

T H E S I S.

SHELL CONCUSSION, "SHELL SHOCK" AND ALLIED  
CONDITIONS, RESULT OF WAR STRAIN, OR THE  
PSYCHO-NEUROSES OF THE WAR.

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GENERAL CONSIDERATIONS.

Officially "Shell Shock" has a varied significance, as describing a condition more or less serious. Very little was known regarding "this condition" before and after the commencement of the War, the result being that quite a number of these cases were discharged from the Army as unfit for further Military Service. The exact condition was not known, or rather we should say, neither the time nor the "machinery" for dealing with such cases were forthcoming.

In former Wars such "conditions" which we may classify under the "generic term" - "Shell Shock" were seldom seen or recognised as such, although a few cases of a similar nature were recorded during the last Balkan War. The then Armies were smaller, artillery units were not of the colossal number as at present, and, moreover, the modern aspect of warfare is totally different.

One must also take into account the greater precision and accuracy of artillery fire. How does this latter factor act is the question we must put to ourselves. There is manifest evidence how a barrage acts on the moral of the men, and

undoubtedly its use is for this specific purpose as military experts so well know and hope for. In former wars artillery did not, could not, play the same part, yet military authorities were fully alive to the great possibilities of the demoralising effect of such, notwithstanding the fact that relatively few casualties were obtained by "shell fire".

The fear, the absolute helplessness, with its resulting loss of self control and self confidence, paralysed "in toto" the actions and movements of great bodies of men as has been well seen during the progress of this great European War.

Another and very important factor from a psychological point of view is the effect of awaiting an unseen danger or enemy. Many of the men sent down confessed that this period of intense anticipation was almost unbearable. The horrors of war, the dangers and hardships of modern trench warfare, the nauseating sights of the trenches and other parts of the battlefield, together with the groove into which his mind runs, from, in many cases, "comradeship with himself alone" produces a collapse, temporary it may be, but which, if repeated, must necessarily cause a nervous breakdown.

There is no doubt that however varied may be the state of the mind of the soldier "bowled over" after mine, shell or bomb explosion, buried in dug-out, or other appalling experiences which as stated above

finally incapacitates him for service in the fighting line, it is true to say that after a few days his reason and his senses are usually not lost " but functional with painful efficiency". This was seen over and over again amongst those admitted to Hospital here.

Of course it must be pointed out that evidence is accumulating that the above conditions are just as prevalent amongst the soldiers of the "Central Powers" as amongst those of the Allies.

As the War progressed, Medical men recognising the condition and particularly looking to the future aspect of the condition of these cases, made a definite stand and asserted that a great number of the cases were genuine and should not be stigmatised nor categorized as cases of malingering or simulation. From the point of view of the combatant many of these cases may have seemed the result of pure "funk" or the lack of self discipline and that severe and exemplary punishment was necessary. One cannot gainsay the fact that malingerers did occur, but have ~~xxx~~ we not malingerers even in civil life.

Medical expert opinion, amongst all the combatants, from those who have observed, studied and treated these conditions, shows that there is a definite condition, the result of what may be called "War Strain".

Discipline in the German Army is of paramount importance, still in such an Army there are cases of

"Shell Shock", nay the probability is that there at least as many, if not more such cases than amongst our own men. The condition is seen amongst the German Prisoners and also amongst Civilians in those towns bombed by our Airmen. Not only so, in this Hospital we have had cases from the Prisoners of War Camp. Again evidence of this condition in the German Army is obtained from some of the German Papers and also abstracts from German Medical Literature. Many of the German Prisoners who have passed through the hands of our Medical Officers have shown the symptoms in a high degree.

As the fighting got more severe, more prolonged, and the machinery of warfare increased, more men were sent down suffering from psycho-neurosis and other nerve lesions. From a medical point of view, therefore, it behoves us to supplement in every way the treatment of such conditions.

Men with a previous neurotic tendency or history, sooner or later collapsed, but even the bravest of our men in many instances were unable to withstand the frequency and intensity of such strain. The stimuli becoming greater than their power of nerve resistance.

Very few men who have had experience of trench warfare for a period of eighteen to twenty four months but show some evidence of War Strain. It must be admitted however that there are some men who do not

know what fear is, and, comparatively speaking, cannot be said to be as truly brave as the men who feel the fear and yet suppress it, and who may ultimately collapse.

In the South African War one never heard of cases of Shell Shock, due, of course, to the different method of warfare and also to the fact that our men on the whole were of a better standard, comparatively speaking, than the present men.

The term "War Strain", although vague, points to the fact that the condition or conditions is partly or are partly the result of War Strain.

Nervous breakdown as already stated is quite common. Many cases were seen, the result of many and varied causes, but were not complicated by bullet wounds, shell or bomb wounds, gas poisoning, or burns.

Cases have been sent down to the Special Hospitals with Shock described as "having lost his senses", "D.A.H"., "Sclerosis of the cord", "Dementia Praecox", etc.

The onset of the War had a disturbing effect upon those who suffered from nervous maladies, anxiety about relatives and financial worries being potent factors.

In men over middle age, the sudden change of work with excessive fatigue sometimes leads to nervous exhaustion, sleeplessness, depression and delusions.

Apprehensiveness of Air Raids, Gas attacks, shelling, etc., bring on gradual psychic exhaustion and are important predisposing factors, particularly in men of neuropathic tendency.

The fear of being buried, horrible sights so often seen, any psychic shock or strain, are quite sufficient to bring on a functional neurosis even in the strongest and bravest provided they be of sufficient intensity relative to the nerve resistance of the individual.

Professor Hoche, for instance, states that the effect upon the minds of the inhabitants of Freiberg was directly proportional to the loudness of the explosions, and he incidentally remarks that some people dread thunder more than lightning. Though the chances of being wounded in Freiberg were infinitely smaller than on the Somme, a German Artillery Officer considered an aeroplane bombardment of Freiberg far more terrifying. This, Hoche considers to be due to the forced passivity in the case of many. On the other hand, those who could take an active part in the defence, the mental strain was relieved. Hoche also refers to the period of anticipatory tension which precedes the explosion, because the sound of the bomb falling travels quicker than the bomb. This anticipatory tension had an injurious effect, and the common expressions of fear were chattering of teeth, pallor, more or less mechanical praying, hysterical

laughter, diarrhoea, rapid excretion of urine, and great thirst. Hoche considers insanity is remarkably independent of external factors because the early bombardments did not produce a single new case.

Asylum inmates were not perturbed, and some regarded the bombing as an agreeable entertainment. Among the sane insomnia was a common phenomenon, cardiac symptoms were often prominent, not in the subjects of organic disease, but in cases of nervous origin, notably the Thyrio-toxic group. Increased excretion of sugar, vomiting, attacks of asthma, giddiness, and also general weakness were observed. Persons buried for seconds or hours might completely lose count of the lapse of time. They could recall visual but not auditory impressions. They could remember seeing the walls falling but not the sound of the explosions. ”



THE ROLE OF EMOTION.

Violent emotions undoubtedly prepare the soil and create predisposition for nervous manifestations. The perspective or critical sense is decreased, slight mental confusion induced and the power of suggestibility increased. Between the emotional shock and the appearance of hysterical phenomena there is an interval called by Charcot the "period of meditation" during which auto suggestion and hetero suggestion have plenty of time to intervene. When we consider the range of heavy artillery and the power of big shells which come from many directions and explode sometimes in the midst of a Rest Camp and also the knowledge that aerial bombing may suddenly occur, one can really conceive that the result would be - an intense emotional shock. In cases where we have, for instance, gun shot wounds, shell wounds or contusion, the pain with its resulting inhibition is the starting point of a process of auto suggestion.

On the other hand, the disturbance caused by large ~~shells~~ shells, bombs and mines, are not considered by many to produce lesions, while others maintain that organic disturbance of the neural axis in such cases is frequent. Of course the nervous symptoms will vary in regard to their intensity and localisation according to the sensations produced by the actual shock and the various circumstances in which

the patients are placed. Emotion and traumatism predispose to nervous manifestations, increasing suggestibility, and sometimes providing the elements of an auto suggestion. Hysterical manifestations are common in the Neurology of War.

It has been contended that the exceptional circumstances of the War have produced numerous hystero-traumatic manifestations, some of which have been improperly labelled Hysteria. Here predisposition, personal or hereditary antecedants, the nature of the individual and the emotional constitution appear to be of secondary importance. The Pithiatic symptoms observed at the present time appear chiefly as the result of the mental<sup>physical</sup> strain which diminish the psychical resistance of the individual and predispose him to nervous disorders of this kind however insusceptible he may appear.

Hysterical manifestations are essentially polymorphous and are the product of suggestion. Further, they can all be reproduced by suggestion or Hypnotic suggestion.

Visual shocks in many cases are very difficult to erase from the memory, especially some of horrifying spectacles common enough in "no man's land".

The fear of being buried or of receiving injuries that would possibly make him a burden upon relatives is often times worse than the fear of being

killed outright. One may point out in passing that a process of self education may enable a man to get accustomed more or less to his surroundings, be what they may be, provided the individual procures sufficient sleep and enjoys good health.

While attached as M.O. to a Unit of the R.F.C. it was noticed most particularly how the Pilots schooled and educated themselves to suppress their emotional instincts especially after returning from a flight over the enemy's lines.

Again, a position of responsibility affects not only the Officer, the N.C.O., but even the private. The mental strain and tension is very great, and this responsibility occasions much worry, anxiety or remorse tending to make sleep difficult or impossible. The strain upon the nervous system, more especially upon the higher centres caused by constantly subjecting and suppressing the outward show of the emotional states of fear, anxiety, sympathy, remorse, anger, elation, depression, etc., is with some very great and tends towards the loss of sleep.

Loss of sleep is very important, occurring not only from mental strain, but probably as often from physical and external causes.

The mental anguish often resulting from "Trench Fever" or "Myalgia"; the mental irritability resulting from pediculosis and Scabies interfere with sleep; the continual roar of artillery, mine explosions,

rifle and machine gun fire; etc., and in addition and certainly not the least important, wet, cold, fatigue and irregular meals all interfere with sleep. Loss of sleep from physical causes aggravated by mental strain thus sets up a vicious circle predisposing to both physical and mental shock, the ultimate effect of the particular shell or bomb, etc., explosion.

One might ask is it possible for a chronic emotional state to set up organic changes? It has long been known that continued grief and care alter the personality and physiognomy; moreover, it is often contended that the facies may indicate a profession, as for example the Clerical, which is thought by some due to psychic processes producing an organic change. Hence the interception of fixed ideas is essential, the patient must be robbed of his false beliefs and given instead self confidence and a moral or religious philosophy so that he can regain interest and proper compensation.

Normally, emotional phenomena can be restrained by personal self control, with the neuropathic soldier it is otherwise, for the continual recrudescence of emotions added to bodily fatigue, a mental anaphylaxis ensues, the individual becoming incapable of bearing an emotional shock. In the psycho-neuropathic condition, fixation of the emotional reaction is a true characteristic.

The restraining bridle-rein of self preservation

being no longer present, this fixation is in actual operation whether concerned with the dissociation of personality, with a weakening of the mental syndrome, with the imaginative power of the individual, or with the tendency of any idea of a neuropathic subject which has an emotional aspect, to become crystallized. Thus, becoming fixed in the mind, the emotional attitude tends to escape from conscious control and to reach the depths of the unconscious. This occurs rapidly, and the emotional objective symptoms are more deeply rooted, the older their inception. This progressive delay in the realms of the subconscious and then of the unconscious mind, accounts for the fact that psycho-neuropathic symptoms are the more tenacious, the older their origin. The patient can only recall the origin of the neuropathic condition by a voluntary effort, but often he is unable to make this effort.

The instinct of self preservation which at the moment of the shock restrains the abundant emotional reactions and checks the development of psycho-neuropathic manifestations, changes its role and becomes an effective cause of fixation and of the persistence of the emotional attitude. It is not a question of malingering - a conscious and deliberate act - but of an automatic, instinctive, egoistic phenomenon, advantageous to the individual but troublesome to the community.

The concussion resulting from the explosion may cause an organic lesion or only a functional disturbance of the nervous and other systems.

In passing it may be stated that the wounded man seldom suffers from Traumatic Neurasthenia.

The man may have been in a previous state of strained and mental expectancy, that is to say, a state of passivity; on the other hand, he may have been engaged to the full both mentally and physically upon some offensive or defensive work, the result being that in the latter case the mental shock may be lessened. Apart altogether from actual concussion caused by violent contact with solid material such as sandbags, a view has been set forth that mere proximity to the explosion is sufficient to cause organic changes in the spinal cord and brain by the compression and decompression of gases, the result of the detonation of the explosive and of the atmospheric air.

Owing to the distance from the shell or other explosion, the physical shock or concussion may be slight, the mental shock or concussion more or less serious, and the man may become unconscious for several minutes. In many instances he is able to get up and "carry on", the efforts, however, are comparatively feeble and emotionally he collapses.

Some of the men have admitted that they have a constant dread or subjective feeling which is more

or less of an obsession of being afraid that they will run away at any minute - a part of the vicious circle resulting from want of sleep and other above mentioned causes.

Another point which may seem to many trivial, but nevertheless is of some importance, is the fact that military discipline is the source of much mental irritation, especially in the case of the older men who have had no previous military experience - This may tend to hold up interest.

Now intense emotional stimuli may continue for weeks, aggravated by the loss of sleep, setting up bodily and mental excitability. This in its turn acts as a further cause of the insomnia with the resulting sequelae, pains, hyperaesthesia, irritability, emotional instability, inability to fix attention for any length of time, loss of power of inhibition and self control. Men suffering from some or all of these psychical and bodily conditions may not show any outward signs and may even appear to their comrades just as steady and regardless of danger as before. Unnecessary risks have often been taken by men in order to impress upon their comrades that they were not afraid because they had imagined that they were suspected of being afraid. Probably no evident signs of fear can be detected, still, disturbances of the circulatory, respiratory, digestive and excretory systems may be present in a very unpleasant degree

perhaps intensified because the nervous energy is denied other channels of outlet.

Suppression of emotion is a very exhausting process, adding to the already strained condition.

On the ~~one~~ hand, we have the man who suppresses fear, on the other, one who does not feel fear, and no one will gainsay the fact that the former is undoubtedly the bravest.

• Other emotional states besides fear require suppression, for instance, sympathetic pain at the sight of wounds, disgust and ~~nausea~~ at the happenings in the trenches. This pent up emotion cannot be exploded against an unseen enemy, and it must have an outlet. This latter being caused finally by a shell or shells which may burst near the man.

Worry, anxiety, etc., when sudden, cause a deterioration in the quality of the blood. Shock profoundly alters the composition of the circulatory fluid and its influence may extend over a long period of time. One kind of toxæmia may give rise to undue pressor effect, another kind to a depressor.

To effect neutralisation so that the blood pressure will not fall, the nerve reflexes concerned must act promptly, and therefore if worry, anxiety and emotional disturbances have caused some deterioration in the quality of the blood, then centres or nerve cells in the cord through which the reflex travels and depends for its energy are not able to do their



work from imperfect aeration.

Consequently, if the endocrinic glands are called upon suddenly to make amends for failure of nervous and muscular tone, it is possible that internal secretion is poured into the blood stream in excess because of the lack of inhibitory and regulatory influence from the Central Nervous System. The relation of the disturbances of the ductless glands to conditions arising ~~among~~ during the war has attracted a certain amount of attention. The most obvious manifestations of a general over stimulation of the ductless glands by excitement, or the toxaemia of infection, is Hyperthyroidism. This concerns all the endocrine glands, the importance of the inter-relation of these glands has long been recognised. It has been thought that between thyroid and pancreas, and pancreas and chromaffin tissue, there is a mutual restraining influence, and between thyroid and chromaffin tissue, a mutually stimulating influence.

The "Effort Syndrome" as it has been called, is due to, or associated, with hyperthyroidism.

In Grave's disease in which there is believed to be excessive thyroid secretion, an increased amount of adrenalin has been found in the blood and **its** medicinal use is sometimes followed by temporary improvement of the cardio-vascular system, suggesting the conclusion that the increased output of adrenalin is compensatory and overcomes the effects of thyroid in the circulation.

The biochemical questions are related to the endocrinic glands. In a number of cases there was undoubted evidence of enlargement of the thyroid gland. Few of the men examined were aware of this condition until pointed out to them by the M.O., although there must have been some who previously had shown indications of thyroid instability. In this connection one must conclude that the present conditions of modern warfare seem to be capable of precipitating this condition.

In all these cases Tachycardia was a marked symptom, the pulse ranging from 100 - 180, and in cases uncountable. The thyroid itself was moderately enlarged, but in some cases the enlargement was scarcely perceptible and generally was soft and elastic.

Profuse perspiration was prominent. There is strong evidence now to support the view that many of these symptoms are caused by excess of thyroid secretion - Hyperthyroidism.

With regard to the adrenal glands, there is a good deal of evidence that the adrenal secretion is in some way concerned with muscular energy. It is a well known fact that in Addison's disease when Hypoadrenia exists, muscular asthenia is a marked symptom. When the adrenal glands are injured or diseased, there can be little doubt that muscular efficiency is diminished.

It has also been shown that the adrenals are concerned in muscle poisons, so we are justified in stating that one function of these glands is to keep up the cardio-vascular tone, while another is to neutralise poisons elaborated during muscular energy.

In this connection the striking similarity between hypo-adrenia and neurasthenia is to be noted, and if that is so one would expect to see much improvement in the patients after a vaso-tonic hormone, such as adrenalin, and in many cases this really has happened.

Many of the cases gave definite evidence of affection of the endocrine glands, shown by rapid acting heart, enlargement of Thyroid, Mobius sign and fine tremor. Crile says that normally there is an inter-relation of the Thyroid, adrenals and the brain, which constitutes the master key to the automatic action of the body.

Sergeant maintains that many of the symptoms in acute illness are due to adrenal insufficiency, which latter shows itself by first low blood pressure, second, asthenic condition, third, subnormal temperature, fourth, headache of a vacuum nature, fifth, dermographic sign (all of which are seen in Shell Shock Cases). It is quite possible that these small glands play an important part in febrile states in neutralising toxins and helping to maintain blood pressure.

Why should Choreiform symptoms and symptoms

similar to those seen in Graves Disease be caused by shock? Graves Disease has been described as "fright, fight and flight".

Shock is an arterial matter and as we have already seen, the adrenals hold an intimate connection with the arteries. The proper circulation of the blood is second only to its proper composition. Its circulation is maintained partly by the medulla and partly by the local centres in the cord, but its composition is determined by the efficiency of the excretory organs and partly by the ductless glands.

A man may be unable to perform some military task and attributes the failure to some objective difficulty, but it is possible that the explanation may be found in some inner compulsion or hindrance which lies in the man's psyche itself. The problem then becomes an interior one. The solution of suffering and difficulty does not lie simply in the amelioration of physical things, but in the understanding of those forces which exist in every being and upon which the ultimately decisive factor in personality rests. A neurotic patient may attribute his condition to various factors and thinks that if only these factors were removed he would be healthy. But, and until he realises that he carries the roots of his malady in his own psyche he will continue a neurotic. Every neurotic patient is an individual in whose development something has gone wrong in a particular

way, and it is the duty of the sincere physician to find out how and when the matter arose and why it still persists. It is customary to think that functional nerve disease is something unusual and that is because it is associated in peoples minds with palsies and convulsive seizures and other dramatic forms. A neurosis is a creation of the mind like a dream. It is something which arrives spontaneously without apparent organic causes. A man may suffer from morbid fear which is a kind of emotional neurosis. He may have a strange dominant impulse to do something grotesque pointing to a kind of ideational neurosis. He may have some loss of function or paresis, or a loss of sensation, or an inability to act, think or feel, that is beyond remedy of conscious control. This is a functional neurosis and it cripples efficiency.

The protective influences in the mind differ from the protective influences in the body in the sense that they are capable of greater abuse. This has been called "over-compensation".

In the morbid & pessimistic person one sees a state of "under-compensation".

Conditions may arise in the psyche in which interest is held up abnormally, the will strives in vain to direct it along a particular path and the cause of failure is not ~~manifest~~ manifest to the conscious mind.

Where a mass of ideas and emotions collects around a common nucleus in the mind, a system is formed

which will react in a particular way to incoming stimuli. This system is called a complex.

The pushing out of interest on to life is termed extroversion; it really means a coming into contact with life. In the hysteric we see an extreme extroversion.

The withdrawal of interest from life is termed introversion. Life is not regarded with confidence but with suspicion, and this condition is seen in other forms of mental disease.

On the other hand, the retreat of interest from reality may occur at any time and assume a pathological form. Whenever reality becomes formidable interest at first becomes sharpened in normal individuals - a biological contrivance - but at times reality may assume such a terrible aspect that instead of turning outwards in the attempt to overcome the difficulty, interest retreats. What is the result of this retreat or regression?

It can best be studied by examining the condition "Shell Shock", for here we can see the effect of the excessive impact of reality upon the individual. The onset of symptoms may be sudden or gradual, they may lie in bed in a state of helplessness of varying degree; they may be paralyzed, deaf or dumb, and this loss of function does not depend upon local injury for as often as not no kind of injury can be found.

They are incapable of any kind of effort, they cannot concentrate their attention on anything, and the memory is clouded often to an extreme degree. Their emotions are often uncontrolled, they are always fretful, and often tearful. Their fear or anxiety fastens on the smallest things, and the condition may persist for many months. In the initial stages of the shock where the onset is gradual, sleep becomes increasingly disturbed by dreams connected with battle incidents. At first these dreams are vivid reproductions of actual scenes that have occurred. Whatever the patient has seen, whatever horrible experiences he has ever undergone, and whatever things he has heard or imagined, begin to appear as intensely emotional representation in dreaming consciousness. During this phase the state of "regression" is beginning and it becomes increasingly difficult for the victim to carry out his duties. As will be seen in fuller detail later on, in treating a neurotic it is necessary to furnish him with some kind of plan; that he should be furnished with some kind of philosophy to draw upon in order that the neurotic can live successfully.

In the case of the recruit who has finished his training, physically and mentally he is in better condition than he has ever been before. He goes up the line physically fit, in time he enters the trenches; if not wounded or attacked by any bodily disease and assuming no previous causes of anxiety or fear, his

stay there will depend upon the nature, duration, intensity and frequency of the emotion exciting causes, and also upon his temperament, disposition and character.

Another question which we must ask ourselves with regard to Hysteria or Hysterical Shell Shock, if one may so call it, is:- Has the modern conception of it been confirmed by observations made since the beginning of the war? Or should these observations lead us back to some extent to the old conception?

The former view considered that Hysteria manifested itself by two varieties of disorders or symptoms.

The first, which are permanent, are known as stigmata, while the second though they may persist for a long time, are usually transient, being liable to be provoked by external influences or purely psychical causes. Hysteria often manifests itself by symptoms which it alone is capable of producing; still, it can also assume the appearance of various other affections and even of organic disease. Motor disturbances can be produced which in themselves are indistinguishable from those caused by cerebral or spinal changes.

Hysteria has been thought capable of producing disturbances of all kinds such as haemorrhages, laryngeal paralysis, spasm of the glottis, albuminuria, angina pectoris, tachycardia, and bradycardia.

Hysteria imitates almost every disease which



befalls mankind; whatever part of the body it attacks it will create the proper symptoms of that part, and the physician, unless on his guard, may be deceived so as to refer the symptoms to some essential disease of the part and not to the effects of Hysteria.

Hysteria has been called a kind of Proteus and the champion imitator.

Granting that the symptoms in their appearance are the same whether their origin is organic or hysterical, is it possible to deduce the true cause?

It was at one time said that the answer was to be found by looking for the stigmata, and although these stigmata are not constantly present, they constitute clear evidence of hysteria such as anaesthesia of the pharynx, "stocking anaesthesia", hemianaesthesia, and various painful areas.

Neuropathic heredity constitutes the essential and constant factor in hysteria, but a variety of provocative agents such as various intoxications and infections, trauma and psychical influence, may be the cause of its manifestations. The following is the ordinary mechanism of hystero-traumatism:- An individual predisposed to hysteria receives, it may be a blow on the shoulder which is insufficient to cause an appreciable lesion. However, although he continues to use his arm, the idea of motor impotence occurs to him, it gradually increases during a period of varying duration, and finally manifests itself in

the form of a brachial monoplegia, but although suggestion in the form of auto or hetero-suggestion is of considerable importance, the principal factor is usually emotion. It prepares the ground and is even supposed to have the power to create hysterical disorders without consciousness being aware of the development or with the will interfering to oppose them.

In the modern view we can now say that hysteria is very far from being able to do everything as was before stated, for instance, it cannot produce certain characteristic phenomena of organic paralysis. The diagnosis of these two forms of paralysis instead of depending upon extrinsic characters and thus being arbitrary, is subject to exact rules, and in most cases can be made with certainty now that it depends upon examination of intrinsic characters. For example, by establishing an exact scale and by distinguishing ankle clonus, which is pathological, from incomplete ankle clonus which is physiological, and which may of course be observed in an individual with hysterical paralysis as well as <sup>in</sup> a normal subject, avoidance of error in diagnosis is afforded. At one time it was thought that hysteria could produce ulceration, cutaneous or visceral haemorrhages etc., but now a close examination of the facts has shown that such a view was erroneous. The hysterical subject conceives an idea of a morbid condition and realises it when it arouses in the patient a desire of certain

advantages or an abnormal desire to astonish or attract attention. In short it creates the infinite variety of motives which act upon the easily influenced will of such patients. Emotion by itself cannot cause the appearance of hysterical symptoms, and it requires the intervention of a suggested idea to enable them to appear. Some neurologists still maintain that in numerous cases one is always enabled to find undoubted hysterical stigmata, a view entirely opposite to that held by other ~~neurologists~~ neurologists who from their experiences in war are convinced that there are no permanent stigmata of hysteria. There is a danger in attaching excessive importance to these phenomena, and also the inability to recognise the numerous cases of paralysis and contracture in which stigmata are absent, and yet a diagnosis of hysteria must be made.

Neur<sup>s</sup>athenia is a complex of symptoms caused by nerve exhaustion and in many cases actually causing a alteration in nutrition.

The potential energy of the nervous system is lowered, consequently exhaustion ensues after any ordinary effort in neur<sup>s</sup>athenics. It is a combination of mental overwork, anxiety and worry plus physical strain which causes neurasthenia, and it is the mental shock which accompanies a physical injury which gives rise to traumatic neurasthenia. On the other hand, psychasthenia is neurasthenia of a cerebral type.

Serious physical injuries are not accompanied by neurasthenia, consciousness being blunted by the severity of the physical injury. Again, slight injuries do not so blunt the sufferers faculties.

Neurasthenia is indeed of various types.

The neurasthenic, morbidly emotional and introspective as he is, constantly worries and over estimates the importance of trivial things, imagining for instance that the tachycardia from which he may suffer is really some serious heart lesion.

It is most essential, as one can see, to find out that the neurasthenic has not got an organic cause and to be certain that no concomitant disease has been overlooked, because if it has a pathological cause the neurasthenia is not a true neurasthenia.

Exact distinction between organic and functional disease is not easy. The question whether in functional disease there is some change in the nervous system resolves itself to this point, whether the change, if any, is a biochemical one or whether it involves some molecular disturbance in the individual cell, and this in the present state of our knowledge is impossible to say.

Likewise in functional paresis, the stress and strain of modern warfare, the weariness and exhaustion of trench life, the shock following the bursting of high explosive shell or bombs, the pains of "trench foot" or myalgia, have all been factors in the production of a series of nervous phenomena complex

origin and which are designated functional. Here also there is possibly some predisposition in the individual concerned. The patient may be completely prostrated or suffer from temporary loss of certain functions such as speech, sight, hearing or voluntary movement.

All grades, all combinations, may exist. In the majority of these cases with loss of power of movement, with functional paresis, there are no external marks of injury, and in cases where there are external wounds the functional disturbances are entirely out of proportion to these.

The time of onset varies, some become paralyzed within a very short time - a few hours, days or weeks. In other instances the loss of power has been gradual. One may see after the lapse of months the pains of Rheumatism for instance resulting in the symptoms of paralysis, which really means the subjective symptoms have become converted into objective symptoms.

Leonard Hill states:- "The explosion of a big shell in a trench dug-out, cellar, or other confined space must, I think, instantly deoxygenate the air and produce a high concentration of carbon monoxide and oxides of Nitrogen. The inspiration of a man at the moment of explosion may introduce enough of these gases to cause death from want of oxygen. If he is fatigued his muscles will be in the condition to go into rigor on the sudden deprivation of oxygen. It would be of great interest to get samples of blood from men

killed by shell shock. I do not see how the alteration of air pressure can do more than act on the gas in the guts and on the lung. The sudden compression of the lungs by several atmospheres must be considered. The pressure will probably act quicker through the wall of the thorax than down the trachea. I do not see how a sudden squeeze of the thorax is going to do any harm, and the pressure will be equally distributed through the fluids of the body in all directions, and it is not enough to break the thoracic wall by the sudden compression of the gas in the lungs. A copper ball with a glass tube sealed up full of air sunk in the deep sea, is broken in when the glass tube bursts, in spite of a free opening into the copper ball. I imagine the thoracic wall might be broken in by a sufficient sudden pressure. The elasticity of the atmosphere is such that this does not occur. I once carried out some experiments on the effect of exploding heavy charges of gun-cotton on pigs. A few feet of air was enough to save the pigs from damage. When the gun-cotton exploded near the ground, the soil, stones, etc., were converted into missiles, and these wounded the pigs. The lungs of these pigs showed some patches of emphysema, as if the sudden wave of air pressure had driven air from one part of the lung into other parts.

I should say that the men either die, as you suggest, from the gases - "deoxy<sup>y</sup>genation of the blood - or else from concussion".

"Also through Lord Sydenham I have heard from the Secretary of the Tranch Warfare Department that it is possible that the partial detonation of a large shell containing say 50 to 100 lbs of T.N.T. would produce enough carbon monoxide in the immediate neighbourhood to give rise to the characteristic poisonous effects of this product".

The effects upon the Central Nervous system of High Explosives may be divided into:- firstly, direct material injury to the Central Nervous System, and, secondly, the moral effect of the continued anxious tension of what may happen combined with the terror caused by the horrible sights of death and destruction. The latter may exhaust and shatter even the strongest nervous system. Soldiers who live in trenches or underground for days or weeks exposed continually to wet, cold, and often to hunger and also to the state of apprehension, together with what might be called "Trench Fear", will suffer from a lowering of the vital resistance of the nervous system so that a shell bursting near and without causing any visible injury, may lead to sudden loss of consciousness.

If a ~~man~~ neuro-potentially sound soldier can acquire a neurasthenic condition from the prolonged stress of trench warfare, then a pre-war neurotic will succumb much earlier.

In born timorous or neurotic disposition or an inborn germinal or acquired neuropathic or psychopathic taint causes a "locus minoris resistentiae"

in the Central Nervous System.

An emotional experience such as fright is liable to develop the symptoms of a functional neurosis or psychosis.

The effects of high explosives upon the Central Nervous System due to direct material injury fall into three groups, viz:-

(1) Immediately fatal from a fragment of the shell or bomb, bricks or sandbags, commotio cerebri or deoxygenation of the blood as a result of excessive formation of carbon monoxide.

(2) In the second group are cases in which the detonation of the high explosive has caused wounds and injuries of the body including the Central Nervous System which have not been immediately fatal.

(3) The third group comprises injuries of the Central Nervous System without visible injury, and in this group are included the functional neurosis and psychosis. There may be no discoverable lesion in a psychic trauma; the human Central Nervous System is so complex in structure. "Our gross methods of investigating dead material do not enable <sup>us</sup> to say that the living matter is altered. Still, a physical or chemical change and a break in the links of the chain of neurones which subserve a particular function is implied".

The physical trauma, i.e., the concussion or commotio cerebri caused by direct aerial compression



or by the force of the aerial compression blowing the person into the air or into the side of the trench or "dug-out", or blowing down the parapet or roof etc., on to him, is a very real factor, though, as frequently happens, no sign of injury can be found. One can imagine a sandbag hitting a man on the head or spine and causing a concussion, or a man buried and being asphyxiated or suffering from deoxygenation of the blood from C.O. toxaemia, but the fact must not be neglected that the enemy frequently intersperses shells containing heavy lethal gases among ordinary High Explosives during a bombardment.

It may be pointed out here that the cerebro-spinal fluid serves to equalise pressure throughout the cranial cavity; the cerebro-spinal fluid also serves as a self-adjusting mechanism by maintaining a uniform equalisation of the blood supply to the nerve elements during the rhythmical variations of respiration and circulation; this fluid is incompressible and normally serves as a protective mechanism, but when the detonation of a large quantity of High Explosives take place an enormous aerial compression is instantly generated, and it is quite possible that this may be transmitted through the fluid about the base of the brain and cause shock to the vital centres of the floor of the fourth ventricle causing instantaneous arrest of the cardiac and respiratory centres.

It is stated that an aneroid showed that the explosion of one of these shells caused a sudden atmospheric depression of about 350 m.m. of mercury corresponding to a dynamic pressure of ten tons to the square yard.

One effect of the aerial compression being rapidly followed by decompression would be liberation of nitrogen as bubbles of gas in the blood stream. These bubbles of nitrogen gas may then be driven into the capillary vessels and cause instant death.

If aerial concussion, the result of detonation of high explosives, can cause sudden death without visible injury, it is probably due to sudden arrest of the medullary centres.

In War Psycho-neurosis it is difficult to separate hysteria from neurasthenia. Neurasthenia is found in those individuals who have been returned suffering from so-called "Shell Shock" but who exhibit not a sign of visible injury on the body, and of whom it may be said that in many of the cases there is no evidence of commotional shock or concussion.

Fatigue is a sensation, the outcome of a particular state of the nervous system the result of work carried out beyond the capabilities of the organism. As a result of overwork, structural changes occur in the nerve cells, which, however, rest has removed.

It must also be pointed out that the effects of alcohol and syphilis cause an ill nourished poisoned

condition of the nervous system, a combination indeed of circumstances of potent and manifest evil.

Neural fatigue or Nervous Debility is neither neurasthenia nor hysteria, but if there is super-added a state of continued emotivity upon which may be grafted obsessing preoccupation, we are justified in diagnosing neurasthenia. Continued emotivity and preoccupation causes a persistent condition of neural exhaustion. The question arises is neural exhaustion caused by using up neural energy or by interfering with the storage of neural energy, or, finally, is it caused by interfering with the functions of the endocrine glands? Probably all are factors in bringing about this condition.

Every individual has a personality depending upon what he was born with and what has happened after birth. The most important factor in the genesis of Neurasthenia is an inborn disposition to emotivity. Feeling tends to dominate reason, but in the well-balanced mind emotion and imagination are guided by reason and controlled by the will. Early life environment shapes the personality.

In many cases admitted to Hospital there was a history of neuropathic or psychopathic tendency and temperamental timidity.

The Surgical Divisions of Hospitals contain amongst the wounded the psychoneurosis - Neurasthenia and hysteria, at most only an odd case. We have then

to consider how far the existence of the wound by its normal effect interferes with a particular mental preoccupation.

Let us consider the effect on the mind of the emotion fear. There is a considerable similarity in the signs and symptoms which are manifested by individuals of very different personality suffering with war psychoneurosis. Fear is primitive emotion common to all human beings; it is associated with definite sensori-motor reactions for self preservation, viz:- the paralytic crouching attitude of immobility for concealment, or of the active reaction of flight or fight, in which there is increased conversion of latent into kinetic energy. In the latter state, Cannon ~~and~~ Elliott have shown that there is a profound effect on the endocrine glands; notably there is a mobilisation of adrenalin with its reaction on the thyroid, its causation of a rise of blood pressure and conversion of more glycogen into sugar for the production of muscular energy.

In discussing the influence of dreams and their significance regarding preoccupation of the mind, it has been pointed out that the dream can be considered as an emotive excitation, and when, as it is in the case of soldiers persistent and terrifying, we may assume there is a state of continuous emotivity.

Dreams occurring in a certain type of individual as a result of war experiences and their

continual revival in the imagination as the dreams indicate, show that there is always present in the sub-conscious mind a source of contemplative fear. The ideas which give rise to this contemplative fear may break through the threshold of consciousness when the attention is not diverted by the continuity in the chain of perceptual experiences and their association with the past whereby the personality adapts itself to the external world in the struggle for existence.

In dreams when the perceptual relations of the body to the external world are dissociated, ideas of past war experiences are revived in consciousness with great vividness in the great majority of cases. The fact that some soldiers cannot recollect their dreams is no proof that they have not occurred.

Many of the soldiers have had no recollection of their dreams, but the fact that they woke up in a cold sweat, or that the next morning they felt dejected, was sufficient proof that they had been dreaming. In fact many of them have been heard to shout in their sleep, and some of these were mutes; a good few have gone through all the processes of fighting with bombs, rifle or bayonet, and yet have had no recollection of the pantomime of war which they have been enacting during their sleep.

There is sufficient evidence to prove that contemplative fear or terror has left a deep impress on the minds of these men and produced a continual state of fear emotivity.

The war psycho-neuroses do not differ in any form from those met with in civil life except that they are coloured and determined by war experiences.

The dodging reflex and the startling reflex so commonly seen in soldiers suffering with "Shell Shock" Neurasthenia afford a striking reminiscence of instinctive self conservative reactions to the booming of shells.

Many men when conscripted are the subjects of Neurasthenia or Hysteria, and numbers of such spend more time in Hospitals and Convalescent Homes than with their Units.

The signs and symptoms of war psycho-neurosis are essentially the same as those found amongst soldiers at home.

Burton Fanning states in the majority of his cases he found an inborn temperamental neurotic disposition. These men start their military career under a cloud, many of them are quite unfit for the hard training and suffer with mental and bodily fatigue aggravated by insomnia and anxious mental preoccupation.

Many of the after effects of nervous breakdowns in soldiers may come on gradually or suddenly and show themselves in many forms. It may be designated a partial dissolution represented by some definite or some uncontrolled action, and as already noted varies according to the temperament and the education of the man. Defect of some function often leads to loss of control over or exaggerated action

of a lower function.

A form of mental crippling is well seen in some toxic neuroses. Take, for instance, the continued and repeated action of alcohol - a toxic neurosis. Here the baneful effects are seen in a more and more state of incapacity.

Injury to the head or body may induce mental disorder, as may also gas attacks, typhoid and malarial fevers.

The motor disorders and disabilities met with in war psycho-neuroses may be the outcome of instinctive reactions of fear.

The vaso motor reaction is manifested by acro-cyanosis. Each individual reacts to emotion according to his personality, and each physical reaction whether kinetic, cardiac, respiratory, gastric or genital, when exhibited for the first time is subconscious. Is there any relation between the psychological disturbance and the physical signs of disordered emotion? Undoubtedly there is.

A continued preoccupation regarding the function of an organ like the heart, the perfect action of which we should be quite unconscious, becomes an obsession. Disordered function tends to re-percussion in the field of consciousness causing a continual conflict between reason and emotion for re-adjustment, thus a vicious circle is liable to be established.

Why is it that soldiers without visible injuries should so frequently have a continued state

of emotivity when far away from danger?

Because from the moment when all danger is passed the instinct of self preservation loses all its inhibiting influence over the emotional phenomena. The latter outlast the initial emotion or more often, perhaps, the emotion is brought back to the mind of the patient bringing with it the various recognised motor and visceral disturbances, and the effect may be first, loss of aptitude, secondly, loss of stability, and, thirdly, definite loss of ability.

In many cases of functional paresis there is a certain amount of mental weakness or confusion. As a rule, however, most recover.

Hysterical symptoms may persist and also the existence and persistence of epileptic symptoms.

Every form of Epilepsy from Petit Mal to L'epilepsie Larvee' may be met with, and in many cases there is a history of fits or convulsions in early life. Many of these "Epileptics" recover, although it will be found that some require colony life and training for a period of years.

In some, other neurosis of early life may be developed. In Syphilis cases (latent poison) and similarly in malarial cases, specific brain symptoms have occurred after shock.

Psychology has been called the positive science of conduct or behaviour, and from a psychological point of view, fear, is characterised by the fact that



its excitement tends to bring to an end at once all other mental activity rivetting the attention upon its object to the exclusion of all others and makes a deep and lasting impression on the mind. It is a great inhibitor of action.

The result of the emotion of fear shows itself in the instinct of flight, one of the means of the self-preservation of the individual.

Suggestion is a process of communication resulting in the acceptance with conviction of the communicative proposition in the absence of logically adequate grounds for its acceptance.

The measure of suggestibility of any subject is the readiness with which he thus accepts propositions.

Imitation is the imitation or copying by one individual of actions, the bodily movements of another.

Temperament is largely a matter of bodily constitution, and shows itself in various ways. Undoubtedly the soldier whose previous environment was good, whose view of life was "sunny", if one may be permitted to so call it, makes a better soldier and less easily falls a prey to becoming a psycho-neurotic, the result of war strain.

The symptoms are seen in all social grades among the patients, and the neuropathic disposition was shown from the family history by the occurrence of Epilepsy, Hysteria, Insanity, Tics and Nervousness in other members of the family.

The traumatism is attributable rather to the psychological conditions attendant upon an accident than to any bodily injury. Many of the symptoms denote a loss of function as, for instance, paralysis, while others such as spasms and tremors indicate an excess of function; some of these are transitory, while others are more enduring. In the hysterical temperament there is an undue nervousness and susceptibility to both physical and psychological impressions. Consequently normal or every day phenomena are not only misinterpreted but are sometimes so exaggerated as to assume an altogether disproportionate significance. The slamming of a door or any sudden action or movement often causes such patients to start or jump (startling reflex), or in the psychological sphere an order or command may bring about such a state. These patients have a susceptibility to hypnotism and auto suggestion. Among other temperamental disabilities are abnormalities of emotion and of will power. Feebleness of will, indecision and doubt, are often accompaniments of this state, judgment is often weak and often influenced by temporary emotions. The basis of the mental state in these cases consists of a dissociation or disparity of consciousness whereby certain phases may be lost or perverted, well seen in the condition known as double consciousness or dual personality.

Psychasthenia is a psycho-neurosis in which a hereditary neuropathic history is always obtainable, but from special inquiry into the family history, parental alcoholism and nervousness will be found, and also the finding in some of the relatives of these patients of nervous systems, periodic headache, hysterical manifestations, nervous Dyspepsia, nervous Asthma, Tic-like movements or habit spasm, and occasionally Chorea.

SYMPTOMATOLOGY.

The examination of these patients brought forcibly before one, the multifarious forms of the symptoms and also the vivid contrast between the cases in which the symptoms were slight and those in which the symptoms were severe and also showed how difficult to judge and apportion in their true sphere the many and varied phases of the symptomatology. And withall there was a striking similarity in nearly all the cases.

There is little doubt that in the great majority of the cases the symptoms possess, to a certain degree, a psychical origin. This origin is sometimes difficult to elucidate, masked as it is by the more blatant phenemena of the complaint; but experience has taught all those who have dealt with these "Shell Shock" Cases that for the physician to be successful he must work on psychopathic lines and that psychotherapy is the most successful branch of the treatment.

First and foremost in studying the symptoms of these conditions resulting from war strain is the separation of symptoms due to an organic lesion from those of a functional nature, or at least symptoms which have no known organic pathological basis.

After dividing cases into organic and functional we can arbitrarily sub-divide the functional class, since it includes the vast majority of the patients who suffer from war strain, into Traumatic

Neurasthenia, Neurasthenia, Psychasthenia, Hysteria, Organo-hysteria, Hystero-Traumatism and Malingering.

It is essential to eliminate concomitant disease, and in some cases Hysterical symptoms will be found associated with organic disease.

With the bulk of these men suffering from war Psycho-neurosis, there is no definite symptom or physical sign, indicating a lesion of the nervous system, but in a few cases there were undoubtedly symptoms pointing to an organic lesion.

The greater number have more subjective than objective ~~symptoms~~ troubles, and as psychological symptoms may be said to predominate, it will be seen that they largely influence objective phenomena.

The etiological role of emotion has been studied, and now one comes to the effect of fixation and realisation of the emotional reaction which is a characteristic of this psycho-neuropathic condition. This may be seen in one as a tremor, in another as a paralysis, and in others as a contracture, deaf mutism or delirium, etc.

A great many of the cases showed a craving for sympathy and responded to it quickly, and no doubt many had intellect sufficient to tell them that they were not like other people and therefore they were continually brooding over their troubles and attempting to rationalise their symptoms by arguments drawn from their own insufficient data and false beliefs.

Regression of interest was marked, and it was

evident that the man in a great many cases had failed to adapt himself to warfare conditions.

The psyche holds power over the bodily functions, and once let the mind lose its interest in life, then it will not be long before physical disorders begin to appear. Hypnotism teaches us that the psyche exercises control over physiological functions, and, moreover, that the psyche is ever open to suggestion.

How far do any of us act apart from suggestion?

Is it possible that suggestion in early life makes a man ambitious or otherwise, moral or immoral, a soldier or a civilian.

These patients frequently showed an increased measure of suggestibility, especially along the lines upon which they were attempting to rationalise.

The instinct of fear was always very marked, and it was often seen that a man who could make no attempts to move while everything was calm and peaceful would make great efforts to get into a "dug-out" if an "air raid" warning was sounded. Some who were unable to move quickly threw themselves into a pseudo fit or cried like a child.

It was also noted that these men who had lost all control over their emotions were often easy to calm by fearless example and a little sympathy. Several writers have likened them to children, and during an air raid they acted truly as such.

Here, an instance of the saying "Good

example is infectious". During one air raid a N.C.O. who had recovered and was awaiting discharge from Hospital not only remained in his own Marquee but prevented eleven others from going out to seek "dug-out" protection. On this occasion many bombs were dropped and the anti-aircraft fire was particularly heavy. There were "dug-outs" for these men to go to but this N.C.O. who was senior of the party considered it was undignified for them to act like a rabble, and he was able by moral alone to keep the other eleven in their beds. This has been stated in order to show the susceptibility of these cases to suggestion because the N.C.O. acted purely on his own authority, there being no Hospital order preventing patients from seeking protection within the limits of the Camp grounds.

The onset of the paralysis and other symptoms varied considerably. For example, a history was given of unconsciousness immediately after being knocked down, etc., and that on regaining consciousness found their power of speech gone and their limbs more or less powerless. Again, some gave a history of being blown into the air and buried and more or less dazed, that they had managed to get up and tried to "carry on". The symptoms appeared a few hours after in some cases, while in others a considerable time elapsed - even a few weeks.

Many admitted that they had been the victims of shakiness, insomnia, emotion, terrifying dreams,

want of energy, loss of appetite, and had alternate attacks of Diarrhoea and constipation and frequency of micturition before the shell, bomb, mine or torpedo caused them to lose consciousness.

Some gave a history of previous bombardments in which they had been buried, etc., but although upset they had managed to continue at their duty though not quite as efficiently, and gradually they had become more depressed, or suffered from fits of depression associated with headaches, slight deafness, tremor, etc., until the particular explosion claimed them as casualties of their Unit.

The following tabulated symptoms may be observed in conditions resulting from war strain. Later, the more important will be dealt with in detail.

In and associated with the Nervous System:-

Objectivities:-

Deaf mutism, mutism, stammering, contractures, paralysis and paresis,

Muscular twitchings, Tremors, Choreiform movements, Tics and Restlessness.

Convulsive seizures.

Exophthalmos occasionally and then associated with enlargement of the thyroid.

Dilation of pupils frequent, slight Nystagmus occasionally? In a few cases congestion of the Optic disc later followed by pallor of the disc.

Reflexes (cutaneous and tendon) normal or



altered slightly in a few cases.

Dodging and startling reflex.

Defence Reflex.

Anaesthesia, analgesia, and hyperaesthesia,  
not showing any nerve distribution.

Spinal irritability.

Occasionally changes in the Cerebro-Spinal  
fluid.

Sighing.

Terror stricken appearance.

Excessive impressionability.

Well marked instinct of self preservation.

Irritability.

Inability to fix attention.

Loss of power of inhibition, self control  
and self confidence.

Obsessions or insipient delusions.

In Circulatory System:-

Blood pressure unstable, usually low and  
rising with improvement in patient.

Pulse generally rapid and showing a striking  
difference between standing and lying.

Attacks of Tachycardia.

Occasional Bradycardia.

Vaso motor disturbances of fingers, ears and  
lips.

In Alimentary System:-

Bowels irregular.

Dyspepsia.

Vomiting.

Flatulence.

Appetite variable though mostly poor.

In Urinary System:-

Frequency and urgency of micturition.

False incontinence.

In Respiratory System:-

Polypnoea or Tachypnoea.

Dyspnoea.

"Reflex Disorders":-

Cyanosis of the extremity affected.

Sweating.

Hypothermia of part affected.

Muscular hyperexcitability (mechanical and electrical).

Slow muscular contraction.

Slight Amyotrophy.

Slight trophic disorders such as decalcification of finger bones and certain fibro tendinous or muscular retraction.

Under Chloroform:-

- (1) Latent exaggeration of **knee** jerk.
- (2) Spasms caused by attempt to correct vicious attitude.
- (3) Persistence of contractures to advanced **narcosis**.

Subjectives:-

Deafness.

Amaurosis, Amblyopia.

Amnesia or Dysmnnesia.

Insomnia.

Dreams of terrifying nature associated with low blood pressure.

Various Algias, particularly persistent Headache.

Tinnitus Aurium.

Head sensations.

Easily fatigued.

Palpitation.

Depression.

Emotional instability.

Hallucinations.

Concomitant Diseases:-

"P.U.O" (Trench Fever) and its sequelae

Epilepsy, especially Petit Mal.

Pediculosis.

Scabies.

Impetigo.

Furunculosis and Carbuncles.

Ecthematous Ulcers.

Bronchitis, Conjunctivitis, Dermatitis and

Bullae due to irritant enemy gas.

A lower state of resistance to skin micro-organisms was often seen especially in Furunculosis, Carbuncles and Ecthematous Ulcers from which many of these "Shell Shock" patients suffered.

It may be remarked here that many soldiers in France suffering from Scabies make no complaint of

itching, and though many such cases are found among psycho-neurotics it is not confined to them alone.

Cases which were said to have developed Epilepsy as a result of "Shell Shock" can safely be assumed to have been Epileptics or potential epileptics prior to the shock. A history could often be elicited of former attacks of fainting, dizziness, and petit mal before the War. This question of Epilepsy is an exceedingly important one requiring very careful investigation.

In some ahistory of automatic wandering was elicited, but the dazed condition which may result from "being knocked out" may bring about such conditions. Here it may also be remarked that the "shock" and the conditions of trench warfare may lower the resistance and cause a recrudescence of symptoms pointing to Syphilis - the latent Treponema Pallidum taking on an active development.

TRAUMATIC NEURASTHENIA.

Under this heading will be grouped the symptoms of the patient who is entitled upon recovery to wear a "wound stripe", i.e., officially he is diagnosed "Shell Shock Wound".

Before the case is diagnosed "Shell Shock Wound" the patient's statement on Army Form W.3436 is forwarded for verification to the Commanding Officer of his Unit. On the return of the Army Form the M.O. in charge of the Medical Division of the Hospital makes the Diagnosis.

Many of the characteristic phenomena of this "condition" are also seen in Hysteria. Still, cases occur which show slight evidence of an organic lesion of the Central Nervous System.

The patient on admission usually is a pale, helpless, tremulous, frightened, cowering and often crouching (Defence Reflex) object, and may be deaf, blind, mute, though perhaps deaf-mutism alone is the commonest association of sensory disturbance.

Paralysis is mostly paraplegia, less frequently hemiplegia and only a few cases monoplegia.

Low Blood pressure or unstable arterial pressure.

Some cases show a marked slowing of the pulse rate, subsequently Tachycardia or ~~or~~ Ortho Tachycardia (upright position).

Arrhythmia occasionally.

Cutaneous Reflexes, mostly normal.

Tendon Reflexes normal, feeble or rather brisk, but not really exaggerated.

Babinshi's extensor response maybe obtained(?)

Contractures.

Profound Asthenia both physical and psychical.

Immediate loss of consciousness.

Complete Coma or Transient loss of consciousness.

Cyanosis of fingers, nose and lips.

Amnesia.

Affections of sphincters.

Cerebro-spinal fluid in a few cases shows albumen, increased lymphocytosis and Xantho chromia. Haematomyelia is rare and so also is Meningeal or Cerebral haemorrhage.

Dilation, or rarely inequality of pupils.

Slight Nystagmus.

Acoustic and visual hyperaesthesia.

Vertigo and Tinnitus Aurium, and other subjective noises in ears.

Rise of temperature occasionally.

Tremor and choreiform movements.

Aphonia, stuttering.

Intractable Insomnia or sleep troubled or distorted by dreams.

Disorders of gait.

Hyperaesthesia and spinal irritability.

Cerebral dullness.

Intractable Headache.

Delayed or Chronic Symptoms:-

Intractable Headache.

Change of Character.

Persistent **Dysmnnesia.**

Persistent Dyspnoea.

Psychasthenic state:- In this condition patients are true psychological invalids.

Incapability of fixing attention.

Hyperexcitability of imagination.

Amblyopia.

Intellectual Inertia.

The above form the Symptoms of the Concussion Syndrome.

NEURASTHENIA.

Under this heading will be grouped some of the outstanding symptoms of those patients who have not suffered a definite concussion or shock and are not entitled to wear a wound stripe.

Depression.

Lassitude which is often accompanied by a certain and curious restlessness.

Easily fatigued and possibly suffers from Tachycardia upon the slightest exertion.

Loss of power of concentration.

Failure of memory for a certain period.

**Insomnia.**

Abnormal sensations in different Organs.

Headache very frequently a marked symptom.

Trembling; Tremors.

Dragging pains.

Loss of appetite, Dyspepsia and bowels irregular.

Loss of vitality and poor resistance to micro-organismal infection?

He is morbidly emotional, introspective, constantly worrying and over-estimates the importance of trivial things, eg., he may convince himself that his Tachycardia is Organic Heart Disease.

PSYCHASTHENIA.

This is Neurasthenia of a more pronounced Cerebral type.

Stuporose condition may be seen.

Appearst to be unable to move or speak.

Eyes may be fixed in a position of external strabismus.

Legs may be fixed and almost immovable.

May be morose, depressed and very prone to tears.

Very apprehensive at times.

Melancholy and suspicious.

May have an obsession and generally tends to fixed ideas.

May complain of stabbing pains in lumbar region or pseudo sciatica.

Tactile anaesthesia may be marked almost all over the body or in only one limb.



Dream states may occur, or he may suffer from attacks of "giddiness", "throbbing", and "palpitation", a feeling of "choking" and a sense of fear. These attacks are followed by sweating and exhaustion.

May have head sensations such as "burning", "emptiness", "bursting" or "popping" inside the head.

Unable to concentrate.

### HYSTERIA.

Hysteria may be called unconscious simulation, because Hysteria can do nothing that is impossible for simulation.

All the symptoms of this condition can be produced or reproduced exactly by suggestion, and in most subjects, if not all, can be made <sup>to</sup> disappear by <sub>^</sub> the influence of persuasion or counter suggestion (especially post hypnotic suggestion).

Contractures.

Paralysis; hemiplegia, paraplegia and monoplegia.

Various Anaesthsias, e.g., hemi anaesthesia, stocking anaesthesia, glove anaesthesia, anaesthesia of pharynx.

Convulsive seizures.

Pseudo-fits.

Automatism, trance or stupor.

Astasia Abasia.

Tremors.

Mutism, Deaf-mutism, Deafness.

Amblyopia or Amaurosis.

Narrowing of visual Field.

Pains in head and lumbar region, etc.

Tender areas which are hyperaesthetic to light palpation, but will permit deep pressure if gradually applied.

Appetite impaired.

Hysterical vomiting, flatulence, Dysphagia, Cough, barking, intermittent respiration, hiccough, yawning, etc.

ORGANO-HYSTERIA.

If a patient with a predisposition to psychoneurosis contracts an illness or acquires an organic lesion, then it is possible that his organic disease may have superadded to it Hysterical Symptoms, or Hysteria may follow on the recovery of a patient from organic disease or injury.

Organic disability especially if of toxic origin tends to set up perversion of mental processes and possibly cells of higher centres are to a lesser or greater extent deranged functionally or permanently by any form of toxæmia, but more especially that of Syphilis and alcohol. If nerve cells are only functionally deranged, then it is possible during such period for the fixation of an idea, or a suggestion, or an emotional reaction, because whichever it be, will have time to pass from sub-consciousness into unconsciousness.

HYSTERO-TRAUMATISM.

A class of cases may be separated ~~from~~ the Psychoneuroses of War and placed under this title.

In this condition the patient previous to his concussion or shock suffered from hysterical symptoms, and thus we have a concussion syndrome superimposed upon Hysteria or a Hysterical subject may receive a physical wound or injury. In the latter case the patient may find his way into a Surgical Ward and thus be some time before he gets under the care of a

Neurologist because the dulling of the patients sensibility, or the distraction or interruption of his attention or preoccupation by the pain of the injury or wound, may cause the Hysterical symptoms to be more or less quiescent or dormant for at least the first few days. Later the patient develops paralysis or contracture, etc., of a true hysterical type.

Some of these cases may run a protracted course.

Is it possible that some of the "Reflex Disorders" described by Babinski et Froment are Hystero-Traumatisms?

#### MALINGERING.

Malingering is conscious and intentional simulation of symptoms either subjective or objective of a disease or diseases with the object of gaining some definite advantage.

It may be voluntary and intentional exaggeration of a real disorder.

Or it may be the voluntary and intentional prolongation of a real disorder.

Thus, the symptoms may be assumed invented, exaggerated or prolonged.

Intent to deceive is the Hall Mark of Malingering.

Malingering is rare.

A few cases of Hysteria are very near the

border line separating Malingering from Hysteria.

The appearance is that of a healthy man with a good appetite and sleeping well especially if the simulator thinks he is not being watched.

The patient or pseudo patient may be "caught tripping", but a hysterical patient can also be "caught tripping" at times.

An admission by the patient is useful evidence provided that the M.O. did not use suggestion during his examination.

When a simulator imitates a posture gait or paralysis he usually exaggerates or distorts to excess. He may add symptoms as he learns them and thus is liable to contradict himself especially if he has been given an opportunity to learn Babinski's Plantar Reflex.

Moral considerations are always necessary before a diagnosis of Malingering is made, because it is rare.

METHOD ADOPTED FOR EXAMINING PATIENTS ON ADMISSION  
TO HOSPITAL.

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The patients having been bathed and having received clean underclothing were detailed to their several tents and were seen each morning by the Medical Officers. The severe cases were admitted to Bed Tents, and were seen at least twice daily, in many cases more often. Cases showing special symptoms, e.g., Tic, were isolated in special tents and had special treatment, which will be detailed later. The progress of the case was watched by seeing the patient daily, and special treatment and instruction was undertaken by the M.O. in all cases requiring such, e.g., cases of stammering, electrical treatment, etc.

Each patient was examined carefully and separately in the examination tent, where a history of the case was taken before the actual, physical and clinical examination.

The scheme was as follows:-

Name.	Occupation.	Age.
Length of Service.	Foreign Service.	

- (1) P.N. His previous nervous condition or state was carefully and exhaustively gone **into**, and generally at the same time his previous personal **history**. The nature of his civil work, was he exposed to any poisons, eg., lead, mercury, etc. Syphilis and alcohol were inquired about with special care. Also is any previous history of discharge from

ears, and history of fits obtainable.

Under this heading enquiries were made as to his interest in sports, cricket, football, etc.

(2). P.S. (Present State).

Here careful enquiries were made as to his nervous condition since joining the Army, and especially so since coming to France and his entry into the trenches, together with enquiries regarding any other illness he may have had, whether such was treated in Field Ambulance, "C.C.S.", Hospital or otherwise. Particular enquiry was made if wounded, and, if so, how often, and part or parts affected, and the effect or effects on his general condition. Here also enquiry was made regarding any previous history of "Shell Shock".

S.S. (Statement of Patient).

Here a fully detailed statement of the history of the present state was taken, as to the actual cause, and under what conditions did it occur, and also a statement of movement from the trenches etc., to hospital.

Enquiries were made under this arbitrary heading as to his previous "appetite", condition of bowels and micturition.

S.Y. (Symptoms).

A statement of his subjective symptoms was now taken:-

The Alimentary.  
Respiratory.  
Urinary.  
Circulatory

systems were carefully and exhaustively examined.

Sleep. Particular enquiry was made as to his previous condition regarding sleep, and also, if we may call it, his immediate condition of sleep.

P.S. (Physical signs).

- D. Development.
- N. Nutrition.
- S. Strength.
- M. Movements.

(Cr.N. Cranial Nerves.

( Coordination.

( Sphincters.

( Reflexes.

( Motor Functions.

( Sensory Functions.

( Vaso Motor and trophic changes.

( Intellectual functions, e.g., intelligence

( speech, etc.

Neuro-logical Examination.

Cases presenting Mental symptoms.

- (1) Family History.
- (2) History of patient.
- (3) General aberrations, e.g., facial expression.
- (4) Physical examination.
- (5) Neurological examination.

Mental Examination.

- (1) Orientation.
- (2) General Memory.
- (3) Emotional status.
- (4) Hallucinations.
- (5) Speech.
- (6) Stories.
- (7) Special Memory.

Special attention was taken in eliciting a general information, getting patient to complete a sentence, or to incorporate a sentence having been given 2 or 3 special words, and to tell the difference between two words seemingly meaning the same, and lastly getting patient to draw a diagram.

Pulse. Special attention was given to the pulse under different conditions, viz:- standing, sitting and sleeping.

Blood Pressure. As far as possible the blood pressure



was taken at the primary examination and subsequently.  
Urine. The urine was examined regularly and on several occasions if necessary.

Treatment.

The following case will show more clearly the above routine:-

Case T.D.G. Occupation:- Printer. Age:-34.

Regimental No. --

Length of Service 13/12. In France 4/52.  
Date.

P.N. Health has been fair, although complained frequently of a weak chest. His nerve was always poor. Took no interest in sport.

P.S. Since enlisting health has been fairly good, occasionally has had a cough. Nerve has been worse especially within range of gunfire and noise of gunfire.

Has been in France 4 weeks. Has not been wounded, nor had previous shock.

S.S. On 7/8/17 about 8-0pm while at ----- and while getting ready for going into "supports", a shell burst near opening of the "dug-out" in which he was; was "knocked down: and cannot remember anything further; he "came to" in Dressing Station.

- (1) Appetite has been good.
- (2) Bowels regular.
- (3) Micturition normal.

S.Y. (Symptoms). "Shakiness and feeling of fear".

"Sleep poor and delayed".

"Terrifying dreams".

"Severe frontal headache".

"Aches all over".

"General feeling of weakness.

Alimentary )	Normal.
Respiratory )	
Circulatory )	
Urinary )	

<u>P.S.</u>	D. & N.	Normal.
	S. & M.	"
	Cr.N.	"
	Co-ord.	"
	Sph.	"
	R.	"

Pulse 84.  
Blood Pressure 90-120.  
Urine - Normal.

Treatment:- Trional Grs.X. Rest in Bed 1 day.

Further progress of case.

Complained greatly of weakness of legs, and cold sweats at night, but greatly improved sleep.

Was ordered gentle massage and physical drill (easy exercises). Rapidly improved and on 17th was able to do route march, and subsequently returned to duty.

It is now intended to enter into more detail with the more marked phenomena arising out of War Strain.

PARALYSES AND CONTRACTURES.

Paralysés may be of two types, viz:-

- (1) A flaccid paralysis of a whole limb with no movement.
- (2) A muscular stiffness or contracture of certain muscles with paresis of others and some slight movements possible.

Hemiplegia, Paraplegia and Monoplegia all occur, but Paraplegia is the most frequent. These

paralyses are often characterised by their completeness especially in the case of Brachial Monoplegia of flaccid type.

Hemiplegia is much rarer than Paraplegia or Monoplegia, and is in many cases better described by the word Hemiparesis. It may be an absolute motor paralysis of the upper limb and lower limb. With the aid of a crutch progression is often possible, and then the "dragging foot gait" is characteristic. The toes are dragged and the trunk is bent, and at each step the weight is thrown somewhat on the affected leg.

Paraplegia is the commonest form of physical paralysis and occasionally is associated with injury due to concussion or burial with earth up to the waist, there being in some cases evidence of slight bruising, perhaps spinal irritability and a trace of blood albumen and increased lymphocytosis in the Cerebro Spinal Fluid.

There is a flaccid type and a type with contracture which is mostly that of extension of the legs. Walking or progression is difficult, but with the aid of sticks or crutches is not impossible.

Monoplegia may be brachial or crural. The flaccid type is the most common in Brachial Monoplegia and is complete and absolute with no active movement and seeming as if patient had forgotten the existence of the arm. In crural Monoplegia, the type with contracture is the more common, and there may be incomplete flexion of the leg on the thigh and the thigh on the pelvis; contact with the ground being made

only by the big toe. Walking is slow and laborious and associated with a very marked limp.

There is an extended type, and all segments of the lower limb are extended including the foot; contact with the ground being only made with the ball of the big toe. Consequently there is tilting of the pelvis with a compensatory vertebral curvature with its convexity directed to the healthy side.

Monoplegic contracture is more frequently met with in the lower limb than the flaccid type, while the reverse occurs in the upper limb.

Many of these paralyses and contractures are associated with vaso motor disturbances (especially of the extremity of the affected limb) such as cyanosis, hypothermia and sweating. Other "Reflex Changes" may also occur such as hyperexcitability of muscles and nerves, amyrophy and decalcification and fibro-tendinous and muscular retractions.

#### DISTURBANCES OF THE GAIT.

The study of functional disorders of the gait shows that one class of these has a psychological sub-stratum, and active emotional condition; the other a condition of suggestibility of which the clearest expression is the fixation of the disturbance of a bodily function.

The former have been termed Basophobic disorders, and the latter Abasic or Dysbasic disorders. Astasia Abasia which is a Dysbasia and a true hysterical

syndrome.

During lying or sitting the patient is able to move his limbs freely as if nothing is wrong, but is incapable of standing or walking normally. He may be able to walk on all fours, to jump or even climb.

Standing or walking are sometimes affected by abnormal movements such as ataxic choreiform or tremulous forms, and these two functions may be abolished or only weakened (i.e., paralytic or paretic forms).

Choreiform or Saltatory type. Lower limbs are put forward asymmetrically, and choreiform movements not having any connection with the object in view are superimposed on the automatic movement of walking. The muscular disorder is more exaggerated during walking than standing and has been called Dysbasia with tremor.

Occasionally when the upper limbs are not involved the arms may be shaken by brusque and jerky movements of flexion and extension and the hands are never at rest.

Dysbasia of Psuedo Tabetie Type. Again, in this condition passive and voluntary movements are normal, while patient lies in bed, but when asked to walk he progresses by throwing forward the lower limbs; "he kicks his heels, swings the limbs and widens his base". Forward progression is effected without discomfort or fear of falling. While standing irregular and wide, oscillations both antero posteriorly and laterally may be seen, and these are not increased by the patient

closing his eyes, nor are they exaggerated in darkness as one would find in *Tabes Dorsalis*.

There is a type showing both a paralytic and an ataxic element. In this the patient usually stands without much effort, though he often shifts a little forward as if trying to find his centre of gravity. When he attempts to walk the thigh is unduly flexed, the leg hangs vertically with the foot slightly dropped. The limb thus advanced comes heavily to the ground. This type of progression is an exaggeration of the "steppage gait" and is associated with abruptness of movements.

Other atypical types have been described. "Staso-Basophobia". This syndrome in most respects resembles *Astasia Abasia*. It is a functional disorder of the gait and differs from *Astasia Abasia* in being an inhibition of automatism dependent upon an emotional condition instead of being a disturbance of the automatic performance of walking as one finds in *Astasia Abasia*.

When a patient suffering from this condition is made stand erect, his facial expression changes and shows fright, anxiety and terror. He begs to be supported, says everything is "going round" and that he is going to fall. He clings to anything that is near or clutches at the orderly. If persuaded to put his foot forward he quickly draws it back feeling certain that he is going to fall.

With difficulty the patient "crawls", the

attempt at which, causing acute fear, practically shuffling along the floor of the tent in a limp and semi-flexed manner; a picture of dire distress he implores to be allowed to rest on the bed or chair in the tent, exhausted and bathed with profuse perspiration.

Habit Limping. The gait is characteristic; in some cases an attitude of almost complete semi-flexion is seen, in others an abnormal attitude in one or both limbs, limp and almost useless or even semi-flexed; in all cases causing a defective use of the limb.

Again, contracture of certain groups of muscles are seen.

This condition of limping, or, as it has been called "habit limping", becomes automatic and is in reality a part of a vicious circle resulting in or becoming a "habit".

The daily examination of such patients showed conclusively that many features in these cases were more or less automatic. A peculiar and characteristic method of walking adopted by some of these patients was a limping condition with dorsal flexion of the toes.

TREMORS, TICS AND CHOREIFORM MOVEMENTS.

Tremors. A certain proportion of cases showing tremors are on the border line dividing functional from organic disease, and hence the possible cause of the often protracted nature of this symptom is an organic basis.

Tremor may occur in a young soldier arriving at the front for the first time or in a hardened veteran who has just come through a violent engagement. Though a history of neuropathic tendency may be elicited, yet, the majority give no indication of any previous neuropathic or psychopathic history.

Normally these disturbances follow as a sequel to "Shell Shock", though a few instances may be found following a slight wound, fatigue, exposure to cold, etc.

The associated symptoms are those due to Shell, etc. explosions, the commonest being deaf-mutism.

The onset may be sudden or more usually it is delayed from a few hours to several days, or it may commence when the patient leaves his bed after slight wounds have healed.

Tremors may be divided into Atypical and Typical.

Atypical Tremors are disorderly, irregular movements not resembling in their behaviour or course any tremors accompanying known maladies. These appear to be conceived by the patient who seems to determine their form and manner of appearance.

Typical Tremors, more or less resemble those seen in Nervous diseases which are accompanied by Tremors.



They appear to be imitative because there is no other sign of paralysis agitans, disseminated sclerosis, cerebellar affection, general paralysis, mercurial or alcoholic intoxication, nor is there any question of hereditary tremor.

Atypical Tremors may be generalized or limited to a limb or part of a limb.

When generalized they form part of the "Shell Shock" syndrome.

The facial expression shows indescribable terror and shares in the irregular movements of the whole body, and one is struck by the enormous waste of energy that goes on.

The tremor is considered "as the expression mimicking fear". There are circulatory disturbances (tachycardia, flushing or pallor of the face), secretory changes (perspiratory, lachrymal, small salivary secretion, discharge of urine), all of which with the tremor are manifestations of the emotion (Henry Meige).

In Generalized Tremors the patient is shaken by vibratory oscillations of variable intensity, sometimes fine and limited to the extremities, more often wide and irregular. The patient cannot stand upright, and on the approach of the M.O. these irregular movements become greatly intensified. Any sudden noise may bring on a paroxysmal crisis.

Tremophobia (fear of Tremor) is a distinct psychopathic condition described by Meige "Tremophobia partakes of

all the characteristics of an obsession". "It is seen in those with a predisposition especially those with a generally unhealthy constitution". "Blushing and tremor are only reflex manifestations of the emotional conditions. Tremophobia is increased by fear of tremor". "The physical phenomenon produces the obsession which in its turn increases the somatic reaction, the exaggeration of the latter again reacts on the mental disorder; thus a vicious circle of interchanging psycho-physical reactions is established, the final result of which is an obsession".

Tics. A Tic may be defined as a co-ordinated systematised, purposive act, reproducing in an involuntary manner the co-ordinated movements of everyday life. (Meige).

Tonic Tic occasionally occurs as the result of wound or nervous shock, but is less common than the chronic tics or spasmodic movements which have the same origin as the tremors and may be found as a part of the concussion syndrome. They respond quickly to psychotherapy especially in early stages. Some may cure with rest and quiet, but most will persist for a very long time or become permanent if untreated.

Tics They are usually observed in and around the head, e.g., clonic contractions of the neck (sternomastoid, trapezius, platysma) or of the head, movements of affirmation or negation, palpebral or facial spasms on one or both sides, or movements of elevation of one

or both shoulders. Some are old cases which after years of quiescence have come to light owing to fatigue or the emotions of the campaign, but the most occur in "Shell Shock" cases for the first time.

Facial spasm corresponding more or less to the distribution of the 7th Nerve is occasionally seen. The spasms are of a clonic character and come on in attacks lasting from several minutes to some hours with intervening periods of comparative freedom. They may involve all portions of the facial musculature, or be mainly limited to the orbicularis palpebrarum, the angle of the mouth and the chin muscles.

Deaf-mutism is the most frequent type of the disorders of the hearing. The patient looks haggard, terror stricken and anxious, or he presents a listless mental confusion with dulling of his senses and an expressionless or immobile face and he is difficult to arouse or even "start up" from his torpor. In addition, there is insomnia, nervous agitation at night or night terror, and loss of appetite.

These patients are only apparently deaf and dumb, though there are occasional cases of organic war deafness which may be due to fracture of the skull and petrous portion of the temporal bone, and labyrinthine disorder or commotion. Impacted wax or perforation of the drum, purulent Otitis Media are easily recognised, but labyrinthic deafness is not so easy to detect.

Deafness alone may be unilateral or

bilateral, and in these "Shell Shock" cases the latter is much the most common. There are usually subjective phenomena such as "ringing in the ears", "noise of water", and "buzzing". Deafness without mutism is not common, though there are a great many cases of deafness with disturbance of speech, e.g., partial aphonia or stammering.

The subjects are little ~~xxxxxxxx~~ inconvenienced by their deafness which may be truly said to be more apparent than real and often more marked when their attention is drawn to it by investigation.

- (1) If these patients are told sharply to shut the eyes they often obey.
- (2) The voice is not affected in quality, pitch or intensity.
- (3) A loud and sudden noise often causes an involuntary movement which will soon be repressed. A motor horn suddenly blown at a distance of a few yards will cause contraction of the orbicularis palpebrarum.

Otoscopic examination was done in nearly all cases; in some rupture of the tympanic membrane was revealed, acute middle ear catarrh was observed in others. In many, indrawing of the membrane was observed, haemorrhage of middle ear was noted in some.

Some patients presented symptoms typical of ~~Meniere's~~ Meniere's disease, no objective symptoms or signs being observed with the otoscope, etc. Symptoms pointing to traumatic affections of the auditory nerve and labyrinth were also observed.

Mutism may exist alone without being combined with deafness. It is just as curable as psychical deafness, if not more so. It may disappear spontaneously (e.g., in a dream, at a picture house, or at a football match, etc) but if not treated, or treated unwisely, it may persist for a very long time. With regard to spontaneous disappearance of mutism, an extract from the "Daily Express" of November 26th, 1917, will explain this symptom and show the ignorance which has existed about this syndrome. It is as follows:-

"Dumb Soldier shouts 'Goal'".

"A man who had lost his voice and had been discharged from the Army recovered his speech in remarkable circumstances on Saturday.

He was watching a football match at Stamford Bridge between Chelsea and Woolwich Arsenal and when Chelsea scored he suddenly shouted "Goal". He can now speak quite freely".

This incident is only one of very many cases of the kind which the newspapers have published, and it shows the psychic element which could have been recognised before the man was discharged.

In this case preoccupation was overpowered by the excitement of the moment.

Mutism is absolute and total. He makes no phonation, and if pressed to tell his name may simply blow air through the lips, making no sound. The tongue is immobile, and the breathing is much at fault.

The Laryngoscope shows the cords to be

normal and at a position of rest.

Written speech is never absent, and this fact combined with total loss of phonation and the associated pantomime which readily develops characterise functional mutism as opposed to motor aphasia of organic origin.

In some cases simple aphonia or whispering voice results from the shock, though it is more frequently seen as a sequel to mutism when the patient is commencing recovery.

Stammering was a very frequent phenomenon, and was mainly of hysterical type. Stammering frequently occurred among the first onset of symptoms and often was a recurrence of a stammer which had been cured in early life. It was often a sequel of deaf-mutism or mutism and appeared when the patient began recovery.

Here again one observed improper filling of the lungs with difficulty in production of voiced consonants and vowel sounds. Breathing was quick, hurried and irregular, and in many cases blowing <sup>in</sup> character. The tongue was retracted or heaped up in the back of the mouth almost touching the posterior part of the soft palate, while there was spastic contraction of the neck muscles.

Visual Disorders are much less common than those of speech and hearing. There are some cases which have suffered trauma to the eyes, and in these there is congestion of the discs which is later followed by a

pallor of the optic disc.

The majority of the cases who complain of visual disturbances show nothing that could indicate organic disease or injury.

The onset of eye symptoms may be caused by the atmospheric disturbance near an explosion, but usually after earth or dust has been thrown up into the eyes or sometimes after lachrymatory gas shells. Some slight trauma or a foreign body without previous shock is responsible in a few rare instances.

Visual disturbance may in a few cases be an isolated symptom and be the only reason for a patient being sent to hospital, but in the main it occurs as a symptom in a "Shell Shock" syndrome or in an Hysterical subject and occurs along with tremors, paralyses, affections of hearing, convulsive crises, etc.

Complete Amaurosis may occur and yet examination shows the eyes to be normal.

Amblyopia and Photophobia are common and may be accompanied by hemiplegia, deaf mutism, etc. They soon yield to Psychotherapy.

Blepharospasm (uni or bilateral) movements of the lids or blinking of neuropathic type are not rare.

Nystagmus is occasionally seen.?

Loss of Smell and Taste were never complained of, and thus were seldom, if ever, impaired.

#### VISCERAL DISORDERS.

Emotional states do not find expression solely

in modifications of sensation and of motor function, but also in extensive though transient disturbances of function of the viscera.

The visceral complaints which may result from emotion are extremely varied and there is no system in the body in which emotion may not show itself. The immediate emotional disorders are essentially transient, and when the cause of emotion is removed they soon disappear or vanish. This same cannot be said of certain affections which may, in a neuropathic individual, become fixed for a more or less protracted period.

Digestive Disorders. Hysterical or Mental Anorexia and the disturbances of sensation in the intestinal tract which they present are matters of common knowledge. Vomiting may occur frequently, but the patient does not lose his appetite, and, further, his nutrition remains unchanged.

The Stomach is not hypersensitive, splashing is not elicited, and the liver is normal in size.

#### RESPIRATORY DISORDERS.

Neuropathic Tachypnoea or Rapid breathing is less common than digestive troubles. It is usually transient and occurs immediately after the emotional excitement of a bombardment, but in a few cases it has recurred and has in rare instances become a neuropathic paroxysmal Tachypnoea.

It is functional and may be accompanied by blatant, excessive and disproportionate manifestations



especially general agitation.

Sighing. The American - Crile - during a visit to this Hospital pointed out that sighing was a prominent symptom in quite a number of cases, and afterwards this symptom was specially watched for and observed in many cases exhibiting cyanosis of the fingers.

#### CIRCULATORY DISORDERS.

Tachycardia - Bradycardia. They form an integral part of an emotional state. Tachycardia is the most common. Psycho-neuropathic Tachycardia is characterised by its occurrences in paroxysmal attacks which are brought on by revival of an emotion.

They occur as a part of the concussion syndrome, or in Neurasthenia or Hysteria .

Paroxysmal attacks of Bradycardia may alternate with severe fits of convulsive hysteria.

Tachycardia was often marked upon slight exertion such as getting up and walking a matter of 10-20 yards. These cases often show a very marked difference between the pulse recumbent and the pulse in the upright position. One case showed a pulse that was uncountable after slight effort.

Disorderly Action of the Heart. D.A.H. or Effort Syndrome, as one writer has called the various symptoms evident in such cases, was a frequent and distressing symptom; palpitation, praecordial pain, feeling of suffocation, giddiness and faintness, being marked. The pulse under these conditions was in many cases not

countable.

A Leucocytosis together with a Polyerythrocythaemia and low colour index is obtained; "the average of fifteen patients suffering from D.A.H. was 5,837,000 which is quite in excess of anything previously observed in healthy individuals". The average age was 28 years. Haemoglobin content average being 93.4%, and average colour index being .8. In these cases the nervous irritability, or increased irritability of the nervous system is the cause of a certain proportion of the D.A.H. cases seen here.

#### BLOOD PRESSURE.

On admission, in severe cases of "Shell Shock", a pressure below 120 m.m. of mercury was shown. Some registered 120 and 160 m.m. and some between 120 - 140 m.m. of mercury.

A subnormal surface temperature was often observed. In most of the cases with a low blood pressure there was associated a condition of extreme fear. Many complaining of terrifying dreams, sweating and trembling being also prominent. The fingers were cold, clammy, and cyanosed, and generally there was a tremor. They showed a marked fatigability and irritability. Most of them were depressed and showed a great lack of self-confidence, and all suffered from headache.

Dilated pupils were seen in many cases. It was also noticed in those cases where the signs of fear were not so well marked, and terrifying dreams more or less

absent, that the blood pressure as a rule was higher.

As the general condition of the patients improved so there was a gradual rise in Blood Pressure; this coinciding with the dreams becoming less terrifying and the symptoms of fear less marked. In relapses there was often a return of symptoms, viz:- dreams, tremors, headaches, and it was also found that there was a drop in the blood pressure at the same time. As the general condition improved so also did the surface temperature rise. The urine was normal in all cases.

An interesting point was the constant relation between low blood pressure and terrifying dreams. A vicious circle is produced; the initial vaso-motor disturbance produced at the time of the shock being rendered more or less permanent by the occurrence of terrifying dreams; a cerebral anaemia, lessened mental and physical activity being also caused by the low blood pressure, and which prevented the man from throwing off the effects of his imaginations.

Vaso-motor Disturbance. Cyanosis of the fingers, ears and lips was frequently seen, and associated with this was a low external temperature of the extremities (hypothermia) and also often a low blood pressure. This coldness and cyanosis of the extremities formed a part of the concussion syndrome and was due, as the American Surgeon, Crile, stated when he saw some of these cases at this Hospital, "to defective intra cellular respiration".

DISORDERS OF SPHINCTER CONTROL.

Frequency of micturition is a very common disorder among soldiers in France, and the Regimental Medical Officer is frequently consulted by a man who complains that he has frequent and urgent calls to micturate both diurnal and nocturnal, and that occasionally he suffers a very slight incontinence or else his micturition is precipitate. These are mild cases in men who have no outward signs of Hysteria or Neurasthenia, and who are performing their duties efficiently though their sleep is often disturbed.

In many of these men a psychic process is at work, for one has observed that Tincture of Belladonna usually works marvels, but that tablets of aspirin or sodium bicarbonate have also effected a cure. Therefore, since the latter are known to have no influence on the micturition centre nor any anuretic effect, the cure can be considered as an instance of pure suggestion. These soldiers are probably exhibiting one of the earliest symptoms of War Neurasthenia. Frequency and urgency of micturition appears to be due to excessive contraction of bladder muscle. Emotion and the suppression of emotion appear to be etiological factors in the causation of these mild cases who have not become Hospital patients. Mental fatigue made the symptom more marked.

Generally, the urine was normal in quantity and quality.

Incontinence and Retention of Urine when complete most

probably indicate an organic lesion, and are rare.

False Incontinence is frequently seen and may develop out of the above-mentioned Frequency and Urgency, but it is commonly one of the prominent features of the Concussion Syndrome, viz:- after a bombardment or burial, the man has loss of consciousness, deaf-mutism, tremors, paralysis, etc. At the time of the shock the patient may pass urine unconsciously which is explainable on psychological grounds. This may occur again and again until the disorder gets chronic and fixed, and then great care must be taken before any diagnosis is made that would help the man to rationalise his false idea which has become, or soon becomes fixed.

Another variety of False Incontinence may be due to bad habit.

Recurrence of Childhood enuresis or essential incontinence of urine after a period of years of freedom, may be provoked by emotion, exhaustion or shock similar to Epilepsy.

Incontinence may follow a period of incomplete retention and in this condition there is a slight lesion of the cauda equina or conus medullaris, a lesion which only produces an incomplete syndrome and may pass totally unobserved unless sought for with care.

Retention of Urine is much rarer than Incontinence, and when it does occur, is usually transitory and passes off from a few hours to a few days after the concussion.

There is occasionally an incomplete form of

retention with vesical pain necessitating the passage of a Catheter and associated with it may be found lymphocytosis or slight increase of albumen in the Cerebro Spinal fluid. There may be increase of tendon and bone reflexes, and sometimes ankle clonus, hyperaesthesia of the perineo scrotal region and abolition of the anal reflex or changes in the cremasteric and abdominal reflexes. It is probably abortive or early organic lesion of the cord and therefore important to diagnose.

Polyuria occurs as a transient manifestation or reflex emotional disorder and is only of short duration.

#### DISORDERS OF THE ANO RECTAL SPHINCTER.

Relaxation of the Anal sphincter may occur in a severe concussion, but after admission to hospital loss of sphincter control was never seen.

Diarrhoea frequently occurs among psychoneurotics and is due to over action of peristaltic movements which are possibly due directly or indirectly to endocrinic secretion together with some toxicaemic influence.

#### The pains, aches, or "Algias".

Some of the headaches which follow concussion are very real and undoubtedly have an organic basis because lumbar puncture reveals (1) Cerebro Spinal Fluid to be under pressure, (2) to contain occasionally traces of blood and albumen, and, (3) drawing off of 3-5 c.c. gives immediate relief to the patient.

Other headaches and pains come under the

term psycho-neuropathic and include every pain with or without loss of power, which on clinical grounds or for therapeutic reasons, for example, cure by psycho-therapy, does not appear to be caused by an organic lesion.

Pain localised in the lower limbs (e.g., pseudo-sciatica and skin pains) and causing claudication are the most common.

The clinical types show infinite variation, but in general they reproduce the classical syndromes in which pain is the important factor. These may be vicious antalgic postures such as curvatures or scoliosis or functional impotence as seen in the various forms of claudication. They may take the form of more or less severe pain without apparent deformity, but localised in clearly defined regions to which the patient constantly directs attention (hysterical or neurasthenic topo-algias). Lastly they may be cases of various visceral pains - gastric, vesical, renal, etc - the diagnosis of which is often far from simple.

Headache was a frequent symptom complained of; in some cases frontal headache, in others occipital; while in some parietal and either unilateral or bilateral. Common to all was the intractability of the headache and its persistency, many wakening up with what they described as a "dull, leaden headache"; associated with this was often observed giddiness. These headaches were little amenable to drug treatment by analgesics.

Praecordial pain is frequently complained

of, often persistent and to the patient very real and associated with this one found in some cases a tenderness on palpation.

Pleurodynia was often complained of.

Pseudo-Lumbago was often a cause of complaint and sometimes a cause of spinal curvature. Here it may be mentioned that when palpating the spinous processes there was in some a marked tenderness or irritability over certain vertebrae.

Colic or Intestinal pain was often a cause of complaint, and in some was associated with flatus and possibly an excessive and somewhat irregular peristaltic movement.

It may be stated here that the majority seemed to have more or less intestinal stasis.

Gastritis accompanied by vomiting was occasionally met with, as also hysterical vomiting of solids.

Appendicular pain or pseudo-appendicular pain was often complained of, but here there is not much difficulty in diagnosis.

Pain in old scars of hernial region was common.

Various pains of the limbs are common and are important since they simulate organic disease such as neuritis, arthritis, "T.B.Hip," etc., and are liable to give rise to limping or vicious postures which in these psychically unstable patients may become fixed, automatic and difficult to cure.



ANAESTHESIA, ANALGESIA, PARAESTHESIA AND HYPERAESTHESIA.

Anaesthesias and Analgesias are really only modifications of objective sensation and are much less important than the subjective sensations.

They are seldom or never complained of during first examinations; they do not in themselves keep patients in Hospitals; when present do not correspond to nerve distribution and generally answer to text book descriptions of those found in Hysteria.

They are never a predominant or isolated sign, but are part of a symptomatic picture of functional disorder, viz:- hemiplegia, convulsive crises, tremors, paralyses, contractures, algias, etc.

Small patches or large areas may be affected, and there may be complete or partial impairment of all varieties of superficial sensation. Usually they are more profound than organic disease during examination, but they never cause patient to burn his fingers or kick his toes against ~~xxxxxxxx~~ hard objects, **not** interfere with the performance of acts that patient wishes to perform for himself.

PSYCHICAL DISORDERS.

Fit of Terror. These outbursts of terror may occur in the most courageous soldiers and represent often some previous disorder which the war has not sensibly modified.

These crises of terror and mental anguish must not be confused with common cowardice. The fits of

terror only occur at long intervals as a rule.

The occurrence of a crisis is not determined by an emotion at the time but only by a recollection of previous emotions which the patient brings to mind. The memory of these emotions may remain latent and only come to light on the recurrence of some incident with which they are in some way closely associated. There is no real hallucination.

Alcohol may prepare the soil for the neurosis, but the essential element is emotion, or more often the sum total of emotions.

Attacks very like Epilepsy are often seen, although these are in reality hysterical in nature, and are called by the French "Les Crises Hysterique". The symptoms seen are both tonic and clonic phases, twisting movements and other symptoms, the result of a personal element. Of course we must differentiate between the mental disorders which are accentuated by War Strain, and those definitely caused by it.

Emotion and concussion are undoubtedly the two great etiological and pathogenic factors causing psychical phenomena of the psycho-neuroses of the War.

In psychical disorders due to inhibition, in which you have as a predominating factor confusion with its various steps up to stupor evidenced by torpor, slow cerebration, mental sluggishness, etc. On the other hand, where there is undue excitation of mental activity you have mental confusion often with hallucinations and hystero-emotional symptoms, showing clearly that

emotion is the basis of these mental disorders. There are, of course, periods of mental calm between these attacks of mental confusion.

PSYCHICAL DISORDERS SEEN IN TRUE CASES OF CEREBRAL CONCUSSION.

Psychical disturbance may be the result of:-

- (1) Actual changes in the brain,
- (2) or functional.

In the first, having a pathogenic basis you have changes in the substance of brain; in the second class of cases the symptoms often disappear quickly under appropriate treatment.

In those cases where you assume traumatic changes in the brain, you find changes in tendon and cutaneous reflexes, also respiratory and circulatory changes; in the Cerebro-Spinal Fluid you find albumen increased, leucocytes increased, and Xantho-chromia; never seen in true neuropathic conditions.

The later symptoms which manifest themselves are persistent headache, very troublesome to treat, photophobia, vertigo, insomnia, bad dreams, mental depression, and a highly emotional condition. Such patients have a continued and real dread of their present condition, becoming melancholy and immobile. The Insomnia is most intractable, sleep broken and troubled by terrifying war dreams, greatly accentuated by acoustic and visual hyperaesthesia. Tachycardia is a most depressing condition in these patients; the

persistence and intractability of these subjective symptoms brings on a state of melancholy as above stated.

The course of these cases is very protracted, and often months elapse before any visible improvement is observed.

Under the name of "concussion syndrome" are grouped the most diverse nervous and psychical manifestations, the determining factor being various violent explosions.

Men of all ages, the raw soldier as well as the hardened veteran; men with previous tainted nervous trait, men without any previous predisposition, break down sometimes precipitately and slowly, but surely, under the continued strain.

A history was often given that when a bombardment commenced a "feeling of shakiness and helplessness", often indeed a "convulsive feeling" overcame them. "Some inner feeling compelled them to run to the Dressing Station, there falling down trembling and cowering.

On the other hand, men who were "blown up", "thrown down", "blown against parapet" and "buried", had loss of consciousness, grave cerebral disturbance, muscular relaxation and abolition of cutaneous and tendon reflexes; others showed only a loss of consciousness, they were able to get up although shaking and dazed, and were able to get to the First Aid Post with the assistance of Stretcher Bearers. The muscles of the limbs

and trunk were hypotonic and the men were often unable to stand or sit up without assistance.

The symptoms observed shortly after the trauma were varied and in the psychopathic type pointed to a condition of mental confusion of various degrees, together with convulsive attacks, tremor, paralyzes and deaf-mutism, but the predominating feature is mental confusion. On the other hand, symptoms entirely neuropathic, affections of the hearing and speech, deaf-mutism, aphonia, stuttering, convulsive attacks, paralytic motor disorders, etc., were observed, which persisted either permanently or for a long period, showing themselves in disorders of a motor, sensorial, sphincteric or reflex nature, and by changes in the Cerebro-Spinal Fluid.

The sequelae and delayed symptoms seen were intractable headache, benefited little by drugs, excessive emotive state, various forms of fear and terror, change of character, persistent dysmnasia and also a mental condition called by the French "Sinistrose of War", in reality a state of hypo-chondriasis.

SYMPTOMATOLOGY OF "REFLEX NERVOUS DISORDERS".

They develop after wounds or various injuries of the limbs and sometimes after frost-bite.

The original wound may be only of the soft parts of the arm or leg. The condition may be seen after transfixion of the forearm, head, leg and foot, and the nervous disturbance usually extends above the area on which the trauma has been inflicted.

The intensity of the nervous disorder bears no relation to the duration of the infection, the extent of the lesion and the scar, or to the severity of the pain which these may cause.

Symptoms may appear immediately after the wound, but not usually until the dressing or splint is discarded and may not show until several weeks after the wound, and then the patient finds his limb assuming a vicious attitude, which progressively increases in spite of his efforts to prevent it.

The disorder at first perhaps only a mere paresis, becomes suddenly aggravated as a result of fatigue.

Traumatic reflex contracture and paralysis have been usually sent to Surgical Units, but finally the Neurologists get hold of them if they are not previously discharged from the Army.

CONTRACTURES AND PARALYSES are reflex motor disorders, and may adopt various forms such as contracture, paralysis, hypotonus, paresis, or mere weakness and frequently a combination of pareses and contractures.

Whatever form it takes the motor trouble is usually incomplete, partial and limited; it shows a tendency to predominate in one segment of a limb, especially at its extremity, and thereby differs from (hysterical) "Pithiatic" paralysis or contracture, which is generally more extensive and often complete and in which all the segments of the limb are usually affected.

Amyotrophic Paralysis of the quadriceps is a classical form of reflex atrophy which generally follows arthritis of the knee joint, but it may also be observed after wounds of the thigh or in the region of the knee in the absence of any lesion of the joint or patellar tendon. The atrophy is sometimes associated with an obstinate paralysis of the quadriceps and may be accompanied by very marked hypotonus; usually but not invariably the knee jerk is exaggerated.

Contracture of the peri-trochanteric muscles associated with paresis of the foot. Almost always found after trauma in region of the hip. The outer border of the foot being in contact with the bed, passive movements of the thigh are somewhat limited, especially movements of internal rotation, and pull the pelvis round more rapidly than those in the sound side. In addition, to the stiffness of the peri-trochanteric muscles there may be some fibrous contraction.

The contracture of the hip may be accompanied by paresis of the foot; active movements of plantar flexion, and especially those of dorsal flexion are

weak and of very small extent; it is the same with movements of the toes. When the paresis is less marked, patient executes fairly extensive movements of dorsal flexion, but he lifts chiefly the inner border of the foot, which assumes the varus attitude.

These motor disorders almost always cause a pronounced and obstinate claudication, sometimes a special complex type of limping occurs.

The knee jerk is not always definitely exaggerated in the waking state, but chloroform narcosis usually reveals a latent exaggeration of the reflex.

Vaso motor symptoms and mechanical hyperexcitability are usually very marked in the leg and especially in the foot. It is not unusual to find hyperaesthesia of the foot with absence of the cutaneous reflexes.

Flexion Contracture of the Leg:- This clinical type is more frequent than the extension type and is very common. It is almost always a sequela of wounds of the thigh and leg; it may also be a complication of paralysis due to lesion of the sciatic nerve.

In standing or walking the heel is raised and only the front part of the foot rests upon the ground.

In the dorsal decubitus, it is found that in addition to flexion of the leg there is some flexion and abduction of the thigh. Active movements are possible but limited by the contracture. It is the same with passive movements, but these are more extensive. It is impossible to produce complete extension even by taking



the patient off his guard.

In the ventral decubitus position, even when it is prolonged, the flexion deformity persists, and the leg presents only slight oscillations.

Contracture and Pareses of the Foot:- Club Foot and Claw Toes. Motor disorders confined to the foot and toes chiefly occur after a wounds of the leg or foot. They assume various forms such as paresis of the extensors with equino-varus, claw toes from contracture of the flexors or a rarer type in which there is co-existence of flaccid paralysis of the great toe with extensor contraction of the other toes has often corresponding to it some quantitative modification in electrical contractility, such as faradic and voltaic hyperexcitability of muscles, or, on the contrary, slight hypo-excitability and sometimes premature fusion of contractions. There is never any reaction of degeneration.

Muscular Hypotonus is sometimes very pronounced and may be as great as in the most serious ~~cases~~ nervous lesions, but its area is usually restricted. It may be very marked in certain muscular groups of the affected limb and absent completely in others. Thus it may be possible to obtain by passive movements in various cases a hyper-flexion of the hand forming a very acute angle with the forearm; fingers into the arc of a circle; hyper-flexion of the thigh (leg extended) and hyper-flexion of the leg on the thigh combined with hyper-flexion of the thigh, a complex movement in which the

thigh is brought close to the abdominal wall and the heel to the gluteal fold.

Amyotrophy sometimes constitutes the most prominent feature. Thus traumatism or arthritis affecting the knee may be followed by very pronounced atrophy without the paresis being very pronounced. On the other hand, paresis and contracture may be well developed and the amyotrophy be only of secondary importance. The circumference of the affected leg may differ from the sound by 3-6 c.metres, forearm 2-3 c.metres, and the upper arm 3-4 c.metres.

Exaggeration of the tendon reflexes;- Definite when there is definite asymmetry between the two sides.

suddenness and polykinesis are to be considered in addition to amplitude.

Exaggeration is often open to doubt, and may be entirely absent. Sometimes it is latent only, and can be made evident by Chloroform narcosis.

Loss of Cutaneous Reflex. In cases in which sensory disorders were observed there was generally loss of plantar reflex. Hot water immersion caused reappearance of the reflex which was then identical with the sound side.

Tremor. The affected limb is frequently subject to tremor, and this symptom is most pronounced in hot weather when the limb has been warmed, or when the patient has exerted himself.

In the paretic form extension of the great toe does not accompany dorsal flexion of the foot as in the normal condition, the toes are not extended in any stage of walking.

These motor disturbances, especially the most frequent one, paresis of the flexors of the foot and toes, may be associated with the various types of contractures and pareses of the lower limb which we have previously described.

Flexion and pronation contracture of the forearm with paresis of the extensors of the hand and contracture of the flexors. This clinical type is frequently seen either in a complete or incomplete form after wounds of the upper arm and forearm. The hand with the fingers extended is flexed at a right angle on the forearm, which forms an acute angle with the upper arm and is in a position of pronation.

Contracture of the flexors is associated with paresis of the extensors and the tendons of the flexor carpi radialis and palmaris longus stand out beneath the skin. It sometimes gives rise to subluxations.

In conformity with reflex paralysis and contractures, the symptoms predominate at the extremity of the limb.

Hypotonic Paralysis or pareses of the hand and fingers.

(Extreme flaccidity of the hand contrasts with the forearm and upper arm). These deformities caused by reflex contracture of the upper limb bear a striking resemblance to tetany, apart from the paroxysmal character of this affection.

Vaso Motor and Thermal disorders. Well marked in cold weather. The phenomena do not correspond to a well defined nerve territory. They may occupy the whole of the affected limb, but predominate at the extremities in which they persist. The affected hand is cyanosed, mottled or of a uniform salmon-red tint. The slightest pressure causes a local ischaemia, and the whole spot thus produced disappears slowly.

The asymmetry of colouration is seen by comparing the two limbs and is not marked in the lower limb when the patient is standing. In addition to colour there is a slightly infiltrated appearance of the skin, especially seen on the dorsal surface of the hand which presents a "succulent" appearance. Sometimes there is real oedema which pits slightly on pressure, especially in the lower limb. The oedema may be localized in the dorsum of the foot, or in exceptional cases extend up to the knee. The consistency is generally hard.

Hypothermia definitely perceptible to the touch and sometimes very pronounced, is associated with the vaso motor disorders. The difference in temperature "between the affected limb and the sound limb is as much as  $8^{\circ}$  or  $8.5^{\circ}\text{C}.$ ", and is most marked in the fingers, toes, hand or foot and becomes progressively less from the

extremity to the root of the limb. This hypothermia passes appreciable beyond the wound, e.g., felt at knee or thigh when the wound was in the foot or leg.

After a short immersion in water at 104° F., the affected limb <sup>sometimes</sup> becomes as hot or even hotter than the sound limb. The white area caused by pressure of the finger instead of disappearing slowly, fades quite as quickly and even more so than the unaffected side.

Return to the previous temperature is more rapid in the sound side.

Exercises and electrical treatment also affect the local temperature.

The affected limb is, to a certain extent, hetero-thermal.

There is weakness of arterial pulsation in the affected limb.

"The sphygmomanometer shows a marked difference at times in the arterial pressure of the affected and sound sides."

Mechanical Hyperexcitability of the Muscles, and  
slowness of muscular contraction. It is best marked in the paralytic or paretic forms, but it is also found in the hypertonic varieties. It is best seen in the small muscles of the extremities, but is also seen in the leg muscles, forearm, and quadriceps. Even a slight percussion of the muscles causes a movement of great amplitude, which is often slow and sustained, whereas in the normal it is possible to obtain only a

faint movement of only feeble amplitude.

It is not a reflex movement, and individual muscles can be picked out.

Mechanical hyperexcitability of muscles is closely connected with hypothermia and when ill marked immersion of two limbs in cold water for a few minutes is often sufficient to make it obvious on the affected side, whereas on the sound side it is not appreciably modified as a rule.

This phenomenon is more marked with electrical stimulus. It occurs when there is R.D. but may occur without R.D., though there is often disturbance of electrical reactions.

The slowness of muscular contraction due to mechanical hyperexcitability is most evident when the temperature is cold.

#### Electrical and Mechanical excitability of Nerves.

Mechanical hyperexcitability of muscles shows more or less segmentary distribution. Most marked on sole, less on dorsal aspect of foot, and least of all on the lower two thirds of the leg.

These sensory changes include touch, discrimination, localisation, pain and heat. Disturbance in sense of position was also noted.

Sensory disorders sometimes diminish after immersion of the part in hot water.

#### Secretory and trophic Disorders.

Secretion. Skin may be damp, especially at the extremity of the affected limb, sometimes it is

even slightly macerated. Occasionally sweating is very marked.

Trophic Disorders. A general atrophy may be found especially when the lesion is situated in the hand, and this can be clearly seen in the tapering fingers.

“Skiagrams show decalcification of the affected hand.”

There is almost always a certain degree of fibro tendinous or muscular retractions. Best seen in finger joints and <sup>these</sup> may be enlarged and painful like those of Chronic Rheumatism. Develop rapidly and explain to a certain extent the limitation and difficulty in the movements of the joints.

Under Chloroform.

- (1) “Exaggeration of tendon jerks in affected limb.”
- (2) Spasm caused by any attempt to correct vicious attitude.
- (3) Persistence of contracture to advanced stage of narcosis.

Sensory Disturbances. In some of these patients paraesthesiae are observed; also hyperaesthesia; the pains are spontaneous or caused by pressure on the nerve trunks. A condition of delayed conduction is sometimes seen and was most marked on sole of feet. These sensory changes were elicited with all forms of stimulation.

PATHOLOGY.

Histological changes that have been found in the brain in "Shell Shock" and Spinal concussion.

(1) "Multiple punctate haemorrhages have been found by Mott in the white matter of centrum ovale, corpus callosum, internal capsule and cerebral peduncles. In many places these haemorrhages have coalesced into large areas."

"Microscopic examination shows isolated capillary haemorrhages in the grey matter; in the medulla there are only congested vessels, but no haemorrhages".

"Cells of medulla showed a marked chromatolysis with swollen clear eccentric nucleus, this is most marked in cells of the vagus, but more or less general throughout. In the cortex many of the Betz cells showed a very marked chromatolysis, swelling of the cell and eccentric nucleus, while others may possess a fairly normal amount of basophil Nissl granules".

Mott is of opinion that the blood of persons suffering from "Shell Shock" resulting in unconsciousness should be tested for Carbon monoxide poisoning.

(2) In another case, Mott describes visible haemorrhages in upper cervical region extending about one inch on external surface of dura mater. On reflecting the dura a subpial haemorrhage was seen. The central canal about the level of the subpial haemorrhage contains blood about the size of a large pin head. An obvious



change was seen in the grey matter, but the haemorrhage is much less extensive. Subsequent microscopic examination of the sections showed that these changes were due to some congestive oedema.

"Microscopic examination showed that a partial destruction of the 'Nucleus diaphragmaticus' took place".

The ganglion cells show some chromatolysis. The posterior column at the seat of concussion presents a diffuse sieve like vacuolation of the myelin fibres (Gordon Holmes), and enormously swollen axis cylinders were also seen.

Gordon Holmes has also described histological changes seen in spinal concussion, without visible injury. Mott suggests that the changes seen in the case of "Shell Shock" with burial (No.1) are due to vascular stasis and lack of oxygen, the result of inhalation of sufficient carbon monoxide to produce fatal effects ~~upon~~ before excavation could be effected. The imperfect detonation of high explosives may produce sufficient quantities of C.O. to produce poisonous effects.

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the early stage following a concussion. It consists in pinching the tip of one finger or the pulp of the finger against the nail, and if a lesion of the upper neurone is present, a flexion of the thumb or a slight attempt at apposition of the thumb and forefinger will be seen.

There are undoubtedly cases of definite commotio cerebri, but it would seem that if the concussion or gases from the explosion are not sufficient to kill the man outright that he recovers consciousness sooner or later and then his symptoms will soon become pronouncedly psychical in the majority of these cases, and unless skillful treatment and care is at hand, he will conceive wrong ideas and develop "hysterical" phenomena, which will soon become "fixed" and rationalised on the patients own insufficient and inaccurate data.

#### PARALYTIC MOTOR DISORDERS.

Hemiplegia. In the functional paralysis one finds that it is not always limited to one side of the body, and this applies particularly to the face in which the paralysis is often bilateral. Organic hemiplegia is limited to one side.

A functional hemiplegia is systematic, e.g., unilateral movements may be abolished while the muscles on the affected side take part in synergic movements. The organic paralysis is never systematic, and paralysed muscles, e.g., in the face, never take part in synergic movements such as smiling or whistling.

In the organic disease, conscious and unconscious movements are equally affected; there is contraction of the platysma on the sound side in opening the mouth or in turning or bending the head against the resistance of the observer, combined flexion of the thigh and trunk, and in walking, absence of active swinging of the arm which hangs and sways as if lifeless. In the functional condition, unconscious or sub-conscious voluntary movements are present; there is absence of platysma sign and absence of combined flexion of the thigh or the trunk. During walking the hysteric may show active swinging of the arm, but the limb will not sway as readily to and fro when the patient turns round as is the case in organic paralysis.

In organic hemiplegia the tongue is usually deviated to the side of the paralysis, while in the functional condition the tongue is sometimes deviated to the opposite side.

The hypotonus shown in the face by obliteration of the naso labial fold and lowering of the eyebrow, and in the upper limb by exaggerated passive flexion of the forearm and by the pronation sign, i.e., the hand when left to itself assumes a position of pronation, is not found in functional disorder. If there is facial asymmetry in functional hemiplegia it is due to muscular spasm and not to hypotonus. Further, organic muscular hypotonus is marked at the onset of the paralysis.

The cutaneous tendon and bone reflexes are lost, diminished or exaggerated in organic hemiplegia on the

affected side, whereas these are not altered in functional disorders. The cutaneous reflexes may be difficult to obtain if tactile anaesthesia is present.

True Ankle Clonus is never found in functional disorder, but is <sup>a</sup>diagnostic of organic disease.

Where there is contracture of muscles it will be found that the functional contracture is easily simulated by voluntary contracture, which is not the case in organic disease.

The course of organic contracture is regular, and one finds flaccidity first, which is later followed by contracture. If the organic motor disturbance tends to disappear it does so progressively. It shows no tendency to become better and worse, alternately. In the case of functional motor disorder, paralysis may remain flaccid indefinitely, or it may take the form of contracture from the commencement. Functional symptoms are often capricious in their course and may tend to get worse and subside alternately, to become rapidly modified in their intensity as well as in their form, and to present transitory remissions which may last only a few moments:

Reaction of Degeneration is present or else the response to electricity will be at least greatly modified in organic disease as opposed to functional.

Paraplegia. Functional paraplegia is diagnosed by absence of the following objectivities:-

In organic paraplegia one finds the tendon reflexes altered according to the position of the lesion.

If the lesion is in the dorsal region there is exaggeration of tendon reflexes in the lower limbs and both ankle clonus and patellar clonus are usually present. Sensory phenomena will show nerve distribution and immediately above and adjoining the level of the lesion may be a zone of hyperaesthesia. Should the lesion occur in the cervical region there will be modifications of the upper limb reflexes in addition to the exaggeration, diminution or loss of reflexes in the lower limb. If the lesion is in the cauda equina or lower part of the cord, the tendon reflexes of the lower limbs are generally altered or abolished partially.

If Babinski's cutaneous plantar reflex gives an extensor response of the great toe, it definitely indicates a lesion of the pyramidal tract. When the skin of the dorsal aspect of the foot or lower part of the leg is vigorously pinched, and the stimulation produces dorsal flexion of the foot, then one is justified in asserting that the reflexes of defence are exaggerated which further indicates lesion of the pyramidal tract.

Amyotrophy with reaction of degeneration occurs in organic paralysis and indicates that the grey matter of the anterior cornua and the anterior nerve roots have been affected.

In organic paraplegia there is loss of sphincter control which does not occur in functional disorders except temporarily during a shock, and in those few cases where it develops into a bad habit and even then

true retention does not ~~xxxxxx~~ occur in the hysterical or psycho-neurotic patients.

Bed sores are common in paralysés with a pathological basis, but do not occur in the psycho-neurotic subjects.

DIFFERENTIAL DIAGNOSIS OF FACIAL PARALYSIS OF  
ORGANIC ORIGIN AND FUNCTIONAL CONDITION.  
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Facial Paralysis was seen as a motor symptom alone.

In the organic condition there is faradic irritability, and after seven to ten days from the onset there is Reaction of Degeneration.

The patient with organic Facial Paralysis is unable to frown or raise the eyebrows, unable to close the eyelids on the affected side, unable to whistle, unable to smile, and the angle of the mouth may hang down in a pouch-like fashion. All wrinkles and furrows are erased, and thus the face takes on an expressionless and mask like appearance. Food collects in the paralysed cheek, and fluid may run out of the angle of the mouth. Tears may roll down the cheek from the weakness of the paralysed lower eyelid which may be everted into a condition of ectropion with the resulting Conjunctivitis. If there is a lesion of the third nerve, there is dilation of the pupil, **p**tosis of upper lid, diplopia and possibly an ~~associated~~ associated Herpes Frontalis, all of which put the functional disorder out of question.

In the Facial Paralysis the tongue usually points to the side of the paralysis if it is an organic condition, but if the condition is functional the tongue when protruded may point to the opposite side.

In the paralysis of the seventh nerve the sensibility of the face may not be impaired, and there



may co-exist Herpes of the auricle, external auditory meatus, and sometimes the superficial cervical plexus. In severe cases deafness and labyrinthine affections may be also present.

Tremors, Choreiform movements and Tics the associated symptoms, the history and circumstances must be considered in making a diagnosis.

The mode of onset in the functional condition is almost always rapid and sudden and is connected with psychical or physical shock without visible wound or injury. Tremors and Choreiform movements are often arrhythmical and irregular in their intensity and development. They are usually exaggerated by voluntary movements and this may resemble organic disease.

With these Tremors and Tics are associated contractures of the muscles concerned. When during treatment the contractions disappear for a few moments, the Tremors simultaneously cease.

Somatic or psychic associated symptoms are of considerable service in diagnosis such as abnormal effects, difficult or laboured breathing, and various emotional or psychic symptoms, the result of interrogation or initial treatment.

It is characteristic of these patients that they place too much importance on these symptoms, magnifying them and giving them such undue importance that one might easily be lead astray as to their reality.

Slight briskness or excitability of the

cutaneous and tendon reflexes observed, but ~~undue~~ undue importance must not be attached to this phenomenon as such is noted in patients with neuropathic history. There is no definite modification of these reflexes such as abolition or exaggeration in functional disorders.

The immediate disappearance of the Tremors, tics or Choreiform movements under psychotherapy, is of great value in diagnosis and stamps them as functional hysterical affections.

#### DIFFERENTIAL DIAGNOSIS OF PERIPHERAL NEURITIS AND HYSTERICAL PARALYSIS.

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In peripheral neuritis or lower neurone lesions there is a diminution or abolition of the tendon and bone reflexes, e.g., there is diminution or loss of the ankle jerk in lesions of the sciatic nerve, of the knee jerks in the lesions of the anterior crural, of the biceps reflex in lesion or injury to the musculo-cutaneous and of the triceps jerk in injuries to the upper part of the musculo-spiral.

There is marked amyotrophy usually in lower neurone lesions. A slight amyotrophy may exceptionally be found in hysterical paralysis of long standing, but is not likely to be mistaken for organic disease if histories of organic origin is compared with the muscular tone in hysteria.

After the tenth days from the onset, the muscles in the case of peripheral neuritis or lower

neurone lesion, usually show reaction of degeneration, Motor disorder, trophic and sensory disturbances, corresponding to distribution of one or more nerves, are organic and not functional.

Attitude is characteristic of organic paralysis. Hysterical paralysis may simulate somewhat but never closely, for instance, the contraction of the biceps and brachialis ~~ant~~icus during flexion of the elbow against resistance cannot purposely be separated from contraction of the supinator longus as in musculo-spiral paralysis.

~~DIFFER~~

DIFFERENTIAL DIAGNOSIS OF "REFLEX" CONTRACTURES AND PARALYSES FROM ORGANIC MONOPLÉGIA DUE TO PYRAMIDAL LESION.  
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The "Reflex" disorders and the organic paralysees are due to entirely distinct etiological factors which are thus a guide to diagnosis.

The Reflex condition is limited to one limb and shows itself mainly, ~~on~~ most markedly at the extremity, seldom, if ever, occupying the whole limb while the organic monoplegia which is due to a central lesion often occupies the whole limb, either upper or lower. Occasionally in the lower limb the Reflex Paralysis or Contracture shows itself only at the root of the limb, but then the paralysis is usually only partial, whereas the organic Monoplegia of central origin may be complete throughout the limb.

The "Reflex" paralysis may remain flaccid

for a long time and frequently co-exist with contractures, the hypertonus and hypotonus occupying different muscular groups. In the organic condition there is a flaccid paralysis from the outset which only lasts a few weeks and usually passes into a spastic paralysis.

" The "Reflex" condition of the upper limb in the hypertonic form may present a characteristic deformity, e.g., "accoucheur's hand", "holy water vessel". In the lower limb the "Reflex" disorder may present variable attitude and gait, but there is never circumduction of the leg in walking.

In the organic paralysis with contraction one finds in the upper limb flexion and claw hand typical, and in the lower limb there is usually circumduction of the leg in walking.

In "Reflex" conditions tendon reflexes vary, exaggeration is often absent even where there is contracture. The plantar cutaneous reflex may be lost in the lower limb, but will reappear after warming the foot, the extensor response is never found. In the organic monoplegia the tendon reflexes are exaggerated some weeks after the onset, and the extensor response to Babinski's plantar cutaneous reflex is found. "

DIFFERENTIAL DIAGNOSIS OF TRAUMATIC, PERIPHERAL  
NEURITIS AND "REFLEX" CONTRACTURE AND PARALYSIS.

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The motor and sensory phenomena and the amyotrophy of the Reflex contracture and paralysis do not correspond to a nerve distribution, but show more or less segmentary topography, whereas the traumatic peripheral neuritis shows exact neuritic topography.

Amyotrophy is very pronounced and accompanying one finds Reaction of Degeneration and diminution or loss of the tendon reflexes in the area supplied by the affected nerve in Traumatic Peripheral Neuritis. In the "Reflex" condition the amyotrophy is variable, but never so marked as in neuritis. There is no reaction of degeneration, though there may be marked weakening or even exaggeration of the faradic excitability of the affected muscles; the tendon reflexes are never abolished but they may be exaggerated.

VOLKMANN'S ISCHAEMIC PARALYSIS AND REFLEX PARALYSIS.

Ischaemic Paralysis may follow the application of a splint which has been bandaged on too lightly in a case of fracture of the forearm. In typical cases the long flexors of the fingers and the pronators are affected. The muscular or motor effect is preceded by intense pain and oedema. The after effect is more or less marked limitation of the movements of the hand and fingers, fibrous retractions which form rapidly, sensory disorders of a segmentary distribution, e.g., glove anaesthesia, hypothermia, and occasionally a

modification in the colour of the forearm (red colouration).

The symptomatology is very similar to reflex disorder, but diagnosis is made by consideration of the etiology and the board-like hardness of the muscles and the remarkable diminution or even absence of faradic and voltaic muscular excitability in the case of Volkmann's Ischaemic Paralysis, which features are absent in the "Reflex" condition.

#### ARTERIAL OBLITERATION AND REFLEX VASCULAR SPASM.

" Where there is a difficulty or hesitation, the diagnosis can be settled by a hot bath test, viz:- if the limb is plunged into water about 40° c., for five minutes, then if the condition is one of Reflex Nervous disorder, the symptoms already described will be found and there will be no change if the condition is arterial obliteration.

Intermittent claudication and gangrene and the disappearance of the radial pulse or the pulsation of the ~~Arteria~~ Dorsalis Pedis Artery are never found in "Reflex Disorder".

DIFFERENTIAL DIAGNOSIS "REFLEX" PARALYSIS AND HYSTERICAL PARALYSIS.

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The "Reflex" Paralysis is generally limited to a part of the limb, but is profound and persistent even when submitted to methodical treatment. In the Hysterical condition the paralysis is generally extensive, occupying the whole limb, both limbs, or one side of the body, but it is superficial and transient when properly treated. In the "Reflex" condition one may get amyotrophy, vaso motor and thermal disturbances, hyperidrosis, hypotonus, mechanical muscular hyperexcitability, often accompanied by slowness of muscular contraction, sometimes exaggeration of tendon reflexes, fibro tendinous retractions, trophic changes of bones, hair and skin, all of which are absent in Hysterical paralysis.

DIFFERENTIAL DIAGNOSIS OF HYSTERIA AND SIMULATION.

Hysteria is a genuine condition, and although the symptoms presented appear at times to be simulation, the patient is really unconscious of the fact, whereas the simulator is voluntary conscious of the simulation. The hysterical patient frequently looks ill and the simulator may not look ill.

Hysteria is common, and simulation is rare. Appetite and sleep are usually poor in Hysteria, which is not the case with the simulator, if he believes he is not being watched.

The variability of the symptoms of hysteria and their essentially functional nature without an anatomical

basis may bring the hysterical patient very near the dividing line between hysteria and simulation, but the simulator shows a more marked symptomatic inconsistency.

Both may be "caught tripping", but the conditions will be different, for example, the hysterical patient may be wholly engaged mentally so that his preoccupation is overcome, while the simulator will only be caught by very careful watching especially when he thinks that he is not under ~~any~~ suspicion and is not under observation.

The hysterical patient wants to get better and accepts suggestion readily, submits to hypnotism and cures quickly, while the simulator may not accept suggestion readily, may not submit to hypnotic influence.

It is essential that the M.O. must never let the patient get the slightest hint or suggestion that ~~it~~ is thought or suspected that he is a simulator or malingerer.

Moral considerations are essential before definite diagnosis can be made, and the admission of simulation by the patient is not sufficient, though useful evidence.

#### DIFFERENTIAL DIAGNOSIS OF DEAFNESS.

Deafness in the functional disorders is mostly associated with mutism, whereas organic deafness is never accompanied by mutism except in the congenital condition.

Functional deafness is generally bilateral, while organic may be either unilateral or bilateral.

In the functional deafness there is no sign of injury, whereas in the organic one may find fracture of



the skull and petrous portion of the temporal bone.

Otoscopic examination may reveal excess of impacted wax, perforation of drum with catarrh of middle ear, purulent otitis media, otosclerosis.

If a sharp command is given the functionally deaf patient will sometimes commence to obey, especially if it be some simple act. When a loud sound (such as blowing a motor horn) occurs very suddenly and without warning, the functionally deaf patient may show contraction of the orbicularis palpebrarum muscle.

Tests. In an unilateral condition which is rare, whispered voice, ticking watch, "Weber", "Rinne", and "Swabach" tests may be used.

If the vestibular apparatus is suspected to be at fault, one would test for "Rombergism", gait in walking, execution of movements requiring co-ordination, e.g., hopping backwards and forwards; rotation test, caloric test, galvanic test.

The caloric and galvanic tests are the two most important tests for differentiating functional deafness from sound perceiving deafness or labyrinthine disorder.

In the caloric test the ear is syringed with water at 65° - 80° F., the head being erect, there is horizontal and rotatory nystagmus when the patients eyes are fixed to the opposite side. If the water is from 110° - 118° F., and the patients eyes are fixed to the same side, then upon syringing the ear, horizontal and rotatory nystagmus is seen. Each vestibular apparatus is tested separately and if the vestibular apparatus is destroyed or the nerve

paralysed, there is as a rule no nystagmus on syringing.

The caloric test was often used.

In the galvanic test by holding one electrode in the hand and placing the other upon the mastoid process, currents of 10-25 milliamperes may be used. When the Kathode is applied to the normal ear, rotatory nystagmus is produced on ~~fixing~~<sup>fixing</sup> the eyes to the same side. When the anode is applied, there is a rotatory nystagmus on fixing the eyes to the opposite side. In the pathological condition there is no nystagmus or modification.

Babinski recommends the following procedure in investigating vertigo:- "The electrodes of a voltaic apparatus are placed on the temples or mastoid process, one on each side, and an electric current of a few milliamperes is passed. This causes in the normal condition, among the phenomena a feeling of giddiness, nausea, nystagmus and a lateral inclination of the head to the side of the positive pole. A rotation of the head is produced, and sometimes also rotation of the trunk by placing the electrodes as follows:- the one connected with the negative pole behind the lower jaw, and the other above the tragus. The head executes a movement of rotation from the side of the positive pole beginning at the time of the closure of the current and continuing slowly. This movement is a physiological phenomenon, but is not constant; it is more or less pronounced according to the individual, sometimes it occurs by itself and sometimes it is associated with the inclination of the head. The following are the various

modifications of voltaic vertigo which are observed in the labyrinthine disorders and do not occur in Hysteria: increase of resistance to the stimulus caused by the voltaic current, movement of the head backwards and forwards, replacing inclination <sup>or</sup> rotation; cephalic nystagmus; unilateral inclination or rotation; inclination and rotation occurring on one side only; unilateral inclination to one side, with unilateral rotation to the other and occasionally circumduction of the head.

#### MUTISM.

Functional Mutism may occur alone or in association with deafness, and its onset is sudden, whereas organic mutism is either congenital or slow in onset.

Functional mutism is complete and the patient utters no sound whatever. In organic motor ~~aphasia~~ aphasia language may be extremely reduced, but there are always some sounds or syllables or words possible.

Accompanying functional mutism is a markedly intelligent "pantomime," while in the organic condition there is little "pantomime," and then it is poor and Monotonous and unable to supply the defect of speech.

Written speech is usually lost in organic motor aphasia, but is always present in the functional condition.

#### APHONIA.

In this condition it is the laryngoscope which differentiates the functional disorder from the organic. If the aphonia is organic in **its** origin, then one expects to find a lesion such as T.B. of the cords, neoplasm, inflammation, etc., or one cord contracted

and the other relaxed indicating an unilateral nerve paralysis, but in the functional disorder the cords are usually normal and at the position of rest.

#### AMAUROSIS.

In the functional condition the ophthalmoscope reveals nothing abnormal, while in organic disease one sees changes in the disc, eg., optic neuritis, atrophy, haemorrhages, congestion, pallor, etc.

Again, in the functional blindness, the pupillary reaction to light is present, whereas in organic blindness this is lost.

#### CONVULSIVE ATTACKS AND HYSTERICAL FITS.

The functional or pseudo fit only occurs under special circumstances or in what appears to be a chosen site. The patient is never alone as may be the case in epilepsy. In hysteria there is usually no aura and the onset is sometimes accompanied by screaming, is more gradual than the sudden commencement of an epileptic fit which is often initiated by a typical cry. The Epileptic usually falls and may injure himself, whereas the hysterical seldom or never hurts himself. In the fit of organic origin one may find the corneal reflex absent, the reaction to light lost, whereas in the hysterical fit the corneal reflex is, at most only impaired, and reaction of the pupil to light is always retained. The early movements in the hysterical attack are wide ranged movements, with gesticulations possibly passing into Opisthotonus with a change to prosthonus: the movements

are semi purposive and co-ordinated and may be increased by interference.

The motor symptoms of an epileptic fit are at first tonic spasm passing into clonic, conjugate deviation of the head and eyes to the side more affected with the movements unaffected by interference.

The epileptic may pass urine during the tonic phase and may bite his own tongue during the clonic spasm, whereas the hysterical usually does not pass urine or if he does it will be at the end of the fit, and he does not tend to bite his own tongue.

During the epileptic fit, the patient's reflexes may be considerably altered, which is not so in hysteria. After the fit the epileptic may show stupor, drowsiness, automatism or mental confusion, which do not occur in the hysterical patient who often wakes suddenly and asks what has happened.

Further, the hysterical patient may have been unaware of all that was said during the period of the fit, which is not so in organic affliction.

Again, suggestion or hypnotism can reproduce a hysterical fit or bring one immediately to an end, especially if electricity is available, which is not the case of epilepsy.

#### HYSTERO-ORGANIC, HYSTERO "REFLEX" AND ORGANO "REFLEX" ASSOCIATIONS.

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Differential diagnosis is largely a matter of symptomatic incompatibilities and the long experience of the Neurologist.

Paralysés and contractures due to the lesions of nervous system are distinguished by a special objective features, and it is by means of objective features which are absent in hysteria that motor disturbances of a reflex character: can be recognised.

Reaction of Degeneration during an electrical exploration of the muscles of a completely paralysed limb may show that only one nerve supply is at fault and that the other muscle groups receiving a different nerve supply react normally to the galvanic stimulus. Let there be a scar of an old bullet wound which would account for the destruction of the one nerve which supplies the muscles showing R.D. and no other: evidence to explain the complete paralysis, then we have a symptomatic incompatibility and must turn our attention to the psyche and if psycho-therapy removes the paralysis from the muscle groups showing normal electrical excitability, the case is one of hystero-organic association.

If a patient with a hysterical paralysis of one leg continues to use crutches until he develops an organic paralysis of the musculo spiral nerve area due to the pressure of the crutch upon the musculo-spiral nerve. This is termed arbitrarily Organo-Hysterical association.

Suppose a patient wounded in the upper part of the forearm showed the following symptoms:- in the first place in the distribution of the ulna nerve, a paralysis with Reaction of Degeneration of the hypothenar muscles, adduction of the thumb and interossei, and secondly an incomplete paralysis of the muscles of the hand innervated

by the median, and a paresis of the extensors and flexors of the fingers. These last muscles do not show R.D., but mechanical hyperexcitability is present and there is slowness of muscular contraction and moreover the whole hand irrespective of the nervous territory involved, sweats and <sup>is</sup> cyanosed and cold, then we have an example of Organo Reflex Association.

Another example:- As a result of a wound in the left leg, a soldier presents a remarkable gait, which constitutes a form of rhythmic chorea; at every step he bends his knees as if he was going to sit down and then he raises himself again. But he also shows vaso-motor and thermal disturbance of the left lower limb, mechanical hyperexcitability of the small muscles of the foot, and loss of a flexor response to the plantar cutaneous reflex with its transitory appearance under action of heat. Such symptoms can hardly be explained except by the association of hysterical <sup>n</sup> manifestations with reflex nervous disorders especially if the gait is rapidly cured by counter suggestion which has no action on the vaso-motor or thermal troubles nor on the other symptoms observed in the wounded limb.

PROGNOSIS.

From the experience of several thousand cases it has been borne upon one that, speaking generally, the prognosis is good as far as ultimate recovery is concerned, although one must be very guarded and cautious in expressing a definite opinion regarding length or course of the illness. Many of the cases with appropriate treatment and guidance do remarkably well, recovering quickly, being fit for duty in a few weeks. It was remarkable and in some ways unaccountable how cases admitted as mild, and with a history of no severe exposure or having had a "rough time" of it (with reference to stay in the trenches), became gradually worse and often ultimately had to be sent to a Base Hospital or evacuated to the United Kingdom.

Disorderly action of the Heart, or the "Effort Syndrome" condition as a complication in, or result of, these cases, were generally of bad import, prolonging their stay in Hospital, interfering with general treatment and often requiring their removal to special hospitals for heart cases. Cases showing the above were most intractable to treatment, requiring very special care and supervision with regard to proper rest, diet, and graduated exercise, ~~making~~ nothing taxed the Physician so much as the "proper handling" and management of these cases, and they undoubtedly required his most careful daily attention.

However, with proper rest, sleep, and suitable



diet, together with suitable medication, many improved slowly but surely, and ultimately were able ~~to~~ gradually to do the graduated exercises, take part in light games and finally "route marching", and after being on duty at the base were able for front line work.

Stammering as a complication was in some easily corrected, in others most difficult to overcome, and was only by the persistence of the Medical Officer and often after great difficulty, that such cases "recovered". In some again, the stammering was so pronounced and intractable that they were evacuated for further special treatment. The experience here regarding men who had stammered previously, and as a result of "shock", stammering supervened, was that such cases were more difficult to treat and correct.

In those cases where headache and vertigo were the prominent symptoms, the course of the illness was often prolonged, although ultimately many did well.

Patients showing symptoms of Petit Mal, or who had a previous history of fits, were often most disappointing and often had to be sent to a base hospital or evacuated to the United Kingdom.

Mutes as a rule did exceptionally well, more especially if handled properly and at once, if such cases were allowed <sup>to</sup> "hang fire" it was most difficult even with the various methods of treatment adopted, to overcome their condition, but as already mentioned, were quickly cured of their condition, if treatment was adopted at once and wisely.

Deafness as a rule, unless there was an organic basis, cleared up quickly.

It was remarkable how the "Tics" recovered if treated at once, as mentioned under treatment, e.g., one of the patients, - a boxer and a keen athlete, was admitted with a violent Tic of the muscles of the head and neck. He was isolated, Weir Mitchell treatment, massage, etc., prescribed, and in three or four days was completely cured of his tic, although one thought that this would be a protracted case.

In a few cases ~~≡~~ Insomnia remained more or less intractable, even with the assistance of the necessary drugs, and these required a change to a Base Hospital.

Cases having the various subjective disorders of sensations as prominent symptoms were more <sup>or</sup> less prolonged, and these symptoms protracted the convalescence of many.

The various psycho-neurotic motor symptoms, paralyzes, or contractures, as also the psycho-neuropathic disturbance of the gait did, on the whole, remarkably well.

A word here may be said on psychical disorders of the special senses as a whole, as a rule they did well, and their course as regards recovery was rapid.

To sum up, the cases, unless there was some organic disease not previously observed, did remarkably well provided the requisite necessary measures for treatment were taken at once and applied in a most thorough and painstaking manner.

TREATMENT.GENERAL CONSIDERATIONS.

It is necessary perhaps to preface ~~xxxx~~ our introductory remarks regarding treatment by stating that sometimes this is rather unsatisfactory, more especially in cases of longstanding, and yet, in these, as well as in all other cases, it is important both for the patient and for the country that they should recover as soon as possible.

In some cases improvement is rapid after a short rest, and regular dieting (diet should contain a sufficiency of vitamins), in others, especially of the severe type, the symptoms remain persistent and most intractable, necessitating removal to special hospitals for further treatment.

As has been well said "the intellect of most of us has but a frail backbone, fracture that and there is left a crumpled up mass of ideas which have a way of falling into a single channel of abnormal beliefs, constituting the dominant worry". The only way to overcome or correct this is to open up a different point of view, broader in its scope, and with supporting ideas, so as to make it impossible to have a further collapse. The methods of doing this are varied, but the essential point is the necessity of making the man forget his "self", and in such a manner as to make him feel what is required of him by his country at this present juncture.

It behoves all, and especially the physician,

to point out to such men that they still have will power and that everything should be done to increase such, pointing out to them the fatality of "giving in".

Patients come into Hospital, they often require rest, probably a few days or longer, or others, on the other hand, though able to walk, take little or no exercise, and are not definitely occupied in any way. They have this time for thinking and brooding over their experiences and symptoms, and of looking forward to the time when they will be expected to return to the front. No class of patients require so urgently the lively interest, the personal and continual attention of the physician as these do, and speaking from experience unless such is forthcoming more failures than cures will be the result. The role of the physician is indeed most important, he certainly must be able to convince his patients that they will be cured, to speak kindly but with authority; great patience is necessary, also great adaptability, the personal equation, in short, is paramount. Newly admitted patients are much more easily treated than cases of some standing; in the latter you have actually confirmed neuropaths requiring most careful handling and treatment. It is now an established axiom to treat these patients as soon as possible after the "shock". One must necessarily take into account the nature of the case, for instance, it is found that Tic and tremor are often more obstinate than other results of shock. Again, the patient's mental intelligence and his pre-war neurotic condition have important bearings

on the length and success of the treatment.

Another point having a most important bearing on the successful treatment of these cases is the creation of a suitable atmosphere and proper surroundings, thus, the formation of suitable centres and special hospitals. The whole demeanour of the personnel should be one so as to have the effect of making the patients realise that they have been admitted to be cured, and that as quickly as possible.

Each patient should be most carefully examined, the symptoms noted, and signs of organic searched for. It is important to exclude organic disease of the nervous system, incipient insanity, and organic disease of the various systems. Again, one must be fully alive to the question of malingering or shirking, as such must be excluded before treatment is commenced. It is sometimes very difficult to detect such cases; we have seen cases of malingering, but there can be no question that many men, whose bravery cannot be doubted and who have been for months under shell fire, break down and are sent into hospital as "Shell Shock" cases. These men may be discharged from the Army, and, yet, having no further fear "of the trenches", their symptoms continue often for months. On the other hand, many men leave hospital for the front and behave with the greatest bravery.

In very severe cases at the commencement of the treatment, it is a good plan to assuage the fear of these men by telling them that they may probably be transferred

to some other branch of the Army, for nothing hinders recovery so much as the almost continual dread these men have of returning to the front and experiencing again the same results. We always tried to make our patients understand after their first examination that they would get better, and that their condition or symptoms was, or were, not serious, and that attention to and perseverance in treatment was most important. Everything was done to make them cheerful, avoiding altogether reference to their past experiences in the trenches and general conversation about the war and its progress.

At first in some cases it was absolutely necessary and desirable that they should have a period of complete rest. They should be judiciously, and well, fed, and any gastric or intestinal trouble treated, common complaints in many; as a matter of fact amongst our cases it was a remarkable how many complained of gastric and intestinal conditions. Particular attention should be paid to condition of the bowels, many giving a history of constipation. Many men showed recurrence of dysenteric and malarial symptoms, or rather results of the above, and these should be carefully attended to; in short any concomitant affection which may be diagnosed requires strict and careful treatment.

Another important point in many ways, perhaps the most important, is to tackle at once the insomnia so marked and persistent in a number of these cases. We found that the judicious and careful administration

of Trional was the most effective drug, in doses of from 7 - 10 grains; Potassium Bromide was also useful in doses of 30 grains, or a mixture of Potassium Bromide with small doses of Chloral hydrate with or without Tincture of Opium. Most noticeable was the beneficial effect upon these cases, when sleep was procured and improvement was rapid. Some cases did not improve as one expected after being able to sleep, the mental dread of returning to the front after leaving Hospital being probably the factor here. In some of the most intractable cases of Insomnia it was necessary to have them rest in bed and to give some such drug as Potassium Bromide to keep them sleeping for a few hours during the day and perhaps Trional grains 7-10 at night. The effect of this treatment must be carefully watched and should only be continued for a few days. When awake he should be closely occupied by something interesting to him, for instance, games such as draughts, dominoes, etc. Under this treatment patients often rapidly improved although Trional may be necessary for a night or two.

As in most case there is a mental element one should try to educate these patients to avoid thinking of the war, and also to show them how deleterious it is for them to dwell on their symptoms and to direct their thoughts in a new groove by getting them interested, little by little it may be, in some new subject or new occupation. Such occupation or work should be interesting, requiring some power of concentration. This often has

to be varied and necessarily must be adapted to the individual cases.

Games such as Dominoes, Draughts, etc., also later on wood-carving, joinery or carpentry work, are often most suitable. Gardening work around the tents in the Camp, games such as Badmington, Cricket, graduated physical exercises, and "route marches". The main point is to get the patients interested in their work, and to concentrate their attention on it as much as possible. In all cases physical fatigue must be avoided.

Our object being to remove the cause of the condition, it is necessary to find out the precise nature of the trouble and to treat it rationally, and to explain clearly to the men the exact cause of their condition.

#### PSYCHOLOGICAL TREATMENT.

Once the cause has been discovered and explained to the patients, it is necessary to re-educate and to help to restore to them, the proper control of themselves. It is exceedingly gratifying in many cases to see how such patients try to overcome their condition by "re-educating themselves" with the assistance and practical demonstrations of the physician, i.e., the "psycho-therapeutic" conversations" of the latter.

The therapeutic value of proper and regular work-mental and physical - cannot be too strongly emphasised, helping as it does to prevent such patients from dwelling upon their subjective symptoms, still in many of the



psycho-neurosis of the war, there are some mental troubles which no form of work will distract the patient. Here, psychological analysis and re-education is very useful and successful. We try to "dissect" the mental condition and to resolve the normal as well as the abnormal phenomena into their functional elements, to get at the unknown factors, but the important factors, in the production of these mental conditions. In many of these conditions our present knowledge of anatomy and physiology is of little help in throwing any light upon the patients condition. In the psycho-neuroses, anatomical and physiological knowledge has not yet passed beyond the theoretical stage, but in "Shell Shock" cases it has been found that psycho-therapy is a most valuable adjunct, - a method really of treating mental disorders by mental means, ensuring good practical results in restoring patients to a normal state of mental health. This war has shown that almost anyone may become a victim of psycho-neurosis, provided his environment may be made difficult enough for him; heredity doubtless plays an important part, but the former infinitely more. In a large Army many men give a history of a neuropathic tendency, giving a greater liability to effect of "shock", others with no neurotic susceptibility, but under repeated and intense stimuli, may become psycho-neurotic.

One must remember that the various paralysis and pains which neurasthenic or hysterical patients suffer from are as real to the patients as if they were due to gross organic lesions.

Doubtless some case may recover without treatment, and some may go undiagnosed, but many slight cases get worse, and it is the true province of the physician to diagnose and correctly treat all cases.

How often a case is lost or becomes chronic, because some seemingly trivial symptom or some slight mental disturbance was overlooked, and which could easily have been corrected. These cases come from a particular class of patients - soldiers, the result of whose training makes them look upon trivial incidents in an abnormal manner.

#### HYPNOSIS.

To be able to convince the patients that we have the ability and the means to ensure his recovery is a sine qua non. In many cases hypnotism is most useful, but discrimination is required in what cases <sup>it</sup> should be used. It is not claimed for hypnotism that it is a complete method of treatment, but in cases not amenable to the suggestions of the physician, it helps in breaking down auto suggestion without in any way interfering with further therapeutic measures. It has been urged against its use that it is unscientific and erratic, but cannot the same be said of other methods of treatment. Daily we use hypnotism unconsciously in treatment of our patients, trying to gain their confidence, explaining their conditions, and creating within them a state of hopefulness as to their recovery. A good deal of common sense is required in handling such cases, and in none more so is it required than in those psycho-neurotics of this great

European War.

After each patient was examined he was detailed according to his condition to:-

(1) Section for mild cases,  
 (2) Section for severe cases,  
 or (3) Section for severe cases with tic, tremor, stammering, as prominent symptoms.

Dealing first with mild cases, it was found that all that was necessary was to point out to them that there was very little wrong, and that they would soon be alright. Very few required medicinal treatment, attention to the condition of the bowels being sufficient. On the second or third day, physical drill, graduated, was ordered, and later on "route marching". These patients were examined daily, special attention being paid to the effect of physical drill upon the pulse rate. Generally these cases did well, but the progress of some of these mild cases was not always satisfactory.

(2) Severe Cases. Many of these cases were admitted to the Division as stretcher cases suffering from psycho-neurotic motor symptoms, tremors, tics, psychical disturbances of sensation and disorder of the special senses, various conditions of terror and mental anguish. Each case was examined carefully and minutely and diagnosis having been made, the treatment was entered upon at once. This latter factor is the key note to success in such cases. Concluding that there was no organic basis for the symptoms, all stretcher cases having been told quietly but firmly that there was nothing seriously wrong, were made to get up or assisted

a little in their endeavours; they were encouraged to walk alone, and made to feel that they had found their master. Great patience was required and unswerving perseverance at this period of treatment in many of these cases. Many of these cases required a period of rest in bed as their exhaustion was great even after slight exertion, still a point was made of getting these patients up daily for a few minutes in order to give ocular demonstration of their already improved condition and with most beneficial results. This was always under the personal supervision of the Medical Officer. Gradually improvement was seen, and the various physical exercises, etc., were ordered, commensurate with that improvement. In certain cases it was necessary to isolate such in a separate tent, and it was astonishing how they improved practically without any treatment. Again, many of these cases required electrical treatment which was always carried out by the Medical Officer himself, in his own tent. In most cases where it was necessary to use faradization, immediate results were obtained, and these depend really on producing a kind of crisis which should always be obtained, if at all possible, at the first séance. Rarely did we fail, even in cases giving history of a/ inability to walk for several days or longer, of having been mute for a like period, etc. In some it was necessary to carry out the treatment for an hour or two until the patient was finally mastered.

We have seen cases sent down as lateral sclerosis, Automatic wandering, Dementia Praecox etc., yielding to

the effects of Faradization in a marvellously short time.

In cases, however, of long standing it was more difficult to obtain this crisis. Other methods may be used to obtain this crisis such as hydrotherapy, but in our hand Faradization proved effective. The further treatment in these cases was re-education, graduated systematic exercises -(motor re-education) - together with massage and passive movements. We found it an excellent plan to take our patients out, walking with them for a short time, encouraging them and pointing out to them the proper method of walking, etc.; such proved an excellent educational tonic in these cases, and as they improved, physical exercises, etc., were gradually increased.

Mutes yielded quickly to this treatment, although if the latter was delayed, treatment afterwards was exceedingly difficult.

Cases with symptoms of "Effort Syndrome" required great care and discrimination in treatment, rest in bed, milk diet, and the elimination of any toxæmic condition being the principal initial points of treatment. Drugs were rarely used unless perhaps an alkaline stomachic mixture. The patients were allowed up a little every day, and the length of time was increased daily or lessened by the effect produced upon the pulse rate.

Here it may be mentioned that extract of Pituitrin grains ii t.d.s., was given which had the effect of causing a gradual rise of blood pressure and an improvement

in the general condition.

Deafness due to Labyrinthine, and nerve lesion, was treated by rest to the organ, i.e., quietness, rest in bed, and counter irritation behind the ears by a small blister repeated at intervals for a few days or by an iodine preparation, and in slight cases this treatment did fairly well; in bad cases, at the best only, a partial recovery was obtained. Headache was often a most intractable and persistent symptom, analgesic drugs having little effect, lumbar puncture was performed in a number of cases with gratifying results in some, no improvement in others. As the general condition of the patients improved, and when they were able to do a little outdoor work or physical exercises, the headache soon disappeared.

FUNCTIONAL APHONIA. In all cases we explained the condition of the cords to patients, impressing upon them that they would be able to phonate and that their natural voice would return. We then proceeded as follows:- pressing down back of tongue and also gently squeezing on back of thyroid cartilage, we asked the patient to make the sound "Ah" on as deep a note as possible. If no vibrations result he was asked to cough and finish the cough on the "Ah" sound. In many cases, with a little patience, and perseverance, the above was successful. In cases, however, "apparently unable" to act thus, Faradization was used at once, being successful in all cases.

(3) In cases where Tremor, Choreiform movements, Tic, or stammering were prominent symptoms, isolation was adopted with very happy results. Patients were put on a milk diet, massage and passive movements, and afterwards limited exercises suitable to the part affected, the results being surprisingly good. The stammerers were also isolated and were instructed daily in the proper manner of breathing, and were taught the main vowel sounds and resonator positions, and the proper use of the consonants, and in the main good results were obtained.

To sum up, treatment in the psycho-neuroses of the war, resolves itself into:-

- (1) It must be clearly established that the condition is functional.
- (2) The full confidence of the patient must be obtained and he must be made to understand that cure is possible; time and patience must be devoted to each individual case.
- (3) Treatment must be adopted at once and persevered with.
- (4) Treat sympathetically and firmly - disciplinary treatment.
- (5) Physical exercises etc., should be gradual and not in too much of a hurry, and as the patients regain confidence in themselves improvement as a rule is rapid.
- (6) Speaking generally, drugs are seldom of much use, and on no account should be used as a routine practice.
- (7) Re-educative methods of treatment are essential, and afterwards manual graduated work with a view of

restoring normal mental keenness through persevering efforts to focus their thoughts on the matter in hand.

The following prescriptions were found useful in some cases:-

R.  
Potassii Bromid. grs. XV  
Tinct. Belladonn. m. X  
Spirit Chloroform. m. X  
Aq. ad.  $\mathfrak{z}\mathfrak{j}$

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s.

R.  
Camphori grs. ij  
Spirit. Vini. Rect.  $\mathfrak{z}$  ss.  
Tinct. Lavand Co.  $\mathfrak{z}$  ij  
Aq. ad.  $\mathfrak{z}$  j

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s.

R.  
Sod. Bicarb.  $\mathfrak{z}$  ss  
Tinct. Nux. Vom. m. XV  
Infus. Gentian Co.  $\mathfrak{z}\mathfrak{j}$   
Aq. ad.  $\mathfrak{z}\mathfrak{j}$

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s. half an hour before meals.

R.  
Tinct. Belladonn. m. iv  
Tinct. Hyoscyam. m. XV  
Aq. ad.  $\mathfrak{z}$  ss

Sig.  $\mathfrak{z}$  ss. t.d.s.

R.  
Sod. Bicarbon. grs. XV  
Tinct. Gentian Co. m. XV  
Spirit. Chloroform. m. X  
Aq. ad.  $\mathfrak{z}\mathfrak{j}$

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s.

R.  
Liq. Ferri. Perchlor. m. X  
Liq. Strych. Hydrochlor. m. X  
Glycerin. m. XI  
Magnes. Sulph. grs. XX  
Aq. ad.  $\mathfrak{z}\mathfrak{j}$

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s.

R.  
Potass. Iod. grs. V  
Sod. Salicyl. grs. X  
Aq. ad.  $\mathfrak{z}\mathfrak{j}$

Sig.  $\mathfrak{z}\mathfrak{j}$  t.d.s.



SUMMARY.

The subject under review has been most forcibly brought home by this great European War. The manifestations are Protean, and to the patients afflicted, such symptoms are as real as those due to organic disease.

The causes of the psycho-neuroses of the War - the functional disorders under the name of "Shell Shock" - are emotion and concussion.

The continued and long mental strain of anticipation; the nauseating sights around; the new methods of trench warfare with exposure to cold, wet, etc., associated with loss of sleep, all help in lowering the vital resistance of the nervous system of even the strongest men and prepare the way for the crisis.

The main etiological factor is emotion.

Traumatism alone seldom gives rise to psycho-neurosis.

Most of these nerve war-strain disorders result from the same etiological factors, and can be differentiated from organic diseases and their method of treatment is more or less the same.

It is necessary in all cases to exclude organic disease and to recognise that these psycho-neuroses are different from cases of malingering.

The prognosis on the whole is good.

Treatment must be adopted at once, must be scientific, individual, and consists mainly of psycho-therapy, psycho-electrical methods and re-educative

measures.

After the war a serious problem will have to be faced, namely:- what is to be done with our War Cripples, not only the physical but the mental.

Briefly the problem resolves itself into the profession and the laymen understanding the psychological aspect of these conditions, recognising that they are real, that treatment for such must be scientific, that "colonies" will be useful and necessary for the "mental war cripples" which will be free from the asylum stigma, and where technical workshops, etc., will be erected to fit these men for new employments or re-educate them in their previous trade or calling.

Out-patient clinics for psychical disorders should be established and be under University control.

In conclusion, it is noteworthy that the German view of, and treatment of, the psycho-neuroses of the war is similar to that of our own.

The Germans lay great stress on some form of employment or course of instruction, in various kinds of work, and general industries of the district. Medical Officers state the kind and amount of work to be done, and inspect the men once a week. Carpentry has been found by them the most satisfactory for strengthening the muscles of the men, for their return to the front. A point is made of always praising and encouraging the men.

Kuhn states "that there are more examples of neuroses in the general wards of Military Hospitals than

there are in the Nervous Hospitals and that patients with functional nervous disorders are often treated for heart disease, disease of the lungs, Sciatica, Myalgia, etc." "In some cases these disorders are of ideogenous origin, occurring while away from the front, such cases having little psychical resistance and readily affected by psychical influence".

Again Kuhn recommends psychical measures first, and lays great importance on the personality of the physician.

A brief summary of 100 Cases is now given detailing a few of the more important points in history, symptoms and treatment.

An analysis of the cases showed that the average age was 26 years. The limits of age being 19 to 50.

With regard to occupation it was interesting to note that general labourers, farm labourers and others of such classes, whose previous environment was not all that could be desired, showed a large percentage of cases.

A previous neuropathic tendency and history was obtained in some cases.

Most of the cases show merely a synopsis of the symptoms and general treatment, etc; one or two show details as recorded on daily examinations.

Abbreviations used are as follows:-

- P.N. represents previous nervous condition at home.
- P.S. is present state and nervous condition in France.
- S.S. Patient's own statement about his condition.
- S.Y. Symptoms.
- P.S. Physical signs.
- T. Treatment.
- N.P.S. No physical signs.
- P.D. Physical Drill.
- R.M. Route Marching.
- D.N.S.M. Cr.N. Development, nutrition, strength, movements, Cranial nerves.
- Co-ord.Sph.R. Co-ordination, Sphincters, Reflexes.
- A.R.U. Alimentary, Respiratory, Urinary.

CASE 1.

Driver.

Aged 23.

- P.N. Health good; nerve good; games - football, cricket. Had slight attack Chorea 5 years ago, but continued to work.
- P.S. Health good; nerve good. 14 Months in France, no wounds, no previous shock. Was in Hospital 3 weeks with Tonsillitis.
- S.S. While on "no man's land" advancing, shell burst behind, knocking him down, was covered with mud, assisted to Dressing Station.
- Sy. Sickness, Vomiting, headache, sleep poor. "
- P.S. Tic, eyelids - both right side; - knee jerks, sluggish; Pulse 78.
- T. Rest, Milk diet. Paraldehyde; Isolation - massage and passive movements; rapid improvement of Tic and general condition. Graduated physical exercises and Route Marching. Progress excellent.

CASE.2.

Clerk.

Aged 21.

- P.N. "Memory never good, "has had attacks of nervous palpitation", keen athlete.
- P.S. Been over the top once - "nerve had deteriorated".
- S.S. While in front of ---- shell burst 3 feet from him, was "knocked down", was able to get up, found himself completely unnerved.
- Sy. Nervous, pains across shoulders, head and legs; appetite good; Insomnia, frequent urination; eyes ache occasionally; "hopes he will recover".
- P.S. Pulse 115. Respiration rapid; sweating profusely; pupils dilated and sluggish; Reflexes normal. Hands cold, slightly Cyanosed.
- T. Rest, milk diet, Isolation; Psycho-electrical treatment, outdoor work, gardening. Greatly improved. Graduated physical exercises and route marching. Excellent recovery.

CASE 3.

Farmer.

Aged 34.

- P.N. Health good; fond of sport; nerve good.
- P.S. Been in France 3 months - up to present time been able to stand shell fire.
- S.S. Was blown over by a shell explosion; no recollection of what happened until at Field Ambulance.
- Sy. Complains of heavy headache over eyes and temples. " Pain across small of back, disturbed sleep. Pulse 80.
- T. Rest in bed. Faradization; Physical drill and route marching. Result good.

CASE 4.

Crane Driver.

Aged 35.

- P.N. Nerve good; never interested in sports.  
 P.S. Not been in any actual engagements; under heavy shell fire.  
 S.S. Was shelled near ----, "knocked out", partly buried. Thinks he lost consciousness.  
 Sy. Insomnia, Tremor, headache, dizziness, weakness, easily worried.  
 P.S. Pulse 84; Blood pressure 136-100.  
 T. Trional grs X., gardening and light work; Route marching; physical drill. Good result.

CASE 5.

Iron worker.

Aged 24.

- P.N. Health good; played football.  
 P.S. Three months in France. Has occasionally been very nervous and shaky under shell fire.  
 S.S. While going into the trenches to relieve, a shell burst in shell hole where he was "sheltering", killing two and wounding three. He was buried but was able to scramble out.  
 Sy. Severe headache and cannot sleep. Pain in right ear - No objective symptom of organic lesion of middle ear nor vestibular disturbance. Tremor.  
 T. Trional grs X. Faradization; graduated physical drill. Route Marching.

CASE 6.

Fitter.

Aged 37.

- P.N. " Good.  
 P.S. Blown off feet a few times by shell bursts.  
 S.S. Was knocked down in trench by aerial torpedoe; after three days was able to carry on his ordinary duties; 10 days after reported sick with headache, shakiness - now much affected by shelling.  
 Sy. Headache; Insomnia; palpitation; mental depression.  
 P.S. Clubbed fingers; sweating profuse; fingers cold and cyanosed; speech tremulous and thick. Marked circulatory disturbance with cardiac dilatation. Pulse 154.  
 T. Rest in bed, milk diet, Trional Gra X. Progress of case - Insomnia and bad dreams; fingers still cold and cyanosed. Pulse 160. Transferred.

CASE 7.

Farmer.

Aged 34.

- P.N. Always nervous; shaky while working with horses.  
 P.S. No wounds; no "shock".  
 S.S. Shell dropped on other side of trench; remembers nothing more till arrival in Hospital.  
 Sy. "Feels queer all over". Wakened by dreams; appetite bad; micturition diminished.  
 P.S. Physical condition very poor, shaky and apprehensive. furred tongue, breath offensive.  
 T. Rest in bed; Mist Gentian & Soda t.d.s. Graduated exercises and route marching.

CASE 8.

Farmer.

Aged 28.

- P.N. " Good.  
 P.S. Knocked over by a shell in February, and the hearing of right ear has been impaired since. "Dull feeling" in right side of head.  
 S.S. During some shelling at ---- head became dazed and was sent "down the line" because he could not carry on.  
 Sy. Dull feeling in right side of head; unable to concentrate; Deafness.  
 P.S. Pulse 104. Blood pressure 130-90. Hands Cold and clammy and slightly cyanosed. Complete " deafness right ear (functional).  
 T. Rest; Hypnotism. Progress satisfactory.

CASE 9.

Boot Examiner.

Aged 38.

- P.N. " Good.  
 P.S. Good.  
 S.S. Blown up at -----  
 Sy. Pain across chest; Insomnia and restlessness; Appetite poor; constipation. "  
 P.S. Mild tremor of hands; Tremulous and slight mental confusion. Pulse 96. Blood pressure 110-80.  
 T. Trional Grs X. Faradization. Mist Alba and Cascara Grs when necessary. Graduated exercises after two days rest.  
 Progress:- Sweating; giddiness; Headache; easily fatigued; Nausea after meals. Fingers cold and cyanosed; psycho-electrical treatment; massage. Improvement good. Graduated physical exercises, and Route Marching.

CASE 10.

Labourer.

Aged 23.

- P.N. " Good. Sister insane; not fond of sport.  
 P.S. Has not had much strain. Never over top.  
 S.S. Shelled while in trenches at. -----, and was buried by bursting shell.  
 Sy. Headache, dizziness, insomnia, frequent micturition; weakness.  
 P.S. Fine tremor of fingers. Pulse 68.  
 T. Trional Grs X. Massage; Faradization. Physical Drill, Route Marching.  
 Progress good.

CASE 11.

Fish Merchant.

Aged 23.

- "
- P.N. Health good; nerve good; keen on sport.
- P.S. Health good and nerve good until lately, suffered from shock, and slight effects of Gas previously, in month of June.
- S.S. While waiting for breakfast at the Cook-house a shell "lobbed" in the centre of the Battery position; he was blown into the air, dazed, got up and ran off about 50 yards and then lost control of himself; began weeping and shaking.
- Sy. Appetite is good; constipation; complains of pain in left side; "Head heavy and dizzy".
- A.R.U. Normal.
- P.S.** Co-ordination and Reflexes normal; sleep good; Pulse 120; Blood pressure 115-76.
- T. Ol Ricini oz: 1. Faradization; Rest two days. Pulse 92, complains of cough and headache, and praecordial pain. Physical drill; → Headache, praecordial pain, sleep restless. → Route marching. Progress fair.

CASE 12.

Grazier.

Aged 38.

- "
- P.N. Health good and nerve good. Keen athlete.
- P.S. Health good. In Hospital May, for Shell Shock and Trench Fever. Nerve good until lately.
- S.Y. Appetite poor. Pain in lower lumbar region passing into left side. Sleep poor. Pulse 78, Blood pressure 105-70.
- S.S. While sitting in support trenches a shell burst near him. States that he was buried but remembers nothing further until he was conscious that he was still sitting in Trench.
- T. Rest, Olei Ricini oz: 1; Trional Grs X. Graduated physical drill. Later, Route Marching, Cricket. Progress good.

CASE 13.

Grocer's Manager.

- "
- P.N. Health and nerve both good. Games - Cricket.
- P.S. Good.
- S.S. Was stunned and buried for some time when "came to" noticed a discharge from ears.
- Sy. Sensation of ears filled up. Sudden noise causes painful tinnitus. Left Ear discharging; sleep broken; Dyspnoea or "respirations short". " Micturition frequent.
- P.S. Deafness.
- T. Mist Belladonnae et Hyocyami. Rest in bed. Progress:- Faint feeling; cold cyanosed hands; Otitis Media left; still faint feeling. Physical drill. Further progress good except ear condition - Transferred.



CASE 14.

Ostler.

Aged 27.

- P.N. " Nerve never very good. Does not care for sports.  
 P.S. Little or no strain. Only 3 months in France.  
 S.S. Was carrying up rations and heard two shells coming; knows nothing until he found himself in Field Ambulance. (On arrival at Field Ambulance was delirious and violent and was strapped to stretcher for 24 hours).  
 Sy. Insomnia; headache; dizziness; weakness; " Eyes ache; constipation.  
 P.S. Pulse 80. Slight prominence of eyes; sweating; Tremor.  
 T. Ol. Recini ozs 1. Trional Grs X. Rest. Pituitary Extract.  
 Later - Physical Drill, Route Marching.

CASE 15.

Butcher.

Aged 25.

- P.N. " Health and nerve good. Athlete.  
 P.S. Health fair. "A little rocky since return from Malta".  
 S.S. Shell burst right up against opening of "dugout" and he was blown to bottom of "dugout". Was conscious of breathing fumes of gas from the shell.  
 Sy. Complains of Gastric pain, shortness of breath, and is nervous when aeroplanes are about. Sleep restless; Respirations shallow; Fingers, lips and ears cyanosed; Sighing. Pulse 96. Blood pressure 115-80.  
 T. Rest; Trional Grs X; Mist Camph.Co. Physical Drill; Route Marching.

CASE 16.

Student.

Aged 19.

- P.N. " Good; Games.  
 P.S. Was wounded and shocked July last year. Rather rough time.  
 S.S. Thinks he was sent to Hospital on account of the state of his mind - delusion. Thought he was being sent to the Base to be shot. Was told that he was delirious one night and had tried to commit suicide.  
 Sy. Headache; Tinnitus; Micturition frequent; Sleep poor. Development fair; Nutrition - thin and anaemic; slight lagging of eyelids; Palpebral spasm; Hands clammy; sweating; Emotional - apprehensive: Mute.  
 T. Speech restored at once by Laryngoscope and brushing of cords. Daily bath; Ol. Recini ozs 1. Mist Belladonnae et Hyoscyami t.d.s. Physical exercises; Route Marching. Progress rapid.

CASE 17.

Cotton Mill Worker.

Aged 21.

- P.N. " Nerve good; active part in sports.  
 P.S. Have been frequently under shell fire. Was not exhausted.  
 S.S. In reserve billets and was shelled for three hours. Nearest shell was ten yards away. Was not "knocked out", but developed a severe headache and his M.O. sent him to Hospital.  
 Sy. Headache; weakness; dizziness; Pulse 80. " Blood pressure 126-85.  
 Tremors; Cyanosis of lips, ears and fingers; sweating; Pupils dilated but react to light; Slight Exophthalmos; Reflexes lively.  
 T. Ol. Recini ozs 1. Rest. Pituitary Extract Grs  $\frac{1}{2}$  t.d.s. Physical Drill; Route Marching. Progress good.

CASE 18.

Assistant Buyer.

Aged 27.

- P.N. " Good.  
 P.S. In France 11 months; nerve good.  
 S.S. Was wounded in left arm and got sent to England. Nerve went as soon as he got back to the line and gradually lost control of himself until he was sent down.  
 Sy. Headache; Noises in ears; sleep disturbed by dreams; Pains in legs.  
 P.S. Pulse 80; Blood pressure 120-70.  
 T. Aspirin Grs. X t.d.s. Ionisation for leg pains. Progress slow; Transferred.

CASE 19.

Bootmaker.

Aged 23.

- P.N. " Health fair. Nerve good; keen athlete.  
 P.S. Healthy; "pretty fair". Nerve good till lately.  
 S.S. Had gone over parapet, was advancing, shell burst near, was knocked and blown back.  
 Sy. "Want of sleep"; "Aching pains all over"; Loss of self control.  
 P.S. Tic of head and shoulders; Pulse 102.  
 T. Isolation - Weir Mitchell; <sup>Treatment</sup> Massage; passive movements. Pulse 68. Progress good.

CASE 20.

Engineer.

Aged 24.

- P.N. " Nerve good; not fond of sport.  
 P.S. "Over top" five times. 4 Engagements. Very little rest for several days.  
 S.S. Was heavily shelled. Does not know what happened - unconscious and "came to" behind lines, being looked after by stretcher bearers.  
 Sy. Headache; tremulous; weakness; sweating profuse; Insomnia.  
 P.S. Paraplegia; Pulse 100.  
 T. Rest; milk diet; Faradization; Massage; Daily instruction in walking. Graduated physical exercises; Route Marching. Sleep poor; Trional Grs X. Progress good.  
 exercises, passive stretching; Sleep poor.

CASE 21.

Machinist.

Aged 22.

- P.N. " Nerve good; fond of sport.  
 P.S. In 4 engagements and "over top" 4 times.  
 Wounded 6 times.  
 S.S. Was blown up by shell; unconscious and carried  
 down.  
 Sy. Backache; headache severe; eyes painful;  
 dizziness; weakness;  
 P.S. Pulse 60. Blood pressure 160-84.  
 Fingers cyanosed and cold; Lips and ears cyanosed.  
 T. Olei Ricini oz. 1; Mist Camph. t.d.s.  
 Rest; Graduated physical exercises and Route  
 Marching.

CASE 22.Chocolate Maker.  
(Re-admission).

Aged 28.

- P.N. " Health good; nerve fair; keen athlete.  
 P.S. Health good; nerve deteriorated; Shell Shock  
 Sept. 1916.  
 S.S. While digging in trench for cable, shelling got  
 severe. Shell burst on parapet near him, partially  
 buried, was pulled out; dazed and shaky.  
 Sy. Complains "of great dizziness"; shakiness;  
 sleep bad; "feels feverish".  
 P.S. Temperature Normal. Pulse 84.  
 T. Rest; Paraldehyde . Out door work on farm for  
 several weeks; much improvement. Graduated  
 physical exercises and route marching.  
 Progress satisfactory.

CASE 23.

Woollen Weaver.

Aged 22.

- P.N. " Good. Games nil.  
 P.S. Has had Muscular Rheumatism; blown up by "Zep"  
 bomb at York.  
 S.S. While unloading ammunition enemy shell burst  
 near him; was blown over about 10 yards"; a  
 second shell dropped immediately afterwards;  
 began to tremble and was taken to Dressing Station.  
 Sy. Paraesthesia Abdomen; Paraesthesia Joints.  
 Head pains; Sleep always disturbed since in France.  
 P.S. Profuse sweating; Pulse 92.  
 T. Rest; Belladonnae Hyoscyami t.d.s. Milk diet.  
 Isolation; psycho-electrical treatment.  
 Graduated physical exercises and route marching.

CASE 24.

Warehouseman.

Aged 29.

- P.N. " Good. Games nil.  
 P.S. "Nerve deteriorated. No wound; no previous shock.  
 S.S. Was knocked down by a shell bursting in gun-pit; partially unconscious for some time.  
 Sy. Headache occasionally; hands cold and cyanosed.  
 "Nervous feeling.  
 P.S. "Pronounced limping". Pulse 88; Respiration " panting on walking; Tendon and skin Reflexes brisk.  
 T. Rest; "finger exercises"; Isolation; re-educative methods; Faradization; much time and patience was required in this case; Graduated physical exercises and route marching. Progress fair.

CASE 25.

Tailor.

Aged 24.

- P.N. " Health good; nervous disposition always; Games - nil.  
 P.S. Health poor; "cardiac trouble"; 7 weeks in France.  
 S.S. "Was on his way to get some rifles near a tunnel; recalls getting into tunnel but nothing further till he arrived in C.C.S."  
 Sy. "Feels as if all his strength has gone, and a feeling of heavy weight on head".  
 Sickness; sleep poor.  
 P.S. Nil. - (no cardiac disease).  
 T. Trional Grs X; outdoor work, gardening; Headache increased with giddiness; Rest; Isolation; no improvement; general weakness and malaise.  
 Transferred to General Hospital.

CASE 26.

Miner.

Aged 23.

- P.N. " Nerve not very good. Games etc., Nil.  
 P.S. Good first 8 months; since then was "gassed 3 times, in hospital with nervous debility 4 months ago for 7 weeks; "nerve has deteriorated".  
 S.S. Shelled in billets; dazed, not unconscious; shaky.  
 Sy. Not emotional; appetite poor; headache at night; sleeps badly; wakes easily.  
 P.S. Nil.  
 T. Rest; Trional Grs X. M.Camph.t.d.s.  
 Headache persistent; Lumbar puncture; improvement gradually. Exercises etc. Progress satisfactory but slow.

CASE 27.

Machinist.

Aged 24.

Service 6yrs &amp; 3 months. 1 year &amp; 10 months in France.

- P.N. Good; nerve good; Games, football.  
 P.S. "Nerve good till August 1915. Shell burst near him, was buried. Severe attack Influenza Sept. 1915. Wounded July 1916 right hip. November 1916 detonator exploded in face".  
 S.S. Struck on helmet with shrapnel and wounded (slight); in Field Ambulance 7 days, returned to line; bombardment severe, unable to carry on.  
 Sy. Headache (vertex); "very thirsty"; micturition frequent and urgent; sleep broken; "buzzing in ears".  
 P.S. Limping gait with slight contracture right leg; Pupils sluggish, reaction to light.  
 T. Rest; Isolation; Milk diet.  
 Psycho-electrical treatment; good result on ~~xxxxxxxxxx~~ condition of gait and contracture; Mist Camp. t.d.s. (Oculists's report eyes normal). Splendid recovery; quick return to duty (own wish).

CASE 28.

Labourer.

Aged 23.

- The above was found lying by roadside and sent into Hospital "in a supposed semi-unconscious state" from Field Ambulance. Careful examination excluded any organic disease, or "the effects of alcohol". Patient on admission was "mute", but perfectly conscious. Temperature 99.2. Pupils normal and reacted to light; Could not be induced to speak. Faradization was used and induced to speak in a few minutes.  
History:- "Lost his way further up"; got unnerved and lay down by roadside. Had been having a rough time under shell fire".  
 P.N. Nerve good; games nil.  
 P.S. Nerve greatly deteriorated lately.  
 Sy. Tongue dry and slightly furred; complained of pain left lower jaw (alveolar abscess); Stiffness of joints, and slight sore throat.  
 T. Ol.Recini ozs 1. Hot Milk: Hot bath.  
 2/9/17. Much better; speech normal; Slight Tonsillitis - alveolar abscess, incised - antiseptic gargle and mouth wash.  
 3/9/17. Greatly improved.  
 Patient returned to duty in a few days.

CASE 29.Labourer.  
(Re-admission).

Aged 26.

- P.N. Nerve poor.  
 P.S. Nerve never good in France.  
 S.S. Blown up 1916. Lost control of himself while going up under barrage. Could not sleep for "bombs and planes".  
 Sy. Sleep broken if worried. Appetite poor.  
 P.S. Nil. Pulse 80. Blood pressure normal.  
 T. Bromide of Potassium Grs. 30 t.d.s. after food. Graduated physical exercises & route marching. progress satisfactory.

CASE 30.

Fisherman.

Aged 20.

- P.N. " Good: Football, Boxing.  
 P.S. Nerve not so good for some months past. No wound and no previous shock.  
 S.S. 3 Days ago while under shell fire on a working party he ran **away**. This happened once before as he is unable to control himself under shell fire.  
 Sy. Headache; weakness; "thumping heart". "  
 P.S. Some Nystagmus; Pulse 130.  
 T. Rest; milk diet; Mist Ferri et Strychnine t.d.s. Out door work - gardening; graduated physical drill and route marching. Progress good.

CASE 31.

Knife Machine Maker.

Aged 35.

- P.N. " Sudden noise always made him jump. Cricket and Football occasionally.  
 P.S. In France 1 month; 4 days in trenches, much shelling.  
 S.S. Shell burst near him while on a working party, and he thinks he was unconscious for a few hours. On recovery he was shaking and felt weak. "  
 Sy. Diarrhoea (7 motions in 24 hours); eneuresis all his life; pain in groins; abdominal pains.  
 P.S. Narrow high palatal arch; Physique below normal.  
 T. Rest; light diet; isolation; upset by guns; seen in obvious post epileptic state. Mist Potassii Bromide t.d.s. Transfer to General Hospital as probably Epilepsy.

CASE 32.

Farmer.

Aged 27.

- P.N. Nerve good; games Football.  
 P.S. Nerve good till **lately**, now much deteriorated. No wound.  
 S.S. While **repairing** wire under shell fire, knocked off feet, "inhaled fumes", got to battery and collapsed.  
 Sy. Great depression; "hears **unearthly** things speaking in his head", and shrieking noises, which he knows are hallucinatory. Pain in heart when he thinks of shells; Vertigo; Shortness of breath; feeling of weakness; sleep poor and troubled by dreams.  
 P.S. Weakness; paresis right arm.  
 T. Rest, sleep treatment; psycho-electrical treatment; out door gardening work. - Good result. Paresis right arm completely gone. Graduated physical exercises and route marching. Good recovery of case which seemed very uncertain.

CASE 33.

Printer.

Aged 34.

Service 1 year &amp; 1 mth. Active Service 4 weeks.

- P.N. " Health fair; complained frequently of "weak chest". Nerve always poor; games nil.
- P.S. Health fairly good, occasional cough; ~~nerve~~ **nerve** been worse when within sound of guns. 4 week in France. No wound: no "shock".
- S.S. On 7/8/17 about 8-0pm near ----, while getting ready for going into support trenches, shell burst near the opening of the dugout in which he was; was knocked down; does not remember clearly what happened; sent to Dressing Station. Appetite good.
- Sy. Feels very shaky; sleep poor and delayed; "bad dreams". A.R.U. Normal.
- P.S. D.N. normal; S.M. normal; Cr.N. normal; Co-ord normal; Sph.R. normal.
- T. Trional Grs X. Rest. On 3rd day complained of great weakness, especially of legs, and cold sweats at night; Tepid sponging and massage ordered; afterwards psycho-electrical treatment, after which improvement was rapid.

CASE 34.

Felt Hardener.

Aged 29.

- P.N. Health indifferent. Games Nil. Nerve poor.
- P.S. Nerve good up to present; accidentally wounded October 1916.
- S.S. Buried in sap by shell explosion for over an hour; no recollection of what happened to him after he was got out.
- Sy. Dull heavy frontal headache- Buzzing sounds in ears; sleep delayed.
- P.S. Pulse 100. Superficial reflexes brisk.
- T. Rest; Isolation; milk diet. Trional Grs X. Progressed favourably. Graduated exercises etc. Excellent recovery.

CASE 35.

Tinsmith.

Aged 19.

- P.N. Good; games football.
- P.S. Nerve good, 5 months in France.
- S.S. 2 days ago, while in trench, shelling heavy, became dazed; no history of specific shell burst.
- Sy. Occipital headache; slight deafness; appetite good; "dazed"; "blurred vision".
- P.S. "Flat footed"; "micturition reluctant".
- T. Rest in bed for ad day. Vision normal (oculist's report). No medicinal treatment; graduated exercises and route marching. Progress excellent.

CASE 36.

Clerk.

Aged 20.

- P.N. " Health good; nerve good; Keen athlete.  
 P.S. Health fair; "Rheumatism, sent to England for 10 weeks. No previous shock.  
 S.S. Coming down for rations, shelling heavy, got under a tank; after some time got down; collected rations; again heavysshelling; unable to carry on. Appetite good; micturition normal.  
 Sy. Complains of being frightened; very nervous on sound of gunfire. Slæp good.  
 P.S. Reflexes sluggish; pronounced limping with inclination forwards when walking.  
 T. Rest; milk diet; Isolation; psycho-electrical treatment; gait corrected.  
 Graduated physical drill, etc.  
 Very good recovery.

CASE 37.

Labourer.

Aged 27.

- P.N. " Good; games football.  
 P.S. Good; nerve good; 2 months in France.  
 S.S. On ---- buried twice; speech lost.  
 Sy. Pain all over chest and occiput, and feels sore all over. Appetite good; sleep disturbed by dreams."  
 P.S. Dentition very bad. Shakiness in walking.  
 T. Rest; milk diet; (To see Dentist). M.Camph. t.d.s. Trional Grs XII; outdoor gardening work.  
 31/6/17. Pupils dilated; left eye painful (vision etc., normal - oculist's report). Usual exercises.  
 Excellent recovery.

CASE 38.

Munition Worker.

Aged 22.

- P.N. " Not good; shock 2 years ago; "facial paralysis"; games boxing.  
 P.S. Wounded right hip Sept.1916. Nerve deteriorated very much since.  
 S.S. 2 days ago "German raid", 3 bombs burst near him; stunned; unconscious  $\frac{1}{2}$  hour: "speech lost".  
 Sy. Pain Lumbar region; sleep good; appetite good; deafness (both).  
 P.S. Increase of usual deafness; micturition infrequent and reluctant; inco-ordination; "overbalances"; slight contracture whole of right leg. Mute.  
 T. Rest; Faradization; speech restored in a few minutes with a severe stammer (always had a stammer). Camph.tzd.s. Psycho-electrical treatment for leg, result excellent. Re-educative measures for Stammer which was much improved; usual treatment. Progress excellent.



CASE 39. Electrical Crane Driver. Aged 27.

- P.N. " Health fair; attacks of Bronchitis and Influenza; nerve good.  
 P.S. Health fair; nerve not so good.  
 S.S. While coming out of front line trenches; unable to say what happened, found himself in Dressing Station.  
 Sy. Headache; Lumbar pain; sleep poor; diarrhoea.  
 P.S. Upper dentition bad. "I.C.T.Ulcers" of right leg and buttock. Fingers cold and cyanosed. Pulse 96.  
 T. Rest; milk diet; Ol.Recini ozs i. Tropii M.XV. Bismuth et Salol t.i.d. Psycho-therapeutic measures with graduated exercises.  
 Good recovery.

CASE 40. Labourer. Aged 24.

- P.N. " Good; games nil.  
 P.S. No wound, no previous shock. Nerve good.  
 S.S. While in support trenches, shell burst near party of 9; buried, stunned; no recollection of being dug out; came to in a Dressing Station.  
 Sy. Mute; headache; Lumbar pain. "  
 P.S. Slight left strabismus; slight right nystagmus. Pulse 84.  
 T. Faradization; speech restored almost at once; usual treatment. Progress excellent.

CASE 41. Warehouseman. Aged 21.

- P.N. " "Easily startled". Games nil. History of fits at School.  
 P.S. Nerve good in line. No wound, no shock.  
 S.S. Acting as Sentry in reserve dugouts, shell burst 5 yards away, second shell buried him; was able to get out; shaking and trembling.  
 Sy. Sleep good; headache especially at night; deafness left ear.  
 P.S. Tremulous hands and lips; has attacks of depression. Pulse 150.  
 T. Rest; Mist Potass.Bromid t.d.s. Regulated diet; a little regulated exercise; modified diet; Isolation; increased exercise.  
 Out door work - gardening. Route Marching.  
 Progress excellent.

CASE 42. Railway Labourer. Aged 28.

- P.N. " Was always nervous; no games.  
 P.S. Been over top several times; nerve worse.  
 S.S. While working on light railway, shelling severe; got **shaky**; and unable to carry on.  
 Sy. Feels "sore all over" especially lumbar region; gastric uneasiness; pain in testicles; micturition urgent; sleep poor.  
 P.S. Tremor Arms.  
 T. Rest; Trional Grs X. Milk diet; psycho-therapeutic measures; improvement rapid. Graduated exercises etc. Good recovery.

CASE 43. Cabinet Maker. Aged 24.

- P.N. " Good; games boxing.  
 P.S. Good; wound left forearm; nerve deteriorated since.  
 S.S. A week ago, knocked out by heavy shell; unable to carry on; headache; emotional, laughing and crying.  
 Sy. Pain back and legs; costive; micturition urgent and frequent (up 6 times during the night). Sleep disturbed and broken; terrifying dreams.  
 P.S. Slight contracture left forearm; fingers cold and cyanosed; profuse sweating.  
 T. Psycho-electrical treatment, which relieved contracture in one treatment. Rest; Paraldehyde ; tepid sponging night and morning; out door work; light ~~gamm~~ joinery work. Great improvement. Graduated exercise etc. Good recovery.

CASE 44. Mechanic. Aged 33.  
 (Re-admission).

- P.N. " Nerve good; very active; keen athlete.  
 P.S. Has had pretty rough time; nerve not so good now; Shell Shock 1915.  
 S.S. While going up to trench was "knocked down" by shell and twice buried in course of 15 minutes; became unconscious.  
 Sy. Nervousness; lumbar pain; tinnitus, right ear more marked; Insomnia; wakens "very startled".  
 P.S. Pulse 120. Pupils dilated but react normally; movements slow and "shuffling"; fingers cold and cyanosed. "Sighing".  
 Severe case - Prognosis uncertain.  
 T. Isolation; Paraldehyde ; Psycho-electrical treatment; Pulse 100; graduated physical exercises (very light); light outdoor gardening work.  
Month later:- Pulse 72. Good volume and tension; outdoor gardening work, route marching. Progress slow; ultimately good recovery.

CASE 45.

Labourer.

Aged 27.

- P.N. " Good; keen athlete.  
 P.S. Good; not wounded; no previous shock.  
 S.S. Buried by shell burst while attacking first objective; assisted to aid post and sent to Hospital.  
 Sy. Soreness back and neck; headache; occasionally feels sounds like shells bursting; sleep poor; feels cold. D.A.H.  
 P.S. Hand sweating; unable to stand on feet; falls down; Pulse 120.  
 T. Re-educative measures for ~~walking~~ walking at once; required great patience and encouragement; Isolation; Rest; Mist. Camph. t.d.s. Gradually allowed little exercise; walking accompanied by M.O. Physical drill and route marching. Progress excellent.

CASE 46.

Regular 16 years.

Aged 34.

- P.N. " Health good; nerve good; keen athlete.  
 P.S. Health fair; Rheumatic Fever 3 months 1916; nerve good till lately. 3 years in France Shrapnel wound of hand; no previous shock.  
 S.S. Shell dropped between his horse and leading team; all horses killed; a second shell burst near him, blown up; recovered a little, then collapsed; recollects nothing further until he found himself in C.C.S.  
 Appetite good; bowels regular; micturition normal.  
 Sy. Headache, pain all over left side; A.R.U. normal; sleep poor.  
 P.S. Fingers cold and cyanosed; fine tremor hands; Sighing; Paraplegia.  
 Severe case. - ~~Prognosis~~ Prognosis uncertain.  
 T. (a) Isolation; rest- psycho-electrical treatment; Mist Camp. t.d.s. (b) Walks but not well; (c) Psycho-electrical treatment - much improved. (d) Outdoor work - gardening. (e) Physical exercises and route marching.  
 Very good recovery.

Note:- A.R.U. Alimentary, Respiratory, Urinary.

CASE 47.

Plumber.

Aged 38.

- P.N. " Health good; Nerve good; keen athlete.  
 P.S. Health good; nerve deteriorated since wounded 1916.  
 S.S. While kneeling beside gun, shell landed on gun, "blown up", carried to Dressing Station.  
 Appetite good.  
 Sy. Severe pain in back; right knee painful- walks with difficulty and with curvature. Sleep restless.  
 P.S. Dentition poor; fingers cold; profuse

sweating.

T. Faradization; rest; (to see Dentist). Psycho-electrical treatment; ~~amixkankk~~ graduated physical exercises and route marching. Psycho-electrical treatment result splendid; no hypnotic required.

CASE 48. Cotton Mill worker. Aged 23.

P.N. " Nerve Good; keen athlete.  
 P.S. Wound to hand March 1916; in hospital 9 weeks; Convalescent Hospital 5 months; nerve since good.  
 S.S. While in support trenches buried by shell burst; "pulled out" unconscious.  
 Sy. Pain right ear; tinnitus; sickness; praecordial pain.  
 P.S. Stammering; slight staggering gait; deafness; contracture ring and little finger.  
 T. Rest; Psycho-electrical treatment; stammer and contracture <sup>relieved</sup> after 4 treatments. Mist Camph.t.d.s. Massage; Physical exercises. Progress good.

CASE 49. Labourer. Aged 23.

P.N. " Very nervous; apprehensive; games football.  
 P.S. Starts at sounds of shells; buried Feb-1916.  
 S.S. Shell burst near him, made him run away.  
 Sy. Timid and apprehensive: Pains aching at night; sleep good but bad dreams; Sensation of going into a trance; had similar sensation before joining the army.  
 P.S. D.N., normal; S.M. normal; Cr.N. normal; Co-ord. normal; R. & Sph. normal; Pulse 70.  
 T. Isolation; Massage; cold douching; games and physical exercise. Progress good.

CASE 50. Butcher. Aged 24.  
 (Re-admission).

P.N. " Health fairly good; nervous disposition; games - sprinting.  
 P.S. Health fair; in hospital twice with Neurasthenia and D.A.H.? Slight wound right thumb. Shell Shock April 1917.  
 S.S. Was on guard at ammunition dump; there was occasional shelling; got unnerved and unable to carry on.  
 Sy. Insomnia - persistent; difficulty in breathing; praecordial pain; attacks of palpitation; appetite fair.  
 P.S. Coarse tremor of arms; fingers cold and cyanosed; contracture of right thumb; Pulse (lying) 120.  
 T. Psycho-electrical treatment which relieved contracture of thumb on 2 treatments. Isolation; rest; milk diet; Progress slow and prolonged. Light outdoor gardening work. Transferred to General Hospital.

CASE 51.

Farmer.

Aged 31.

- P.N. " Good; games, etc. nil.
- P.S. 5 months in France; has felt nervous but able to carry on. Not wounded, no previous shock.
- S.S. 6 days ago blown up; stunned about 15 minutes; shaky; not able to carry on; emotional; appetite gone; nausea and vomiting; Diarrhoea; Returned to trenches 2 days later but not much good; much shaken. Sent to Hospital.
- Sy. Vomiting especially after food. Diarrhoea, 3 to 4 motions (fluid) daily. Feeling of Dyspnoea; sleep delayed; terrifying dreams.
- \* P.S. Pain generalized/lumbar region; patient walks with short hesitating steps; Intelligence only fair.
- T. Bed; milk and barley water. Mist Bismuth and Salol, t.d.s. or when necessary. Phenacetin and citrate of Caffein for headache. Faradization and massage. Progress of case slow, although lumbar pain and vicious gait quickly cured.

CASE 52.

Warehouseman.

Aged 28.

- P.N. " Always under Doctor for Debility since bad attack of Influenza. Games nil.
- P.S. Was put on light duty at ----. Fainted while on a march; nerve greatly deteriorated; never in the line; no wound; no previous shock.
- S.S. While entering ----, shelling severe; was knocked down by shell which wounded and killed several others; was again knocked into a dugout by a second shell; remembers no more till in Field Ambulance; shaking and unable to speak.
- Sy. Feels generally weak. Sleep poor; appetite poor; frequent and urgent micturition; Abdominal paraesthesia.
- P.S. Physique poor; heart "flabby": slightly tremulous.
- T. Faradization, required energetic faradic stimulation; voice returned after a few minutes under above treatment.
- Patient sent to bed and isolated. Trional Grs X. Milk diet; massage; Gent. et Sod., t.d.s. A little outdoor exercise daily - walking; afternoons - lying on tent bed outside. Gradually felt stronger.
- A little outdoor work - easy gardening, and afterwards graduated physical exercises and route marching. Very good recovery.

CASE 53.

Horse Driver.

Aged 19.

- P.N. " Fair; no games.
- P.S. Nerve poor in line. Only 2 days in reserve line, and few hours in front line.

- S.S. Shell burst close to him and was unable to carry on. Mute several hours.
- Sy. Praecordial pain, "lumbar pain"; headache; appetite good; sleep broken.
- P.S. Below standard physique; intelligence poor; micturition reluctant; Mute; Tremor right arm. Profuse discharge right ear, rather emotional.
- T. Faradization - rather resistant, took almost half an hour before speaking, then some stammer. Rest; Isolation: Trional Grs VII if necessary. Psycho-therapeutic measures relieved pain in head and back; re-educative measures for stammer; graduated physical exercises and route marching. Results excellent.

CASE 54. Weaver. Aged 35.

- P.N. " Good; games football.
- P.S. Nerve good.
- S.S. 3 days ago "knocked over by shell burst", head driven against parapet; dazed not unconscious; lost speech; Shaky not emotional.
- Sy. "Head swimming"; noises in ears; headache; appetite good; sleep poor; deaf last few days.
- P.S. Physique poor; right inguinal hernia; Dentition very bad.  
Almost mute; made to speak, but reluctant. Walks bad, "inclined to reel and go backwards".
- T. Rest; Faradization; Paraldehyde ; Psycho-electrical treatment; re-educative measures - walking; (to see Dentist); fitted with truss; graduated physical exercises and route marching.

CASE 55. Painter. Aged 28.

- P.N. " Good; games - nil.
- P.S. Good; nerve good; 3 months in France.
- S.S. 5 weeks ago buried, not unconscious, but lost control of himself; shaky, unable to carry on.
- Sy. "Buzzing noises in head", chiefly at night; nervous - greatly upset by gunfire; sleeps but wakens "in a fright"; terrifying dreams occasionally; appetite poor; "gastric weakness".
- P.S. Physique excellent; Dentition good; slight intention tremor? fingers cold and cyanosed. Sighing.
- T. Isolation; rest; milk diet; Calomel Grs III, Magnes. Sulph. ozs 1.  
Progress of case unsatisfactory.
5. Shaky; severe headache.
  6. Giddiness, headache.
  7. Still very shaky.
  8. Pulse 120; greatly upset by guns.
  9. Headache improved but giddiness on rising.
  10. Giddiness persistent; slight walking exercises very unsteady.

14. Greatly upset by gunfire - woke up in a fright.
15. Strict isolation: psychical treatment.
17. Slight improvement; much steadier in walking.
18. Giddiness much worse; "feeling of great distress across chest"; unable to describe feeling correctly.  
Examination - no physical signs.
19. Very much worse- greatly upset by gunfire; Transferred to General Hospital.

CASE 56.

Coal heaver.

Aged 33.

- P.N. " Good; games - nil.
- P.S. Nerve good; only been a few days in the line; felt alright.
- S.S. Dugout blown up, was partially buried; dazed, walked with assistance, shaky, not emotional, unable to carry on. Appetite gone but very thirsty; nausea no vomiting; micturition infrequent.
- Sy. "Swimming feeling in head"; praecordial "stabbing pain"; micturition infrequent; sleep poor; keeps waking.
- P.S. Physique good; contracture of left arm; Pulse 76.
- T. Psycho-electrical treatment for condition of arm; result excellent.  
Rest; isolation; milk diet; progress good.  
Light outdoor gardening work; encouraged to play bowls; good result. Graduated physical exercises and route marching.  
Result very good.

CASE 57.

Assistant Surveyor.

Aged 27.

- P.N. " Good. "Would shake in the legs if row began". Good horseman.
- P.S. Nerve good till 8 weeks ago. After heavy bombardment became shaky and tremulous. A day later blown a few yards by shell bursting behind and knocked out. Shaky ever since even on going into the street.
- S.S. Sent down by Battalion M.O. about a week ago because of nervousness and crying. Was worrying, did not know what about.
- Sy. Shakiness; Pain right temple; Pain behind eyes and neck; "Ears sore inside"; Vision "blurred"; Nausea; Constipation always; micturition frequent and "painful"; Insomnia.
- P.S. Depressed; Memory impaired.
- T. Mist Belladonna and Hyoscyami; Rest; "can't sleep"; Chloral and Bromide; Improved. Pain Right ear. Some pain chest on breathing; Physical drill and route marching. Transferred.

CASE 58.

Electrical Engineer.

Aged 22.

- P.N. " Electric Shock incapacitating him for 2 months, in 1910. No sports.
- P.S. Over top in wibing parties frequently. Nerve not good.
- S.S. Paraded Sick 6 days ago because he felt he could not "stick it longer". Worse each time he went in the line.
- Sy. Shakiness; palpitation- Looks frightened; appetite bad; micturition frequent by day; sleep fair;
- P.S. Slight inco-ordination; Hesitancy of speech; vacant aspect; Pulse 130.
- T. Mist. Camph. t.d.s. Rest; isolation; massage; Mist Bromide and Belladonna t.d.s. Pulse after resting 140. Pulse 160 after getting up. This patients progress was prolonged and not satisfactory.

CASE 59.

Cloth Stamper.

Aged 46.

- P.N. Good; Games, etc. Fair horseman.
- P.S. Good; nerve good; not wounded, no previous shock.
- S.S. Nerve went all to pieces while sitting in the trenches a fortnight ago; "crying and shaking".
- Sy. Pain in shoulder and down left side; headache; Respirations short; Micturition frequent at night and urgent; sleep bad; aching pains at night.
- P.S. Tremors, rapid and regular, especially in the arms, but also seen in the legs.
- T. Rest; Faradization with physical re-educative measures; milk diet; Trional Grs X when necessary; Ionization; Outdoor work in garden. Graduated physical exercises under personal supervision of M.O. Progress unsatisfactory.

CASE 60.

Butcher.

Aged 30.

- P.N. " Since he received a fright when aged 17, been nervous since.
- P.S. Been 4 months in France; been fairly well and nerve fair.
- S.S. 3 days ago knocked down by shell, unable to carry on.
- Sy. Mute; appetite poor; sleep poor; bad dreams; constipated and hesitating.
- B.S. Awkward gait; "shin pains".
- T. Faradization - speech restored in a few minutes. Ol. Recini oza 1. Trional Grs X. Ionization to legs (satisfactory). Graduated physical exercises and route marching. Progress good.



CASE 61.

Cloth Stamper.

Aged 42.

- u
- P.N. Easily startled. No inclination for games or sports.
- P.S. Always "ducked" at sound of guns. On --- 1916 blown up by shell - severe shock - in Hospital 6 weeks - also loss of speech.
- S.S. Buried by mine explosion up to shoulders; was able to get out; "stunned"; shaking; bad stammer; taken to M.O.
- Sy. Sleep broken; terrifying dreams (re trenches); occipital pain; appetite poor; vision blurred?; slight loss of smell?; "cramp in legs";
- P.S. Pulse 140 - 2nd sound; heart accentuated. Dentition very poor; stammering.
- T. Rest; milk diet; (oculist's report - vision normal); Trional Grs X; massage; Parodization; re-educative measures for stammering (satisfactory). General debility increased. Sent to General Hospital.

CASE 62.

Joiner's Labourer.

Aged 29.

- u
- P.N. Good. Games - football.
- P.S. Good first 2 months - deteriorated since.
- S.S. On 26/7/16 buried twice, dazed, lost speech for 2 days, which was restored in a dream after waking.
- Sy. Pain in chest and occipital region; "feels sore all over"; sleep disturbed by dreams.
- P.S. D.N.S. fair; M. normal; Dentition very bad; "very shaky on standing"; Pulse 86.
- T. Rest; Trional Grs X. Mist. Camph. t. d. s. Psycho-electrical treatment, etc. Progress excellent.

CASE 63.

Lace Trade.

Aged 20.

- u
- P.N. Always nervous and shy. Swimming.
- P.S. Slight wound left knee Feby. 1917. Nerve good will March 1917; shell dropped few yards off; shaken, not "knocked out". Carried on after 2 days rest. Not over top.
- S.S. May 14 - lifted off feet by shell burst, blown several yards; "knocked out", got up again, shaking. Officer sent him to M.O.
- Sy. Frontal headache; Micturition reluctant; sleep broken, talks in sleep.
- P.S. nil.
- T. Rest; Mist. Camp. t. d. s. Paraldehyde ; complains of dizziness at night; still shaky; Psycho-electrical treatment; Dizziness on reading; sleep much improved; General improvement; Usual exercises, etc.

CASE 64.

Counter Hand.

Aged 29.

- P.N. " Always nervous - "jump at least noise".  
Football accident, nerve worse since.  
Apprehensive of being hit.
- P.S. Dugout blown in. Away from line a few days  
because of shattered nerves.
- Sy. Headache frontal; heavy praecordial pain;  
sleep poor; occasionally dreams; sensation of  
stoppage in throat; occasional shortness of  
breath.
- P.S. N.P.S. Pulse 86.
- T. Rest; Mist. Camph. t.d.s. Paraldehyde 3; ;  
Psycho-electrical treatment; graduated exercises  
and route marching. Progress very good.

CASE 65.

Engineer.

Aged 32.

- P.N. Good; keen athlete.
- P.S. Feby. 1915 frostbite; "no good out here, nerve  
greatly deteriorated".
- S.S. April 29 in front line, shell dropped between  
him and another Sergeant whose head was blown  
off. Patient buried few minutes later by another  
shell bursting near. Unable to carry on.
- Sy. Weakness; Stammer; Pain across eyes; Respiration  
short (gas? shells lately); appetite poor.
- P.S. Slight degree tremors, generalized upper jaw;  
poor dentition.
- T. Bed; isolation; milk diet; Psycho-electrical  
treatment; re-educative methods for stammering;  
Improvement slow due to recurrence of Trench  
Fever. Transferred to General Hospital.

CASE 66.

Cabinet Maker.

Aged 24.

- P.N. Good; games-, etc., Boxing.
- P.S. Good; Wounded July 1916; in hospital 2 months;  
Since nerve deteriorated but able to carry on.  
Battalion bomber before, but could not act as  
such now.
- S.S. A week ago, knocked out by heavy shell; unconscious  
probably an hour; after shaky, dull heavy headache,  
emotional, laughing and crying.
- Sy. Severe pain back and legs; constiveness; appetite  
good; frequent micturition (6 times at night);  
sleep poor - wakes easily and difficult in getting  
to sleep. Worries and cannot control himself.  
Sometimes has terrifying dreams.
- P.S. Shakiness; D.N. Normal; very round shouldered  
due to stooping over bench at his trade.  
Cr.N. normal; co-ord. normal; Sph.R. normal.  
Pulse 80.
- T. Rest; milk diet; Trional Grs VII; Mist Camph  
t.d.s. Same evening very restless, aching pains

legs and back; micturition less frequent (3times);  
 Urine examined - normal.  
 Tonization for shin pains. No improvement;  
 pains legs always worse at night; hot sponging;  
 cotton wool and Aspirin Grs X tds. No  
 improvement. Massage. No improvement in  
 pains in legs. Psycho-neurotic condition  
 greatly improved. Transferred to General  
 Hospital.

CASE 67. " Hall Porter. Aged 24.

P.N. Good; Games - football and cricket.  
 P.S. Fairly good; lately got "palpitation: during  
 our own bombardment. Wounded 1916, nerve has  
 deteriorated since.  
 S.S. 14 days ~~wax~~ ago was buried, no recollection of  
 shell bursting near; remembers nothing till he  
 woke up in C.C.S. 2 days after with throbbing  
 headache; unable to speak and very shaky.  
 Sy. Throbbing headache, especially behind eyes;  
 sleep poor; has attacks of palpitation at night.  
 P.S. Mute.  
 T. Faradization, speech restored almost at once.  
 Rest; Trional Grs X. Mist Camph. t.d.s. A few  
 days after he developed a hesitating shuffling  
 gait which was readily corrected by Isolation  
 and Psycho-electrical treatment. Graduated  
 physical exercises and routes marching.  
 Result very good.

CASE 68. Storekeeper. Aged 30.

P.N. " Nerve good; Games - swimming and football.  
 P.S. Wounded May 1916 in right Shoulder; one month  
 in Hospital.  
 S.S. April 17 buried by two shells; scrambled out  
 dazed and shaking.  
 Sy. Headache frontal; "ears buzzing"; "feels short  
 winded"; sleep broken.  
 T. Mist.Camph.t.d.s. Trional Grs.X. Outdoor work -  
 gardening; physical exercises. Excellent result.

CASE 69. Tinsmith. Aged 23.

P.N. " Nerve good; No games or sport, and subject to  
 headache.  
 P.S. 13 months in France. No wounds or shock. 3'  
 times out of line; once sick, once "lost his  
 head for 4 days".  
 S.S. At ----- was "blown up" and buried; lay day and  
 night and was unconscious during transit to C.C.S.  
 Sy. Headache; deafness right ear; pain in abdomen;  
 appetite poor; pain after meals?; sleep - "can't

get off" Dreams.

P.S. Development, nutrition and strength all poor. Asthenic; Micturition reluctant; Cr.N. normal; Co-ord. normal; Intention tremors; Abdominal reflex not obtained; Sphincters normal. Stammer.

T. Mist.Camp. t.d.s. Trional Grs X. Aural examination; abdominal pain no reference to meals; sleep improved- singing lessons; speech hesitant but improved by instruction; Occipital headache; Progress very slow.

CASE 70. " Farmer. Aged 24.

Deaf Mute.

P.N. Good; "rides to hounds". Fond of working with horses. Nerve very good.

P.S. Nerve good; "been in several raids".

S.S. Was 3 days in an advanced shell hole, shell burst near, was struck by piece of shell; unconscious 2 or 3 hours.

Sy. "Throbbing headache"; painful neck; aching legs; appetite bad; bowels irregular; sleep broken.

P.S. Mute. Fingers cold and cyanosed; Deafness.

T. Baradization, hearing and speech restored in a few minutes.  
Rest; Trional Grs X.  
In this case headache became excruciating, which was relieved by lumbar puncture.  
Further progress good, with usual treatment.

CASE 71. " Carpenter. Aged 43.

P.N. Bad Insomnia for a year., 3 years ago, following C.O.poisoning. Had it previously in Iceland of which he is a native.

P.S. Nerve fair.

S.S. First night in trenches, heavy bombardment; buried; dug out, crying and shaky; unable to stand, tried to carry on.  
Next day, order to go over top - unable to do it - sobbed.

Sy. Fatigue; occipital pain; micturition frequent; sleep broken.

P.S. Right Strabismus; Nystagmus; fine hand tremor.

T. Lin.Saponis. Trional Grs X. Sleep bad; sleep improved; but entirely depending on drug; sleep still bad; Insomnia; Progress poor.

CASE 72.

Farmer.

Aged 23.

"  
 P.N. Always poor; games, etc., - no interest in such.  
 P.S. 9 months in France. Slight wound Sept. 1916.  
 Back in line October. Nerve greatly deteriorated since.  
 S.S. 2 weeks ago knocked out, unconscious one hour.  
 Not able to carry on.  
 Sy. Sickness; headache; tremulous; sleep fair.  
 P.S. No Physical signs.  
 T. Rest; Trional Grs VII; Very anxious to return to unit. This case did excellently after usual physical exercises and route marching. No other treatment.

CASE 73.

Gardener.

Aged 23.

"  
 P.N. Good. Gymnastics - swimming, capable motor car driver.  
 P.S. Nerve good till Sept. 1916. Wounded hand and side. Hospital 1 month.  
 S.S. Shaken by 5.9 dropping a few yards away. Carried on a few hours, began to shake. Sergeant sent him to M.O.  
 Sy. Occipital pain, A.R.U. normal; Sleep - hard to drop off.  
 P.S. No physical signs. Pulse 78.  
 T. Mist. Camph. t.d.s. Trional Grs X.  
 Headache very persistent; Lumbar puncture; greatly improved. Outdoor work - gardening, games, cricket etc. Usual physical exercises. Progress excellent.

CASE 74.

Carman.

Aged 26.

P.N. Very strong. Games - keen athlete.  
 P.S. Good record; first time in Hospital. Often shelled.  
 S.S. 3 days ago, firing gun, was knocked into shell hole; shelled and blown down; Felt sick and could not walk again; hit by shrapnel on bandolier, bullets exploded and knocked rifle to pieces. Fainted on reaching Battery; crying and emotional; unable to carry on.  
 Sy. Pain forehead; pain in legs; feeling of pressure over chest; sleep delayed and broken.  
 P.S. Systolic murmur at Apex; Tremor and some <sup>in</sup> co-ordination.  
 T. Rest; Paraldehyde 3x; Aspirin Grs V. t.d.s. milk diet; pains all over, especially head and back. Feeling of pressure relieved. Pains worse, generalized. Temp. 101° F. Complication. "P.U.O." Transferred to General Hospital.

CASE 75.

Valet.

Aged 23.

- P.N. Health Poor; Anaemia when 16 and treated for such. Never poor. Games -nil.
- P.S. Health improved, but nervous condition worse. Short of breath when marching. No wound, buried July 25, 1916, Somme.
- S.S. While going into trenches to firing line, heavily shelled. Shell burst near him, knocked down. Recollects nothing further till he found himself in Dressing Station.
- Sy. Backache; Giddiness on rising; Trembling; Weakness of Legs; Sleep good.
- P.S. Stooping, shuffling gait.
- T. Isolation; Psycho-electrical treatment, improvement rapid. Usual exercises; General condition greatly improved and was most rapid.

CASE 76.

Butcher.

Aged 24.

- P.N. Good; games - no sports.
- P.S. Not in front line yet. Nerve good.
- S.S. While on working party, heavily shelled, buried in dugout; collapse under shell burst; scrambled out crying and emotional. Taken to Advanced Dressing Station.
- Sy. Pain head vertex; Lumbar pain (severe); shaking; deafness left ear with discharge (chronic Otitis Media); sleep broken.
- P.S. Systolic bruit apex.
- T. Rest; Mist. Camph. t. d. s. Milk diet; Isolation. Tenderness developed over appendicular region. Previous history of similar pain and constiveness. Headache and shakiness almost gone, also lumbar pain. Pain over McBurney's point with rigidity. Transferred to General Hospital.

CASE 77.

Scholmaster.

Aged 25.

- P.N. Good; keen all round athlete.
- P.S. Good; no wound, no previous shock.
- S.S. Blown up 3 weeks ago; unable to carry on, was very shaky; walked to Advanced Dressing Station with help.
- Sy. Unable to sleep; bad dreams; great feeling of depression; occipital headache; appetite poor; no inclination to eat; bowels costive.
- P.S. Splendid physique and intelligence.
- T. Rest; Mist Camph. t. d. s. Milk diet; Trional Grs. X. The mental depression in this case was most persistent; headache at night with sense of pressure round head, was very troublesome; sleep was broken by "bad noises" and terrifying dreams; paraesthesia, jumpy sensation of "throbbing" in arm and shoulder. Isolation was adopted with sleep treatment as described before with exceedingly happy results. Afterwards usual gradual physical exercises, etc. Progress excellent.

CASE 78.

Plumber.

Aged 38.

- P.N. "Health good; keen athlete; nerve good.  
 P.S. Health good; nerve good; 18 months in France; wounded Sept. 1916.  
 S.S. While sitting in trench, shell came through parapet, blowing up trench; was partially buried. Head and abdomen struck with sandbag, causing acute pain. Appetite fair, bowels costive.  
 Sy. Pain over gastric region; "peculiar heavy aching headache; feeling of sickness and inclined to vomit; sleep good.  
 P.S. Fingers cold and cyanosed; "tic of eyelids".  
 T. Isolation; rest- psycho-therapeutic treatment; Lumbar puncture, good result.  
 Outdoor gardening work; usual physical drill. Fairly good recovery.

CASE 79.

Chaffeur.

Aged 28.

- P.N. Health good; nervous disposition; games - tennis.  
 P.S. Health good; "nerve had deteriorated"; in hospital 3 weeks with Neurasthenia.  
 S.S. 3 months ago at ---, while running ammunition up to Battery, bomb was dropped from Taube about 100 yards off; badly shaken; saw M.O.; was unable to control himself; found running about at night.  
 Sy. Complains of having lost control of himself. Sleep poor.  
 P.S. Nil. Pulse 72.  
 T. Isolation; Trional Grs VII. Milk diet; Improvement rapid; Usual physical exercises. Result excellent.

CASE 80.

Boot &amp; Shoe Retailer.

Aged 32.

- P.N. Health indifferent. Nerve poor, games none.  
 P.S. Health fair; Nerve deteriorated lately. 13 months in France, no wound; Gassed 2/7/17. No previous shock.  
 S.S. At ----- while in a dugout taking cover, shell burst near, knocking dugout in; buried completely. Was assisted out very dazed and stupid. Put in another part of dugout. Sent to Dressing Station, got dazed and queer.  
 Sy. Appetite good; Micturition difficult; Bowels costive; Headache; Pain lower part of back; sleep poor.  
 P.S. Nil. Pulse 78.  
 T. Ol. Recini Oz: 1; Trional Grs X. Massage (back); Headache became most intractable; analgesic drugs of no avail. Lumbar puncture, after which great improvement. Usual exercises. Progress fair.

CASE 81.

Grinder.

Aged 26.

- "
- P.N. Good; games - nil.
- P.S. Slight wound face 1916; Trench Fever 5 weeks duration; nerve poor since.
- S.S. Blown up twice; after second time unconscious till arrival at Field Ambulance.
- Sy. Nervousness and very apprehensive; general weakness; Shaking; emotional.
- P.S. Anæsthetic; grip very poor; constantly shifts his purchase of grip; Paraplegia; Pulse 130.
- T. Faradization (brush), after which was able to walk with much encouragement (3 falls). Rest; Isolation; outdoor work - gardening; slowly graduated exercises. Improvement slow and prolonged.

CASE 82.

Labourer.

Aged 26.

- "
- P.N. Good; nerve good; games - nil.
- P.S. Nerve good till lately. No previous shock.
- S.S. Shell burst in trench, was buried, sent to Field Ambulance; was there 18 days and then returned to Company. Found to be very nervous and unable to carry on; sleeping badly, sent to Hospital.
- Sy. Praecordial pain, seemingly in great distress. Appetite poor; aching limbs; sleep broken and restless.
- P.S. Fingers cold and cyanosed; "suppressed sighing"; trunk bent forwards and to the left side.
- T. Rest; Isolation; milk diet; Mist. Bromid. t.d.s. Psycho-electrical treatment, splendid result. Outdoor gardening work- graduated physical exercises and route marching. Good recovery.

CASE 83.

Storekeeper.

Aged 25.

- "
- P.N. Was nervous as a child.
- P.S. No wound; gun burst in 1915, was unconscious half an hour. Buried Aug. 1916; Gassed March 1917. Nerve failing, shaking during firing and when taking orders. Fainted 3 times, sent to wagon lines for a rest. Returned to guns but O.C. sent him to Dressing Station because of his trembling state.
- Sy. "Heavy feeling left chest". "Sensation of blackness" with vertigo, then faints. Occasionally Dyspnoea at night; Appetite poor; Paraesthesia Ears (sensation of opening). Sleep poor - broken.
- P.S. Slight inco-ordination; Tremor Hands.
- T. Mist. Camph. t.d.s. Pulse 100. Belladonn et Hyoscyami. Graduated physical exercises. Praecordial pain on deep breathing; sweating



profusely; Later - Improved; Route marching; Fainted last night at 9-0pm "after having vertigo for some hours previously; . was "shivering when he came to". Not seen by M.O. 24th. Tremor of hands.

CASE 84.

Turner.

Aged 29.

- P.N. " Good; games - football and swimming.  
 P.S. Never wounded; was buried last May but after a few days rest carried on.  
 S.S. Was making tea in the trenches near -----, shelling commenced and he remembers nothing more until he "came to" on the way to the C.C.S.  
 Sy. Vomiting complained of; pain in occipital region and back of neck; vertigo when standing; sleep broken.  
 P.S. Digital tremors; hands cold and clammy and slightly cyanosed; slight inco-ordination and slight "Rombergism"; Tic of orbicularis palpebrarum; D.A.H.  
 T. Belladonn et Hyoscyami t.d.s. Rest: vertigo and headache severe. D.A.H.symptoms increased; Tic persistent after treatment; condition gradually got worse; Transferred to General Hospital.

CASE 85.

Sign Writer.

Aged 21.

- P.N. " Always nervous; especially frightened by thunder. Nervous with horses. No games and no interest in sports.  
 P.S. 6 weeks in France.  
 S.S. Was one of a working party three days ago and was twice buried; was quite unconscious and unable to carry on.  
 Sy. Weakness;terrifying dreams; pains in back and left shoulder; Micturition frequent and causes him to get up twice nightly. Sleep broken.  
 P.S. Development, nutrition and strength all poor. Extensive acne; micturition reluctant; tremulous with astasia abasic gait. Shows no paresis in bed, but walks only after considerable persuasion. Has fall on first attempt at walking.  
 T. Mist.Camph.t.d.s. Daily exercise in walking - Faradization - improvement.Pain in back severe; dizziness; walking better but head still "dizzy". Sleep broken, Trional Grs X. Progress only fair. Transferred.

CASE 86.

Polisher.

Aged 23.

P.N. " Never had a good nerve. Games - football.  
 P.S. Health fair; Twenty two months in France.  
 In hospital 2 months with "chest" complaint.  
 S.S. While riding was blown off his horse by a shell  
 and is unable to recollect anything further.  
 Sy. Headache; giddiness; sleep poor; D.A.H.  
 P.S. Slight dilation of heart with diffuse apex beat.  
 T. Rest; Mist Gentian et Sodae t.d.s. half an hour  
 before meals. Much improved after three days  
 rest. Later graduated physical exercises;  
 complains of headache; Aspirin Grs V. Route  
 marching. Progress good.

CASE 87.

Fireman.

Aged 34.

P.N. " Had accident 2 years ago and nerve only fair  
 since.  
 P.S. Fair.  
 S.S. Shell burst and knocked him into Shell hole full  
 of water. He crawled out and went down trench  
 when another shell knocked down the parapet and  
 buried him; became unconscious and remembers  
 nothing during 24 hours after which he found  
 his voice almost gone. After "coming round" he  
 vomited a good deal.  
 Sy. Headache; pains in back; constipation.  
 P.S. Slight inco-ordination- Dyspnoea on exertion.  
 Functional Aphonia (non-organic basis).  
 T. Mist.Pot.Bromide t.d.s. Oli Ricini ozs 1.  
 Faradization and instruction in voice production;  
 later singing class; graduated physical exercises;  
 Route marching. Progress good.

CASE 88.

Hatter.

Aged 25.

P.N. " Good; No games - no interest in sport.  
 P.S. Two months in France; only three days in line.  
 S.S. 3 days ago parapet was blown in; he was knocked  
 down; stunned for a few minutes. Walked to first  
 aid post with help.  
 Sy. Dizziness; shaking; amblyopia; pain in back;  
 slight headache; sleep fair.  
 P.S. Micturition reluctant; fine tremor of "intention  
 type".  
 T. Mist.Camph. t.d.s.; Eyes examined and nothing  
 abnormal found; complains of pain in foot though  
 back is improved; micturates five times during the  
 night; gives a history of "wetting the bed in  
 childhood". Progress poor. Transferred.

CASE 89.

Labourer.

Aged 36.

- "
- P.N. Nerve very good until frightened by Panther ten years ago. "Nervous debility" last 3 years. Has been in Hospital with "heart" trouble.
- P.S. Two months in France; always nervous.
- S.S. Ten days ago was knocked down by explosion of shell ten yards away; lost control of himself and was screaming etc; fell into a stream.
- Sy. "Jumpy" at night; "bad dreams"; pain occiput and forehead; appetite poor; sleep broken.
- P.S. Getting stouter, but feels very soft.
- T. Mist. Camph. t.d.s. Trional Grs X. Later - sleep improved but complains of giddiness and general weakness; Mist Ferri et Strychnin t.d.s. Physical drill and route marching. Transferred.

CASE 90.

Electric Cable Worker. Aged 40.

- "
- P.N. Pretty good: no games.
- P.S. Not good; rarely employed on guns; 3 weeks in hospital with Lumbago which he is subject to.
- S.S. 4 days ago he was gas sentry, and had no food all day. Remembers leaving "dugout", then no more. There was no special shelling.
- Sy. Pain in back and legs; headache; hallucinations of sight at night; Bowels irregular; sleep poor.
- P.S. Development, nutrition and strength, all poor. Eyes are "fish like", pupils react slowly; knee jerks absent; right calf shows all sensory paths affected; thoracic anglesia.
- T. Trional Grs X. Lumbar puncture. Cerebro-spinal fluid showed lymphocytosis and albumen, and Wassermann positive. Transferred to General Hospital as Tabes Dorsalis.

CASE 91.

Golf Groundsman.

Aged 19.

- "
- P.N. Always shaky; No games except Golf.
- P.S. One month in France, nerve poor.
- S.S. 2 weeks ago was in a working party in water; got knocked down by shell and was unconscious 10 minutes, and then walked to Aid Post; emotional and shaky; since then cannot walk.
- Sy. Sleep poor, awakes often at night; pain in right side; stammer; bowels irregular.
- P.S. Development, nutrition and strength, fair. Coarse tremor of all limbs (Choreaiform).
- T. Trional Grs X. Daily education in walking. Later - walks well; complains of cough, sleeps bad; upset by guns; Later - somnambulism, very shaky and "pains in head". Re-educative measures for stammer, e.g., instruction and singing class, etc.

CASE 92.

Bottle Hand.

Aged 20.

- P.N. Nervous; fainting attacks from age 15. Froths at mouth; legs and hands have had to be tied. Scar shin; Thumb injury. Games - boxing.
- P.S. No wound, no previous shock. 18 months in France, nerve has deteriorated. Trembles at sound of shells.
- S.S. While making Light Railway, knocked out. Unable to carry on. "Came to" after an hour, crying and trembling.
- Sy. Pains occipital region and interscapular. Poor appetite; micturition frequent; sleep broken;
- P.S. Nil. Many pigmented scars on leg.
- T. Trional Grs VII. Massage; outdoor work - gardening. **Partial** Hypnosis for pain, successful. Physical exercises and route marching. Rapid improvement.

CASE 93.

Fireman.

Aged 24.

- P.N. Health fair; nervous disposition always. Games - cricket.
- P.S. Health fair. Nervous disposition increased. 24 months in France. No wound, no previous shock. (Measles 1 month).
- S.S. Felt nervous since January 1917; sleep only fair;
- Sy. Complains of feeling frightened, least excitement causing it. "absent minded".
- P.S. Nil. Pulse 68.
- T. Light outdoor work - gardening, after a few days; Fingers cold and cyanosed; sleep restless; shakiness and dizziness; Rest; Isolation; milk diet. Improvement very slow. Graduated physical exercises, etc. Improvement slow. Sent to Convalescent Camp.

CASE 94.

Labourer.

Aged 30.

- P.N. Health good; nerve good; Games - football, cricket.
- P.S. Health fair; in hospital 2 months with "lung trouble"? Nerve good. 14 months in France. Gunshot wound back. No previous shock.
- S.S. While in support trenches, just come off guard, shell lobbed on edge of trench, partially buried, unconscious 2 hours.
- Sy. Complains of Gastric pains; pain legs; headache; shakiness; sleep poor.
- P.S. Fingers cold and cyanosed. Tremor - outstretched hands.
- T. Rest; Mist. Camph. t.d.s., milk diet; Psycho-electrical treatment - Progress good. Continued graduated physical exercises, etc. Excellent recovery.

CASE 95.

Fruit Merchant. Aged 38.  
(Mute on admission.) Re-admission.

- P.N. Health fair; accident to head aged 35. Headaches since. Nerve poor; games none.
- P.S. Health good; headaches; nerve poor. No wound; Shell Shock, buried 3 months ago.
- S.S. While standing by near large gun attending to equipment, shell burst in vicinity. Lost speech, got unnerved. Saw M.O.; sent back to find equipment along with Sergeant, who took him a few yards and then left him. Found by Military Police and taken to Hospital.
- Sy. Headache; weakness legs; pain back; diarrhoea; sleep poor; emotional.
- P.S. Fingers cold and cyanosed; Tic facial muscles (slight).
- T. Faradization, speech restored in a few minutes. Rest; Mist. Ol. Ricini and Tinct. Opii. Isolation; Psycho-electrical treatment etc. Excellent recovery.

CASE 96.

Miner.

Aged 22.

- P.N. Health good; nerve good; games - football.
- P.S. Health fair; subject to falling out when Battalion on the march. Nerve good. 10 months in France. No wound, no previous shock.
- S.S. Since Jany. 1917 had several fainting turns; reported to M.O. Since then, when route marching and "when he got heated up", became giddy and eyes blurred. Got down on knees (conscious of doing this); sometimes lies down or leans up against some support; this feeling gradually goes off and able to carry on.
- Sy. Feeling of sickness; Giddiness; sleep fair.
- P.S. Nil.
- T. Ol. Ricini. Mist Bromide t.d.s. Light diet. Pulse 78. Patient was carefully watched, and was seen sometimes to have attacks of "giddiness", having to sit down. Out door work - light gardening. Above conditions increased, probably case of Petit Mal. Sent to General Hospital.

CASE 97.

Baker.

Aged 22.

- P.N. Health fair; "Gastric trouble", "chest trouble". Nerve good; games none.
- P.S. Health fair. P.U.O. Nerve good; 12 months in France; shrapnel wound arm. No previous shock.
- S.S. Was on a working party and while walking along road shell burst on left side; "felt queer" and fell down on road. Does not remember any more till he came to in C.C.S.
- Sy. Complains of pain behind eyes; headache; sleep poor.
- P.S. Nil, Pulse 68.
- T. Small doses of Ol. Ricini on alternate nights.

Trional Grs.VII if necessary. Light outdoor work - gardening work; Pain behind eyes became exceedingly severe and resisted all treatment. Lumbar puncture, greatly relieved this. Afterwards case progressed favourably with usual treatment.

CASE 98.

Plumber.

Aged 26.

(Mute on admission).

- P.N. Health poor. Always nervous disposition since severe attack of Diphtheria. Games - nil.
- P.S. Health poor; nerve deteriorated. No wound, no previous shock. 2 attacks Nervous Debility when in United Kingdom.
- S.S. Acting as Rifleman, stood severe shelling; shell burst end of trench near him; blown up, partially buried (20 minutes). Got up himself, carried on. Returning to unit at night, blown up again and partially buried.
- Sy. Feels frightened; Pains head; aching all over; sleep poor.
- P.S. Mute; Pulse 120.
- T. Faradization, induced to speak in a few minutes. Rest; Trional Grs X. Greatly improved. Usual treatment. Excellent recovery.

CASE 99.

Butcher.

Aged 31.

- P.N. Health good; nerve good. Games - football.
- P.S. Health fair; a "little rocky" since he returned from Malta. 5 months Malta.
- S.S. While on an aeroplane shoot, spotted by German aeroplane; sent under cover. After 2 hours came up from dugout finding everything on fire; also shell burst right against doorway; blown to bottom of dugout, was able to get up.
- Sy. Complains of Gastric Pain; shortness of breath; very nervous when aeroplanes about; sleep restless.
- P.S. Fingers cold and cyanosed; spleen enlarged; Respiration shallow; cyanosed lips; sweating.
- T. Rest; milk diet; warm application; "shortness of breath very troublesome", "severe pain chest"; Greatly upset by gunfire. Respiratory condition worse, -probably also slightly gassed when blown to bottom of dugout. Transferred to General Hospital.

CASE 100.

Carpenter.

Aged 28.

- P.N. Health good; nerve good; games - nil.
- P.S. Health fair; Influenza severe (2). In hospital 3 months. Nerve poor since thrown off horse 15 months ago. Shell shock 15 months ago.
- S.S. Since thrown off horse, headaches, easily excited by slightest noise or when under gunfire - fell on head when thrown off horse. On 10/9/17 became giddy and found himself in Medical Officer's tent with severe headache.
- Sy. Headache (occipital); worse at night; sleep poor.
- P.S. Nil. Fingers cold and cyanosed. Pulse 84.
- T. Trional Grs X. Graduated finger exercises, very

successful; outdoor work - gardening and light games which greatly improved headache. Put on "joiner work"; greatly improved. Route marching excellent recovery.

N.B. In all cases where the result is not stated, it may be taken for granted that the progress of each case was satisfactory.

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T H E S I S.

SHELL CONCUSSION, "SHELL SHOCK" AND ALLIED CONDITIONS  
RESULT OF WAR STRAIN, OR PSYCHO-NEUROSES OF THE WAR.

20/3/18.

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