

CHAPTER V

THE EXAMINATION OF THE NERVOUS SYSTEM

Simulation of Nerve Disease.—Of the various fraudulent claims lodged after accidents, those having reference to the nervous system are perhaps the most frequent and troublesome.

Symptoms characteristic of organic disease of the brain or spinal cord are sometimes counterfeited, but, on account of the greater difficulty of detection, malingerers usually prefer to simulate some functional nervous disorder. My experience compels me to insist that it is of paramount importance, though by no means easy, to decide at an early stage of the examination whether the symptoms alleged are in reality organic or functional, or feigned, and the difficulty of forming a correct opinion on this point is increased by the fact that all three varieties or any two of them may co-exist, and that the patient's statements cannot, therefore, be relied upon. The pitfalls are indeed numerous, and, as might be expected, litigants are too often given the benefit of the doubt, when the doubt represents only the line of least resistance on the part of the examiner in a subject which he finds to be extremely difficult.

B. H. had an accident. He complained of persistent pain in his back, which he kept bent when out of doors. He walked with an awkward shuffling gait, which was not characteristic of any known nerve disease. For months he stayed indoors, and was said to be confined to his bed. After he had received full pay for over a year, I was asked to see him. His doctor, who had been in regular attendance, stated that he believed B. H. was suffering from myelitis. A very few weeks of separation from home, firm treatment, and a due proportion of plain speaking, restored this man to his work with a rapidity which was inconsistent with organic or even functional disease. He was, in fact, a malingerer of the most pronounced type, and was astute enough to see that his doctor could not differentiate between feigned and real nerve disease.

For some years the accident laws have revealed to the unscrupulous the infinite possibilities of fraud, and I feel confident that, unless this fact is recognized by those who have the responsibility of working the Insurance Act, the moral currency of the working-classes will be much debased.

It must, however, be remembered that it is a mistake to conclude that a patient under examination is a malingerer, either because the essential features of his alleged injury are not apparent, or because he is making too much of some obviously functional nervous symptom. The more experience the examiner has, the better will he be able to interpret the symptoms alleged by the patient. Highly strung, neurotic people sometimes simulate unconsciously a symptom which may mislead, or, at any rate, be viewed in faulty perspective by those who have not a good knowledge of human nature, or who have had little opportunity of gaining experience in the examination of a class of cases which bristles with difficulties. It has been well said that there is only one thing more painful than missing deceit, and that is to deny the existence of disease in a case where a more careful expert, or one who is better informed, would have diagnosed it.

But it is also neither good for the patient nor just to those who ask for an independent report, to shut one's eyes to gross exaggeration of symptoms or highly coloured manifestations of alleged physical disabilities, even when, as so often happens, these exaggerations have a neurotic basis. A very fair test in most cases is to try, as it were, to take the picture from its setting, and to ask oneself: If there were no Insurance Act, or Compensation Laws, would the clinical aspect of this case be as it is? The fact that so many cases of so-called "traumatic neurasthenia" following accident, for which someone else pays, are rapidly cured when damages are awarded, or the patient removed from the sympathetic environment of his own home, suggests that many of these cases are the result of conscious or unconscious exaggeration, and some are undoubtedly cases of sheer malingering.

The success of the malingerer depends very largely upon his skill in filling in the whole picture, and, fortunately, his want of knowledge often renders him incapable of doing it.

With a view to assisting those who are not in daily contact

with these problems, the following pages upon the examination of the nervous system have been penned. Since it is in connection therewith that symptoms are most frequently feigned or exaggerated, I shall endeavour, as far as possible, to set out the different tests which indicate abnormalities, and to indicate as nearly as may be the distinctions between functional and organic nerve disease.

Pre-existing Organic Nerve Disease in Relation to Traumatism.—I would here draw the reader's attention to the extreme importance of being ever on the lookout for grave nervous disease, such as general paralysis of the insane and locomotor ataxia. A large number of that class of the community which most frequently suffers from the ordinary accidents incidental to industrial occupations have at some time in their lives had syphilis. It will be seen in Chapter XXX., from a special inquiry which I instituted, that a large proportion of apparently healthy members of the working-class community were found, as the result of the Wassermann test, to have at one time suffered from syphilis. Not infrequently the medical examination which follows even a slight accident exposes for the first time the presence of the disease when it manifests itself in the nervous system. I have seen many such cases. It is obvious that the presence of either general paralysis of the insane or locomotor ataxia predisposes to accident.

Now, nothing can be more embarrassing or unfortunate for the reputation of a medical man than to have suddenly sprung upon him irrefutable evidence that he had reported on a case of accident without having discovered that the patient was, at the time of his examination, suffering from grave nervous disease. The difficulty of these cases is that the plaintiff may quite honestly say that he noticed none of the symptoms prior to the accident, and, believing it, may stoutly maintain that the whole of the symptoms of either of these diseases are the direct result of some trifling injury.

The following case is illustrative of one of the many pitfalls which at every turn lie in the way of those in medico-legal practice :

B. I. had been employed as a carman, and, being found by his employer to be too weak for his ordinary work, was, without having

been submitted to medical examination, given work which involved his presence in a busy thoroughfare. In the course of time he met with an injury to his head ; the wound was dressed at one of the large Metropolitan hospitals. The symptoms, although not diagnosed by the medical officer there, evidently aroused his suspicions, for questions were admittedly put to the patient ; they were not, however, followed up by an efficient physical examination at the time. A few days later the man was sent to me with a view to his being certified as fit or unfit to resume duty. He was then slow and apathetic, his speech was slurring, his pupils irregular, and his knee-jerks were absent. He was, in fact, a typical general paralytic ; indeed, within a few weeks he found his way to the insane ward of a Poor Law infirmary, and, judging from his condition when re-examined, there was no doubt he would end his days under institutional treatment.

If this man had resumed work without being subjected to a complete medical examination, the probability is that he would have gone on until his condition necessitated his removal to an asylum, and it might have been difficult then to say definitely that the disease was of such long standing that it must have existed prior to the head injury.

Temporary loss of memory is a condition which is very common in the early stages of general paralysis of the insane, and if such a history is elicited it is of great importance, for it will greatly assist in fixing a date at which it could be definitely affirmed that the disease was in fact present.

These cases are difficult on two accounts: first, there is the difficulty of recognizing the double condition, and, second, of proving that the accident does not cause the nervous symptoms, but only follows them. Claimants often try to make the employer liable for a graver and pre-existing disease, failing which the plea is set up that, admitting the pre-existence of the serious nerve disease, the accident aggravated it, and by precipitating the fatal issue rendered the employer liable.

These cases are therefore of the utmost importance, and the following illustration may be helpful :

B. J.—Not very long ago I was asked to examine a man who had injured his right foot whilst at work. He had a soundly healed scar on his instep. The accident had evidently been a trivial one, and he had obviously wholly recovered therefrom. But the man's manner struck me as being foolish, and upon examining his mental condition it was not difficult to discover that he had much deteriorated. Upon further examination he was found to be suffering from general paralysis of the insane, a condition which is very slow and insidious in its onset.

Judging by the stage which the disease had reached, he must have been ill for from six to twelve months. His wife positively asserted that he had not had a single symptom until a fortnight *after* the accident. The case was very important from the insurance point of view, for it was quite evident that this man would never work again; indeed, he could scarcely live another two years, and his widow would, if her views were admitted, on his death be entitled to a sum of £300, less the weekly payments made during her husband's lifetime. With the consent of the insurance company, I interviewed the foreman of the works in which the man was engaged at the time of the accident, who informed me that he had not found anything wrong with the claimant, who was a perfectly intelligent, able-bodied, good workman, and that he never had any fault to find with him. I suspected that the foreman appreciated the position, and was not telling the truth. I therefore interviewed the master, who had a very different tale to tell. He had noticed that for some time the man was dreamy, slow, and strange in his manner; indeed he was so strange that he was often suspected of being under the influence of alcohol. Further, the master informed me that prior to his commencing work with him, three months previously, he had, in fact, been dismissed from his former situation for incapacity, and that he owed his present position to the foreman whom I had just interviewed. Syphilis being the usual cause of general paralysis of the insane, I had a Wassermann blood test made, with the result that the presence of the disease was established. This, then, was the last link in the chain, and I advised the insurance company to stop payment, as the injured foot had recovered. This was done, and the claim was not pursued.

The course to be adopted in that case was plain; but with somewhat similar conditions different considerations may lead to another conclusion. The following is an example:

B. K., whilst engaged in mending the permanent way, was knocked down by a tramcar. He was injured somewhat, but not very severely. Recovery from the immediate shock of the accident was at once followed by acute maniacal symptoms. I saw him in an asylum within a few weeks, a typical general paralytic, with less than two years to live. He had undoubtedly had syphilis. I advised that it was a case of permanent incapacity due to the accident, since it is useless to attempt to resist such a claim in a court of law.

I now purpose to detail the various steps to be taken in making a thorough examination of the nervous system, amplifying the short synopsis already given (p. 71).

The Cranial Nerves—*The Olfactory Nerve*.—This only requires to be examined in special circumstances, such as suspected fracture of the base of the skull, or when the patient alleges

that he has lost the sense of smell. The test may be made by such substances as oil of cloves, camphor, asafetida, or musk. Pungent vapours, like ammonia and acetic acid, stimulate the nerves of *ordinary* sensation in the olfactory mucous membrane; hence the perception of these is no proof of the existence of the olfactory sense.

In the last resort it must be admitted that, if a person affirms he has lost the sense of smell, it would be difficult or impossible to prove him inaccurate. Probably a malingerer would, when tested, deny that he could "smell" the vapour of ammonia; for the reason just given, this would be a suspicious circumstance.

The Optic Nerve—Visual Acuity.—A thorough examination of the efficiency of the optic nerve and other parts of the visual apparatus demands some special knowledge and special methods. When the person concerned professes symptoms of nervous disease, or alleges that his sight in one or both eyes has failed, or that he is blind, or that he has double vision, a complete investigation of the visual sense is imperative. The examiner must then be in a position to test the visual acuity, to estimate any error of refraction that may be present, to measure the power of accommodation, to examine the condition of the refractive media and of the optic disc and retina, and to apply the appropriate means for distinguishing simulated from true diplopia, and pretended from real blindness. In circumstances other than the above, however, it will be sufficient to test the vision by types in the usual fashion.

The visual acuity should be tested by Snellen's types. These should be kept in the consulting-room, but if the patient has to be visited at his own house appropriate folding types may be carried.

When 6 metres (which is roughly 20 feet) cannot be obtained, half that distance will be sufficient, provided the test type is put 10 feet from a mirror, and the patient reads the letters from the mirror. In looking at letters in this way, the mirror reverses the type, and a specially reversed type is, therefore, prepared by Snellen for use with a mirror.

If each eye tested separately can read $\frac{6}{8}$ in the distant types, and the smallest print on the near chart, the vision may be

regarded as normal. But failure to do either or both of these may be due to causes other than injury or disease. The failure for distance may be due to an error in refraction, and in a person who has passed forty-five years of age there is almost invariably some failure of accommodative power (presbyopia), and consequent difficulty in reading small type; and both near and distant vision may be marred by corneal nebulae from former ulceration, or by opacities in the lens or vitreous. The moral is that, while a satisfactory response to the general tests above-mentioned may be taken as proof that the sense of sight certainly has not suffered injury, an unsatisfactory response does not prove that the eye or optic nerve has certainly been damaged. Before such a proposition can be either affirmed or denied, ophthalmoscopic and other methods of investigation referred to above must be put into operation.

Besides the examination with the test-types, careful attention in every case should be paid to the condition of the pupils, and to the efficiency of the muscles of the eyeballs.

I make it a rule, in the preliminary examination of a patient, to take note of the size and mobility of the pupils. A slight inequality, an irregularity, more especially a very contracted pupil, may put one on one's guard, and cause a careful search for nervous disease which might otherwise be missed.

Equality of the Pupils.—Mere inequality in size *per se* is of little importance; indeed, some persons have congenitally unequal pupils, a condition which is often associated with difference in colour of the irides. Myopes have chronically dilated pupils, and hypermetropes as a rule have their pupils contracted. It must not be forgotten that a pupil may, purposely or by accident, be dilated by belladonna or one of its pharmacological allies, or may be contracted by eserine, etc. In a pupil thus dilated there would be no response to the stimulus of light, and there would be paralysis also of accommodation (the ciliary muscle)—that is, the person would not be able to read small print except by the aid of a strong convex lens (+4 D). From this it follows that when the pupil is dilated and irresponsive to light, while at the same time the accommodation remains unaffected, the condition cannot be due to belladonna, and hence the probability of disease or injury comes prominently into view. It may be accepted that if the

pupils are definitely unequal, apart from the conditions above mentioned, the condition is pathological. Disease or injury of the third cranial (oculo-motor) nerve dilates the corresponding pupil, and if one-sided, as is often the case, it renders the pupils unequal.

Inequality of the pupils is sometimes due to aneurismal or other tumours pressing on the cervical sympathetic nerves.

Remember that old adhesions from iritis may fix one or both pupils. This may affect the whole circumference of the pupil, or may be of more limited distribution. If there is any doubt on this point, a drop of homatropine or cocaine solution should be applied to the eye, when, as the pupil dilates, the restricting and distorting adhesions will become evident. Unless there is some considerable departure from the ordinary standard, it is impossible to say that either contraction or dilatation is, of itself, evidence of disease, since the size of the pupil varies in different individuals; and all healthy pupils vary according to the amount of light, and also from other causes. If the difference in the size of the pupils is accompanied by failure of the light response, the condition is certainly pathological.

One pupil is often smaller than its fellow in *tabes dorsalis* and in general paralysis of the insane, and this diminution in size may be accompanied by a *loss of the light reflex with retention of pupillary contraction in accommodation*.

Response to the Stimulus of Light.—In consequence of the arrangement of the nerve tracts, light falling on either retina will, under normal conditions, cause contraction of *both* pupils. It is very important, in testing for the reaction for light, to remember, first, that each eye should be examined separately; and, secondly, that the pupil contracts normally, not only for light, but in accommodation—*i.e.*, when looking at a near object. The patient must therefore be made to fix his gaze upon some *distant* object, and not upon one close at hand.

Care must be taken that the patient does not shift his gaze from the distant object to a near one, otherwise the contraction in accommodation which would follow such a change may be mistaken for the contraction for light.

Having told the patient to gaze at some distant object, the examiner with his right hand covers the patient's left eye,

and then shades the right eye with his left hand. He should wait for a few seconds to give the pupil time to dilate, and then remove his left palm, when the pupil, if the conditions are normal, will contract under the stimulus of light. By a similar manœuvre the left eye is tested. If, *while the patient is looking at a distant object*, the pupil contracts when light falls on the eye, the reflex arc, composed of the optic nerve, mid-brain centre in the corpora quadrigemina, and the third cranial nerve, is unbroken. A lesion in any part of this path will mean loss of the corresponding light reflex.

In tabes dorsalis and general paralysis of the insane, there is often a loss of the light reflex, with retention of pupillary contraction in accommodation. This association constitutes what is known as the Argyll-Robertson pupil; it is a diagnostic sign of great significance, even in the absence of other signs of these diseases, and means in all probability the presence of cerebral syphilis.

It is important to see, when an artificial light is used, that it is placed to the side where it will be out of the line of fixation. If the light is near and is looked at, the eye will accommodate, and there will be both the accommodation and the light reflexes.

Contraction in Accommodation.—As already explained, this takes place when the person's gaze is removed from some distant object, and is fixed on, say, the examiner's fingers held a few inches in front of his eyes. In this effort the eyeballs are naturally turned inwards, and hence sometimes the accompanying contraction of the pupil is termed "contraction in convergence."

The test should not be applied under the influence of a very bright light, for this may produce such a degree of pupillary contraction that further diminution on accommodation may be overlooked. If the patient, for instance, were asked to look at the sun and then at the examiner's finger near his face, the contraction from the light would be so great that no further contraction would take place on accommodation. The patient's back should be turned to the light, and he should be asked to look at some distant object in the room, and then quickly to the examiner's finger near his nose.

Paralysis of Accommodation.—The ciliary muscle by its contraction in the act of accommodation leads to increased con-

vexity of the crystalline lens. This is necessary to focus clearly near objects; ciliary paralysis will therefore cause inability to read small type without the aid of a convex lens. Such a paralysis may be due to the influence of poisons (*bella-donna*, for example) on the third nerve, or to disease or injury of the nerve; it is usually associated with a dilated and immobile pupil (third nerve paralysis).

Ocular Movements.—In testing these, all that is necessary is that the examiner should place his index finger a few inches to the right of the patient's face at the level of the eyeballs, then similarly to the left, above the level of the eyeballs, and afterwards below this level, telling the patient in each position to look steadily at the point of the finger. The gaze ought to be continued for a few moments in each direction, because with a slight degree of paresis the muscles, though able to effect a full measure of movement, may not be able to sustain a prolonged contraction. If this is not practised, the slighter defects of muscular action may be overlooked. If the patient does not complain of diplopia, *then it may be concluded that the third, fourth, and sixth nerves are normal.* If he does complain of double vision, a more complete examination is necessary, for a defect in the ocular movements insufficient to attract attention by the above method of examination may yet cause diplopia, and may require special methods of testing such as coloured glasses or the Maddox rod. Unless the patient alleges double vision, the above-described method is quite sufficient.

A patient suffering from paralysis of the *superior oblique muscle, which is supplied by the fourth nerve*, will have diplopia when looking at a finger placed a couple of feet below and outwards from the eye tested. In internal squint due to paralysis of the *external rectus*, the absence of movement in the direction of the action of the paralyzed muscle must not be confused with concomitant convergent squint. The *external rectus* is supplied by the *sixth nerve*, which has a long intracranial course, and is therefore likely to be affected by a general increase of intracranial pressure or by basal meningitis, syphilitic or tuberculous in origin. An eye which is sightless may turn outwards because it is not used; this should not be mistaken for paralysis of the *internal rectus*.

Field of Vision.—To investigate this fully, it is necessary to employ a perimeter. But in the majority of cases, and when no visual defect is alleged, the field of vision can roughly be tested by the following method: The patient is directed to cover his left eye, while at the same time the examiner covers his own right eye, as he stands facing the patient, and about a yard away from him. Then the examiner, with his left arm outstretched, moves his fingers, and proceeds gradually to draw the arm towards himself, taking care at the same time that the patient continues to look straight to the front. If the patient sees the moving fingers at the same time as the examiner, it may be concluded that the visual field is normal to the outer side. The test should then be applied from other directions, the inner side, above, and below. The left eye is tested in a similar fashion.

It should be remembered that central vision may be quite normal when tested by the visual types, but yet the visual field may be contracted from commencing optic atrophy. On the other hand, the field may be of full extent while yet there may be an area of defective vision (scotoma) in its centre. This is seen in tobacco and other toxic amblyopias, where often, though white can be appreciated in central vision, there is a scotoma for red in the centre of the field. In hysterical paralysis there may be contraction of the visual field of one eye, or even of both eyes; and colour vision also may be disturbed.

In complete paralysis of the third nerve there is—Drooping of the upper lid, eyeball turned downwards and outward, pupil dilated and fixed, and loss of the power to read small print (paralysis of accommodation).

One or more of these conditions may exist even if only part of the nerve be involved.

Nystagmus.—This may be obvious when the eyes are at rest, but it is frequently elicited only when the globes are moved into an extreme position. Hence, when testing the ocular movements, as already described, the observer should at the same time watch for the presence or absence of nystagmus.

An irregular jerky movement is not infrequently seen when the eyeball is brought to the extreme lateral position, and must not be mistaken for the purely rhythmical systematic movement of nystagmus. Indeed, this jerky and irregular

movement is not by any means necessarily abnormal. Jerking is sometimes seen in extreme degrees of hypermetropia when fixation cannot be kept up, especially if the patient is dull and stupid.

When nystagmus is very fine it may escape observation until the fundus oculi is examined by the ophthalmoscope (direct method). Nystagmus may result from defective vision, especially when this develops in early life—that is, before a habit of fixation in binocular vision has been well established. It is found in such nervous diseases as disseminated sclerosis, syringomyelia, etc., and has received attention of late from its occurrence in workers in mines.

Examination of Fundus Oculi.—An electric ophthalmoscope renders the direct examination of the fundus an exceedingly simple operation. The direct method is at all times much easier than the indirect, and with the electric ophthalmoscope no one need neglect this important item of a systematic examination. There may be difficulty with high myopes, and opacities in the cornea or lens may make a view of the fundus impossible, in which case the indirect method is superior. A solution of 1 per cent. of homatropine and 2 per cent. of cocaine may be instilled if it is necessary to dilate the pupil;* but so far as possible this should be avoided, as it causes the patient annoyance, and if there is any defect of sight he is apt to attribute it, or the aggravation of it, to the “drops.” Atropine should never be used for ophthalmoscopic examination; the paralysis of the iris and ciliary muscle which it produces continues for several days, and in patients over forty years of age its use carries the risk of inducing glaucoma.

The patient is now asked to look down, and the tension of each eyeball is taken. It is a work of a moment, and if done systematically one gets accustomed to the normal tension, and occasionally a valuable discovery is made.

After the fundus has been thoroughly examined, it is a good plan, especially if there is any complaint of defective sight, to slip a + 20 D lens into the eyehole of the ophthalmoscope. In this way the front of the cornea can be focussed and any nebulae or other opacities noted. The remains of vessels

* Gelatine discs containing these drugs can be obtained from most pharmacists.

indicating a former interstitial keratitis can be discovered by this means. Then turn the disc carrying the minus lenses so as to place - 1.0 in the eyehole (the + 20 D still remaining in position), and continue the movement until - 20 D is reached. In this fashion the successive planes of the eyeball are examined in series from before backwards, and any abnormalities in the lens and vitreous may be detected.

If no abnormality up to this point is discovered, then it is clear that the second, third, fourth (superior oblique), and sixth nerves are normal.

Facial Nerves.—The patient is now directed to perform movements which put the various facial muscles into operation. It is a good plan for the examiner to show these movements in his own person as well as to give the word of command. The following are suitable directions:

He is asked to wrinkle the brow or raise the eyebrows (*frontalis muscle*); frown (*corrugator supercilii*); shut the eyes tightly and screw them up whilst an attempt is made by the examiner forcibly to open them (*orbicularis palpebrarum*); whistle (*orbicularis oris*); smile or grin (*lower facial muscles*).

Failure more or less complete on one side will indicate paresis on that side. In an old-standing facial palsy, there may be shrinking of the paralyzed muscles, and so the face may be drawn towards the paralyzed side.

The fine fibrillar facial tremor which it is so important to recognize if an early diagnosis of general paralysis of the insane is to be made, can be best detected when the muscles are put on the stretch, as in the act of grinning or when the mouth is half open.

If he can perform all the above movements, the various branches of the seventh nerve are intact.

He is now asked to clench his teeth whilst the examiner places his own index finger over the ramus of the lower jaw on each side to feel the contraction of the *masseter muscle*. (*Motor division of the fifth nerve.*)

He is now asked to open his mouth widely and say "Ah," and the soft palate is inspected. Observation is made as to whether it deviates to one side. The palate is supplied by the *pharyngeal branch of the pneumogastric or vagus*. (*Tenth nerve.*) Bulbar paralysis when unilateral causes deviation.

He is now asked to put out his tongue, first in the middle line, next to the right, and then to the left. If these movements are satisfactorily performed, there is no paralysis of the *muscles of the tongue*. Deviation denotes paresis on the side to which the tongue deviates. (*Hypoglossal, twelfth nerve.*)

The tongue may be atrophied generally, or on one side only. There may be difficulty in protruding it. This occurs in bulbar paralysis.

After the tongue is taken back into the mouth whilst the mouth is open, deviation of the lower jaw to one side or the other is to be looked for. This occurs when the pterygoids of the same side are weakened. (*Branch of motor division of fifth nerve.*)

Before leaving the oral cavity the teeth are inspected. In a large number of cases pyorrhœa alveolaris will be found.

Sensation.—When loss of sensation is unassociated with a motor paralysis, it is not serious, though often very troublesome to deal with.

To complete the examination, the patient should be directed to close his eyes, and to say "Yes" when he feels he is touched, while the examiner lightly strokes first one side of the face and then the other. (*This shows whether the sensory branches of the fifth nerve are normal.*)

Auditory Nerves.—The examiner now closes each meatus in turn by pressing on the tragus with his thumb, and the patient is asked to say at what distance he hears the ticking of a watch, or the patient is asked to put the palm of his hand over first his right ear and then the left, and to repeat numerals as the examiner speaks these in an ordinary tone of voice. But if deafness is alleged, a more detailed and special examination of the auditory apparatus must be made. (*Eighth nerve.*)

Spinal Accessory (Eleventh Nerve).—The spinal accessory or eleventh nerve supplies the *sterno-mastoid and upper fibres of the trapezius*. To test the *sterno-mastoid*, the patient is directed to turn his head to the right against resistance, while the left *sterno-mastoid* is palpated. The method is then applied to the right *sterno-mastoid*. To test the upper part of the *trapezius*, he is asked to shrug his shoulders against resistance.

Nerves of Upper and Lower Extremities—Muscular Wasting.

—Chronic nerve disease is generally associated with wasting, more especially when the lesion affects the lower motor neurons. In the hand this is evidenced in the wasting of the *thenar* and *hypothenar eminences*, and of the *interossei*; the latter is most readily seen in the *abductor indicis*. Atrophy is usually the result of injury to the *nerves* or of *disease of the cord*, and is met with in progressive muscular atrophy and syringomyelia. The most satisfactory way to estimate wasting is to measure the circumference of each limb. No circumferential comparisons can be made satisfactorily unless the necessary measurements are taken exactly at the corresponding levels of the two limbs. These should therefore first be measured off from fixed bony joints, and marked with a blue pencil. The tape is thus made to encircle the limb at what are known to be corresponding points.

Tremor.—Patients at examinations following accidents frequently suffer from tremor. Fine fibrillary tremor in isolated muscle groups cannot be simulated. Simulated tremors are apt to come on during the course of a prolonged examination. Tremor which is accompanied by increased rapidity of breathing or rise in the pulse-rate may be due merely to nervousness.

Upper Extremities.—The patient is asked to separate widely the fingers of both hands, with the arms outstretched in front, and if there is any tremor it is easily observed. Very fine tremor in the hands can sometimes be ascertained, even when it escapes the eye, by palpating the tips of the fingers with the palm of the examiner's hand.

Lower Extremities.—Some patients appear to have the power of inducing voluntary tremor of some of the large muscles of the lower extremity, but this as a rule passes off when no attention is paid to it. Persistent tremor should be looked for whilst the tendon reflexes are being examined.

Occasionally transient quivering of the quadriceps or glutei of the lower limb, or the biceps or deltoid of the upper, may be observed. It affects only a few of the muscle bundles, and is of no importance. It is known as myokemia, or live flesh.

Well-known conditions in which tremors are met with are—

1. *General Paralysis.*—The fine, regular, vibratory tremor of the general paralytic often first affects the tongue, lips, and

face, and can be most easily elicited in the latter by asking the patient to *half open the mouth*.

2. *Metallic Tremor*.—Mercury, lead, and zinc, when introduced into the system, not infrequently produce tremor. But it should be remembered that the movement is small, rhythmical, and only apparent when the muscles are in action.

3. *Toxic Conditions*.—Tremor is also found in malaria, influenza, diabetes, trypanosomiasis, and generally in pyrexial conditions.

4. *Hysteria*.—The tremor may be small and regular or large and choreiform.

5. *Alcoholic Tremor* is chiefly noticeable in the hands; it is small, rhythmical, and dependent upon muscular action.

6. *Nervous Tremor* is often seen in neurasthenia or in debilitating conditions generally.

7. *Paralysis Agitans* is a disease which is characterized by an involuntary shaking of the whole body, sometimes starting in a single limb and extending all over the body. A peculiar mask-like expression of settled sadness is also characteristic of the disease. Further, a poking forward of the head and shoulders is almost invariably found in this disease. Head-nodding, and pill-rolling movements of the thumb and forefinger, are characteristic.

8. *Disseminated Sclerosis*.—The tremor is very rhythmical, and rather larger than in paralysis agitans, and occurs only when the muscles are in action, stopping when the limb is at rest. The fact that it is intentional (*i.e.*, caused when any voluntary muscular action is attempted to be performed) differentiates it from the tremor of paralysis agitans.

9. Tumours of the brain connected with the motor tract are associated with tremor.

10. Graves's disease is generally connected with fibrillary tremor.

11. Senility.

The danger of relying upon only one objective sign, such as tremor, is well illustrated by the following case:

An out-patient at a nerve hospital, under the care of Dr. Feiling, showed symptoms of spinal syphilis. Under appropriate treatment he recovered, except for a slight tremor of both hands, and was discharged as cured. It subsequently transpired that he was certified by two medical men as suffering from lead-poisoning.

Ataxia—Upper Extremities.—Ataxia is discovered by asking the patient to put both hands to his sides, and then, with his eyes shut, to touch the tip of his nose with his right hand, and then with his left.

Lower Extremities.—He is directed to walk heel-and-toe fashion. Standing on one foot, he is asked to touch the patella with the heel of the other limb; this is done first with the right and then with the left foot.

Romberg's Test.—The patient is asked to stand with heels and toes together whilst his eyes are shut. In order to minimize the possibility of deception when this test is applied, it is a good plan, after a patient has brought his feet together and closed his eyes, to insist repeatedly upon his shutting his eyes *very tightly*. This instruction should be repeated again and again with some emphasis, for when the patient's attention is thus directed from the test no attempt at simulation of swaying is likely to be made.

Another way of distracting the patient's attention is to apply at the same time some other test; for example, after the examinee has put his feet together and closed his eyes, he is asked to say whether he feels certain pin-pricks in different parts of his body. It will be found that many people who sway, or attempt to sway, will maintain their equilibrium when their minds are otherwise occupied, as indicated above.

There need be no fear that an injustice will be done under these conditions, because the tendency to sway and fall due to organic disease cannot be overcome by this procedure. Indeed, the length of time taken in testing for loss of sensibility gives abundant opportunity for swaying, etc., if the case is genuine.

Do not forget that inability to stand steadily with the eyes closed and feet close together may, in a patient who has been seriously ill, be due merely to muscular weakness.

Tendon-Jerks — Upper Extremities: (a) *Triceps-Jerk.*—Keep the arm in a horizontal position with the elbow flexed at a right angle; feel for the triceps tendon and tap it smartly. There ought to be a sharp extensor movement of the forearm.

(b) *Biceps-Jerk.*—Tap the biceps tendon. The biceps contracts.

(c) *The Supinator*.—It will be remembered that the supinator longus arises from the external supracondylar ridge of the humerus, and is inserted into the base of the styloid process of the radius. It is a flexor of the forearm when flexion has once commenced.

The patient's hand should be supported halfway between supination and pronation, with the elbow loosely bent at a right angle, and the supinator longus tapped close above the process of the radius. The supinator longus contracts.

This muscle escapes in lead-poisoning, but not in traumatism of the musculo-spiral nerve, by which it is supplied.

(d) *Wrist-Jerk*.—Tap the upper part of the radius. The wrist and fingers extend.

Lower Extremities : (a) *Knee-Jerk*.—The usual method, as is well known, of eliciting the knee-jerks is by getting the patient to cross his knees whilst sitting on a chair. The knee-jerk can, however, be obtained with more certainty if the quadriceps extensor femoris is just sufficiently stretched to give it the necessary tonus and the calf muscles kept absolutely flaccid. Many patients find it absolutely impossible to produce this relaxation at will, and the best results, certainly the most uniform, can be obtained when the patient is lying on a couch, or in bed, with the hips slightly flexed and the knees at an angle of about 150 degrees. The knees should be separated, but not too widely, and the heels should rest on the couch. A sharp tap over the ligamentum patellæ with the hand, or the binding of a stiff book, or a wooden stethoscope, will certainly elicit the knee-jerk if present.

If the knee-jerk is present, the thigh muscles will be felt to contract under the hand if placed upon it. One often sees the knee-jerks tested when the patient is dressed, and this is a perfectly legitimate procedure; but it is never safe to say that the knee-jerk is absent until it has been tested with the leg bare.

It is a very common experience, especially with nervous people, to find that when asked to cross their knees it is extremely difficult for them to let the muscles of the lower extremities relax, and not infrequently the more they try the less they succeed, with the result that the muscles are all so rigid that although a healthy mechanism is undoubtedly

present the knee-jerk cannot be elicited therefrom. Much assistance is often obtained by asking the patient not to look at his knee, but at the ceiling, or to lock the fingers of the hands firmly together and pull them hard apart. This method, which is called "Jendrassik's reinforcement," is sometimes successful.

The reason why reinforcement helps to elicit a knee-jerk is explained by the fact that the reflex tonus of the quadriceps extensor femoris muscle is controlled by the reflex arc in the lumbar region of the spinal cord, and some of the normal inhibitory influence which is being constantly exerted on the spinal cord by the brain is, by the suggested method of reinforcement, diverted from the lumbar reflex arc to the cervical region of the cord, and the removal of some inhibition from the lumbar centres increases the reflex response of the quadriceps extensor femoris.

Another method is to make the patient press the point of his toe against the observer's hand, his heel being off the ground and the knee flexed. If a knee-jerk is obtainable at all, it will certainly be called forth under these conditions.

It would not be correct to say that the absence of knee-jerks is absolutely and invariably pathological, but it is so with few exceptions. Do not forget that the absence of a knee-jerk may be, not the early symptom of locomotor ataxia, but of a peripheral neuritis due to alcohol.

Exaggeration of the knee-jerk by itself may be of little importance, as it is met with in most debilitated persons and in functional disorders, and merely indicates that the control of the higher centres is more or less diminished. If, however, it is associated with extensor reflex of the great toe and absence of the abdominal reflexes, it points to organic change in the pyramidal tract or in the motor cells of the brain.

The knee-jerk is very easily simulated and exaggerated, but if this is attempted a shammer can be induced to give himself away by asking him to shut his eyes, or distracting his attention in some way or other, and then tapping, not over the tendon, but at the side of it. In cases in which the apparent response is not genuine, there is a momentary pause between the fall of the hammer and the resulting contraction. When deception is suspected, it can be easily proved by blindfolding

the patient and striking the ligamentum patella at irregular intervals, when it will be found that the momentary interval is markedly longer.

In some persons the knee-jerks are naturally very brisk, but the condition is always bilateral. When the knee-jerk is being intentionally restrained, the flexor muscles of the leg will be found contracted. My experience is that, when this is pointed out to a patient, they are usually at once relaxed; indeed, as a rule it is more an evidence of nervousness than fraud, and in either case can be overcome by Jendrassik's mode of reinforcement.

(b) *Patella Clonus*.—This is elicited by displacing the patella downwards by sustained pressure on its upper border. The clonus consists of a rhythmical series of muscular contractions, the result of stretching the muscles.

(c) *Ankle-Jerk*.—To obtain this the patient should be instructed to kneel on a chair with his feet at right angles to his legs. The tendo Achillis is then tapped. This reflex is next in importance to the knee-jerk, and its absence in tabes dorsalis sometimes precedes that of the knee-jerk, this of course being dependent upon which nerve roots are first attacked.

Carhill examined some 1,052 sailors, all apparently healthy. In fifteen cases one or other or both Achilles jerks were absent; in seven of these cases there was sufficient evidence to justify a provisional diagnosis of tabes dorsalis.

Lesions of either the motor or sensory side may interfere with the integrity of the arc, and thus either diminish or abolish the ankle-jerk.

(d) *Ankle Clonus*.—The correct way to elicit ankle clonus is to bend the knee first, and then suddenly dorsiflex the ankle by pressure on the sole of the foot. Not every jerky movement of the foot produced by flexing it on the leg is necessarily true clonus. If jerky movements commence before the foot is at a right angle with the leg, and cease when it is more strongly flexed, then the condition is known as "false ankle clonus." Ankle clonus is sometimes present during excitement or when a limb is tired.

A very definite and sustained ankle clonus is highly suggestive of organic nerve disease; in functional nerve disease some irregular, ill-sustained jerking is not uncommon, and occa-

sionally simulates closely true ankle clonus. There is no absolute way of distinguishing functional from organic ankle clonus. Experience and the absence of other physical signs count for much.

Where there is increased knee-jerk and ankle clonus, Babinski's sign should be present, and contraction of the plantar muscles of the foot absent. While the absence of Babinski's sign is not very significant, its occurrence is of great value in the case of a doubtful ankle clonus or increased knee-jerk.

(e) *Babinski's Sign*.—Babinski's sign consists in an extension, instead of flexion, of the great toe when the sole of the foot is stimulated—that is to say, the great toe bends upwards towards the instep instead of downwards towards the sole of the foot.

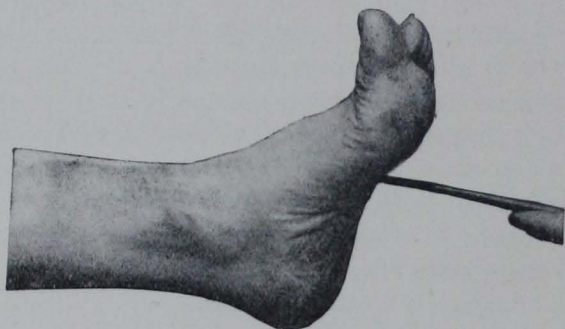


FIG. 3.—BABINSKI'S SIGN (EXTENSOR PLANTAR REFLEX).

No clinical examination of the nervous system is complete without an investigation of the plantar response. This is a much more delicate test than ankle clonus, and is of special value when, as sometimes happens, a false ankle clonus is obtained. It is an important reflex, for it may be said with certainty that, if definitely present in the adult, there must be an organic lesion in the pyramidal tract.

The patient should lie on a comfortable couch, with his feet rotated outwards, so that they are supported on the couch. The ankle should be grasped to prevent movement of the whole foot, and the sole of the foot should be stroked from the heel forwards. It is essential that the stimulus should be applied, not only in the middle of the sole, but forwards to

the roots of the toes. Indeed, when it cannot be otherwise elicited, it may be obtained by striking across the balls of the toes, the outer margin of the sole of the foot, or when the skin of the heel just below the external malleolus is stimulated. Attention should be directed solely to the great toe; the movements of the other toes may be ignored. Normally, under these circumstances, the great toe should be flexed, but if Babinski's sign is positive the toe will be definitely turned up. If Babinski's sign is negative, it by no means necessarily follows that no organic disease is present.

On the other hand, it should not be forgotten that occasionally an extensor response is found which is but the echo of an early lesion in the pyramidal tract, and is only the remnant of a now forgotten motor disturbance from which recovery has long since taken place. Details of a case illustrating this point in a lad of sixteen, who had had infantile paralysis, will be found in an article by Dr. C. O. Hawthorne, written with his usual clearness, in the *Medical Press and Circular* of August 11, 1915. The disability may have entirely disappeared, and Babinski's sign be stumbled upon, as it were, in the course of a medico-legal examination.

This sign indicates a lesion anywhere in the pyramidal tract from its commencement at the cerebral motor cortex down to its termination at the lower part of the lateral column of the cord. It is obvious, therefore, that pressure from a hæmorrhage, a tumour, thrombosis, embolism, or from traumatism, may produce this condition. It is also a well-known sign in disseminated sclerosis, resulting, no doubt, from the pressure of the fibrous tissue as it contracts. The condition is also found in the peroneal type of muscular atrophy.

The value of this sign is that it is practically pathognomonic of disease of the pyramidal tract. The condition, when present, is always associated with organic nerve disease, and is neither functional nor hysterical in its origin. If a positive Babinski's sign has been found in a functional disorder, it must nevertheless be so rare as not to affect the general conclusion.

It will not be forgotten that infants under two years of age, and children up to fifteen whilst asleep, normally have an extensor reflex of the great toe; that it occurs after an epileptic fit, after an administration of strychnine or hyoscin, and is

found in some forms of unconsciousness. These conditions, however, need not trouble us, as they can with great ease be eliminated in a medico-legal examination.

It is a curious fact that, if the foot be cold or damp, the more delicate reflexes are not obtained readily; to obviate any difficulty arising from this cause, it is well to instruct the patient to warm his feet at the fire just before applying the test.

Babinski's sign is sometimes one of great importance in prognosis when taken in conjunction with the existence or absence of optic atrophy. For instance, in locomotor ataxia Babinski's sign is absent, and seriously progressive optic atrophy may commence at a very early period. In disseminated sclerosis Babinski's sign is present, and so also is optic atrophy; in the latter disease, however, the optic atrophy is very slow, and rarely ends in blindness.

Sensation—Anæsthesia and Analgesia.—The difference between anæsthesia and analgesia is that, whilst the former indicates a total or partial insensibility, particularly to *touch*, the latter indicates an insensibility to, or an absence of, *pain*.

Anæsthesia.—Sensation is tested in the limbs by drawing the palms of the hands slowly down the surface of the skin at the back and front of the arms, thighs, and legs, respectively, whilst the patient's eyes are shut. He is asked to say if he feels the light touch of the hand; this, of course, only refers to superficial tactile sensation. If, as so frequently happens, the patient denies all sensation, the test must be subsequently carefully performed by passing cotton-wool over the surface and directing him to say "Yes" when he feels it. If it is suspected that loss of sensation in the leg is being fraudulently alleged, the patient is blindfolded, and both legs are tested by pin-pricks. He is asked to say definitely and at once "Yes" each time he feels the pricks, and "No" when he does not. Occasionally, but by no means always, an amusing result is obtained, the patient correctly saying "Yes" when pricked in the sound leg, and "No" when the leg alleged to be anæsthetic is pricked.

In using this test, it is well not to prick the legs alternately, but to vary the sequence of the pricks, for it has been alleged,

after a successful application of this device, that the patient, assuming that each leg was to be touched alternately, gave the correct answer; but a satisfactory explanation cannot be forthcoming of why the answer "No" was ever given, seeing that if there was no sensation no answer at all should have been given, and evidence of fraud is thus obtained.

A good method of exposing pretended insensibility to pain is to bandage the eyes, find out by the aid of a pin the alleged anæsthetic area, and mark the boundaries of it with a blue pencil; if this procedure is repeated at short intervals, the area alleged to be affected will probably be found to vary considerably, which would not occur in a genuine case.

In some nerve diseases deep muscular sensation is abolished; for instance, in locomotor ataxia, the calf muscle may be squeezed with very considerable force, yet without pain.

Analgesia.—To those who do not feel pain acutely, simulation of analgesia is not a difficult matter. The "human pin-cushion" who invites his morbid customers to stick pins into him is merely one whose tissues are abnormally analgesic, and who for gain endures the amount of suffering entailed, which is always a great deal less than normal.

When testing for analgesia the patient must be taken unawares; attention should be drawn to another part of the body whilst a pin or needle is suddenly applied to the alleged analgesic spot. The test which I have described above for locating alleged painless areas, by marking them as indicated at different times during an examination, is not applicable when *insensibility to touch* is alleged; for it is well known that the limits of anæsthetic areas vary even in cases of unquestionable organic disease. Variations in alleged anæsthetic areas alone are therefore not sufficient proof of simulation. Fortunately the malingerer, as a rule, asserts that he has lost both the sense of touch and sensation of pain; and if it can be proved that he does in fact respond to the application of the needle, one would be justified in assuming the falsity of his alleged insensibility to touch.

Vertigo (Giddiness).—Vertigo may come from disease of the ears, of the nervous system, of the circulatory system, or may be connected with the vision.

Aural vertigo is perhaps most typically seen in Ménière's

disease, but anything in any part of the auditory meatus which increases the pressure on the fenestrum ovale may be accompanied by giddiness and deafness, the special variety being either obstructive or nerve deafness.

It is never safe to give an opinion about giddiness without carefully examining the condition of the internal ear by means of the labyrinthian tests to which reference is made on p. 219.

Disease of the Nervous System.—Vertigo often constitutes the aura of epilepsy. Hysterical vertigo comes on when the patient is startled or frightened, and the neurasthenic variety when the patient goes out of doors.

Various intracranial lesions give rise to giddiness, and the early and unrecognized stage of disseminated sclerosis is a fruitful source of vertigo.

Circulatory System.—Giddiness is the first, and may be the only, manifestation of fainting. Anæmia of various sorts is probably its commonest cause in the young. Cardiac weakness is a well-known cause of giddiness, and high blood-pressure arising from various temporary causes is sometimes associated with slight vertigo.

Ocular Vertigo.—This is generally due to weakness of one or other of the muscles of the eye, as, for instance, when the constant strain of the internal rectus in myopia leads to weakness. Diplopia may cause vertigo, but this is at once relieved by shutting one eye.

Hepatic and gastric disorders are frequent concomitants, and possibly causes of vertigo.

The dull or unimaginative malingerer may merely complain of giddiness or an indeterminate pain in some part of his anatomy, because it does not, apparently, require much skill or knowledge successfully to persist in the allegation.

A correspondent in the *British Medical Journal* states that he examined a railway porter who said that he could not walk on the edge of a cliff without feeling giddy. He was told that the examiner suffered in the same way, but persisted that he was afraid he would fall off the platform in front of a train. It was obvious that the examiner considered the man was a fraud, for in relating the case he stated that, in his opinion, the only place in which the man would have felt safe was behind the counter of a sweetstuff shop !

Vertigo is a subjective symptom, and it is important not to elicit it by leading questions. The safest way to discover it, if present, is by inducing the patient categorically to state what he complains of, and, if it is necessary to supplement this, draw his attention to the question of giddiness by asking if he has any sensation in the head.

When giddiness is alleged, it is, of course, impossible to deny or affirm that the symptom is present, because there may be nothing to go upon except the patient's word. If during an examination in which he is made to bend and touch his toes, then suddenly assume an erect position, put his heels and toes together, and shut his eyes, he stands perfectly steady, it is not absolutely incompatible with alleged giddiness at a different time, but it certainly goes a long way towards proving that on the occasion of the examination there was physical evidence of a condition inconsistent with the presence of giddiness.

It must not be assumed, because we cannot find an objective reason for alleged giddiness, that, therefore, it does not exist. It is well known that long after *head* injuries a sensation of vertigo will persist.

But where no objective symptoms whatever can be discovered (in the entire absence of kidney, heart, cerebellar, or ear disease, etc.), one must to a large extent be guided, in considering the case as a whole, by the likelihood and reasonableness of the alleged subjective symptoms, and, above all, by the examinee's truthfulness, as demonstrated by certain tests which will readily occur to anyone accustomed to dealing with such people.

True vertigo is often accompanied by a certain amount of congestion of the facial capillaries, and sometimes of the conjunctivæ, and, after repeated stooping, some failure of co-ordination of the muscles of the legs. Later the face becomes pale, the pulse loses force, and sometimes there is sweating.

Subjective sensations, which from their nature cannot be objectively investigated, are the sheet-anchor of the fraudulent claimant. His theory is that if he asserts that he suffers from pain in the head and giddiness, no one can deny it; that if he happens to be a house-painter, and says that in consequence of the pain and giddiness he is afraid to go up ladders, how can he be declared fit for the work of a painter? There

are dozens of painters now living fairly comfortable lives at the expense of insurance companies, which, after arbitration proceedings, have had to continue weekly payments, or commute them for lump sums, because the claimants have asserted (and it amounts to nothing more than assertion) that going up a ladder would make them giddy.

The following case is interesting in this connection :

History—B. L.—On behalf of a firm of shipowners I was asked to examine a stevedore who, having received a blow on the forehead and nose whilst unloading scrap-iron, had done no work for six and a half years, and whose sole alleged disability was "giddiness." He had been medically examined on different occasions before being sent to me, but had steadily refused to accept any sum in settlement. Two years before I saw him he offered to take £500, but at the date of my examination I was informed by his employers that he refused to name any sum at all. When he came into my consulting-room, he staggered in a manner which, before I had spoken to him, gave me the impression that he was either very giddy or was pretending. He was asked to walk up and down, first in my consulting-room, then in my hall, and he swayed in a way which experience has shown me was not genuine. On being sharply called to order, the sway altered in character. He was next told to run up my hall stairs; this he at first declined to attempt, but upon my insisting he did so, at first supporting himself by both the wall and the banisters. When told to turn at the top of the stairs and come down, in full sight he deliberately stumbled and sat on the stairs. The action was, without any shadow of doubt, deliberate; he was directed to go up to the top of the stairs, and again come down without holding on to anything. This he did. He was then brought into my consulting-room, and asked to stand, heels and toes together, and shut his eyes. The object of this was to test whether he swayed, as some people with advanced nerve disease do. The moment he shut his eyes, he deliberately let his body fall backwards. I pointed out to him that it was quite obvious that this was a pretence, and he was not to do it. On repeating the experiment, he boldly and deliberately let himself fall straight back, and, losing his equilibrium, would have fallen flat on his back had not a medical friend (who the claimant knew was behind him) caught him under the armpits. My friend, recognizing what was happening, said, "I shall leave the room," and, opening a door behind the patient, closed it again, pretending that he had left the room, and remained motionless behind the man. I repeated the experiment. This time the claimant went backwards, but fell in a sitting position—that is to say, he let himself down gently, thinking that there was no one to catch him !

At my suggestion admission into a hospital was obtained for him, where he was placed under observation; he complained of pain in the back, continuous and dull headache in the frontal region, also that

he had shooting pains in his forehead, especially when stooping. He seemed quite content to lie in bed the whole day and do absolutely nothing. He was found to be well developed and strong, able to walk about as usual. There was no increase of pain on exertion; he was not depressed, and did not seem to be worried about anything. While at home he had been in the habit of loafing about in the parks. During his forty-two days' residence in hospital, no disease, functional or organic, could be discovered.

Three months later, work not having been undertaken, he was examined at my request by a physician, who, after reviewing all the facts of the case, had no hesitation in saying that in his opinion B. L. was free from all evidence of organic injury or disease, and was quite fit to work for his living. At the time of this examination, it is interesting to note, he complained of "severe pains in the head, stabbing pain in the forehead, pain in the lower back, a sense of general weakness, and attacks of giddiness." A thorough examination, however, again failed to reveal any physical condition capable of explaining the alleged symptoms. During the examination he walked backwards quite steadily, which was a fairly severe test of his capacity to maintain equilibrium, nor was there evidence of any alteration in the nervous system, such as is known from experience to accompany loss of power to maintain equilibrium with the eyes closed. At my suggestion he was again, and this time ostentatiously, tested for vertigo, and at the psychological moment fell gently on to a sofa arranged behind him for his reception. The mental condition was that of a man who had long been idle, and had been engaged in the contemplation of injuries real or imagined. He was well nourished; and though his muscles were soft (as was to be expected from prolonged disuse), they suggested possibilities which would be realized were they once more subjected to the discipline of healthy exercise.

I had much satisfaction in being the means of sending this lazy fellow back to work, for he was a coward, and had allowed his wife to work from 7.30 a.m. to 7 p.m. every day to earn 10s. a week, and admitted in her presence that he did not even put himself to the trouble to have her supper ready on her return at night! He had a son at work earning 7s. a week, and had been in receipt of 14s. 1d. half-wages since the accident, so that the total income of the family was when he was at home idle not inconsiderable.

Result.—Compensation was stopped. At arbitration proceedings the Judge, after hearing medical evidence, gave a decision in favour of the employers. A medical referee sat with the Judge.

Cerumen a Cause of Giddiness.—The importance of excluding physical causes for what are apparently subjective sensations is well illustrated in the following case, where the alleged giddiness might very well have arisen from one of two physical

causes, both of them curable, but for which no treatment had been sought.

History.—B. M., a dock labourer, aged forty-five, was struck on the head by a crane. He was at first prepared to accept three weeks' pay as compensation in full, but consulted a firm of solicitors, and then preferred to continue receiving weekly payments. One doctor had recently seen him on behalf of the employers, and reported him fit for work. Another doctor came to the conclusion that he was suffering from catarrh of the auditory canal, not caused by accident, and that he would be fit for work after having wax removed from his ear. The man himself maintained he was still suffering from the effects of the accident. Four and a half months after the accident, a shipping company sent him to me for an opinion prior to taking the case into Court.

Examination.—His complaints at the time were giddiness, trouble with the right ear, and indistinctness of vision after reading the newspaper for a little while.

This claimant told me he attended hospital for six weeks after his accident, wearing a dressing on his head all the time. This appeared improbable, since it was only with a strong lens that I was able to discover the scar of a wound on his head, less than an inch in length, which from its appearance had evidently healed by "first intention."

His complaint of giddiness was not supported by any apparent physical signs. All his organs were healthy, and there were no symptoms of neurasthenia, with which giddiness is so often associated after head injuries.

His complaint with regard to his sight was very easily explained. He had different strengths of sight in the two eyes, the right being normal and the left only half the normal range. With Jaeger's test-types for near vision, the focal distances of the two eyes were found to be quite different, which naturally would lead to considerable confusion when attempting to read. The condition was produced by myopia, and at his age the presbyopia of advancing years would make it impossible for him to read with comfort without the aid of suitable lenses. This condition had no connection with the accident.

The history of the condition of his ears was interesting. His solicitor had sent him to a certain medical man, whom I had met before in medico-legal cases. It appeared that the doctor had looked at the ears, said wax was present, did not remove it, and allowed the man to attend at his surgery once a week for some time merely to have drops put in his ears.

The feelings of numbness, deafness, etc., which he complained of were those usually produced by the pressure of wax, more especially if, as in this case, the wax was in one ear only. With his consent, I removed the whole of the wax, so that he could have no further complaint. He was, in fact, quite well, and had practically been so for six weeks. One could, however, understand how this man, having strange sensations in his head, due solely to accumulation of wax,

might ignorantly attribute them to the blow he had received. But it was difficult to understand, from a purely medical point of view, why he did not have proper treatment long before.

Result.—The shipping company made application to Court for termination of payments. After medical evidence at the hearing, the Judge decided in favour of the company.

Alleged Hyperæsthesia, which is often hysterical or fraudulent, is usually found to be annular in its distribution, instead of following the anatomical distribution of the nerves. It must not be forgotten that the exact areas of skin supplied by nerves vary in different persons, but as a rule they are definite. These cases should be approached from a psychological rather than a physical point of view.

In testing the delicacy of sensation of touch, it should be remembered that the acuity of this sense differs very much according to the part of the body tested. The distance at which two distinct pin-pricks are felt as two and not as one varies in different parts of the body from 1·1 millimetres at a sensitive spot—*e.g.*, the tip of the tongue—to 67·1 millimetres at the middle of the back.

These distances have been accurately determined, and the following table (taken from Starling's work on Physiology) represents the results:

			Millimetres.		Inches.
Tip of tongue	..	..	1·1	or	0·04
Volar surfaces of finger-tips	..	..	2·3	„	0·08
Dorsum of third phalanx	..	..	6·8	„	0·26
Palm of hand	..	..	11·3	„	0·44
Back of hand	..	..	31·6	„	1·23
Back of neck	..	..	54·0	„	2·10
Middle of back, upper arm, and thigh	..	..	67·1	„	2·61

The sense of touch depends upon the position in the skin of what are known as "touch spots." These are scattered about the skin, in some parts much more thickly than in others; for instance, they are some seven times more numerous on the dorsal surfaces of the fingers than between the shoulders, and over the shin a distance even of a centimetre may intervene between the nearest two.

Pain.—One of the most frequent questions the examiner has to decide is whether an alleged pain is real, exaggerated, or wholly absent. This is a very difficult task, and the

greatest care is required if mistakes are to be avoided. Anyone who has had much experience of medico-legal cases acquires an instinctive perception of the truth about alleged pains; but it is one thing to be convinced in one's own mind, and quite another thing to be able to adduce such tangible evidences of shamming as would bring conviction to the minds of Judges and jury.

The attitude of the malingerer at the very commencement of the examination will often show what course he is going to pursue. He shrinks away before he is touched. When he is induced to submit to examination, he complains bitterly long before he can possibly have been really hurt. He can, in fact, be seen making his preparations for complaint, and it will often be remarkably difficult to keep him from looking at the part which is being manipulated, for, knowing that he cannot really feel pain from the passive movement which is taking place, he desires to fall back upon the sense of sight for information as to the exact time when his protest may best be made. It is therefore one of the first essentials in an examination to make the patient keep his face turned away from the part which is being manipulated. The way in which he indicates that he is feeling pain often gives him away, for he does so by the most ludicrous contortions, grimaces, cries, and groans, such as a man who is genuinely feeling pain would not make use of. One of the first things to do is to localize exactly the seat of the alleged pain in the way described on p. 246, and to see whether it remains constant or shifts its position during the examination or at subsequent examinations. The next thing to do is to distract the patient's attention by one of the methods already described, and see whether some given stimulus then provokes less expression of pain than it does when the patient is allowed to direct his attention to what is being done. It should, however, be remembered that in the *minor degrees* of hyperæsthesia this is not a reliable test. For instance, it is well known that pain is reinforced by attention, and that an aching tooth sometimes recovers at the dentist's door.

Pain is due to irritation or pressure on the nerve structures. In true neuralgia there are often tender points to be felt, as, for instance, where nerves emerge from canals; but the

nerve trunk itself is not sensitive to touch. When one remembers that the laity are ignorant of the anatomical distribution of the nerves, methods of detecting a malingerer will at once occur to the examiner.

A very important thing to observe is whether there is any interval between the movement alleged to be painful and the expression of pain on the part of the patient. In true pain the wince or the cry, or whatever indication is being made that pain is felt, follows almost instantaneously on the stimulus causing the pain, and is involuntary. If there is an *appreciable* interval, however short, it indicates that the patient has had to think whether or not he should be really suffering, and such delayed expression gives rise to the suspicion that no pain is really felt.

Evidence of Pain by Pupil and Circulation.—There are also certain objective symptoms which may be present. These are flushing of the face on the one hand, or pallor and sweating on the other, dilatation of the pupil, and increased rapidity of the pulse. If any or all of these are present, it may fairly be supposed that pain is being felt; if absent, their absence goes a long way towards showing that the pain is simulated.

Dilatation of the pupil from pain is the result of irritation of the sympathetic nervous system, chiefly in the splanchnic area.

To a limited extent the presence of genuine pain may be estimated by watching the pupils when pressure is applied over an alleged painful area. It is essential to remember that pressure alone dilates the pupil—especially in the abdomen—and that stroking or pinching the skin of the neck causes the pupil to dilate. The extent of normal dilatation capable of being produced in the individual should first be determined by pressure on a non-painful part. Using this as a standard, dilatation as the result of pressure on an alleged painful area may be estimated. For the proper observation of these indications, it is almost essential that the examiner should have the services of a skilled assistant carefully to examine the pupil in a good light when the alleged pain is produced. Coppioli states that the pupil will sometimes be found to dilate rapidly when pain is really felt. It has often been noted that in patients suffering from such painful affections as pleurisy,

rheumatic fever, neuralgia, appendicitis, and so forth, the pupil can be readily seen to dilate when pressure is applied to the affected part.

In examining the pulse, an idea must be obtained as to its rate when the patient is free from pain. In many cases, as soon as pain is felt it will promptly rise 20 or 30 beats a minute.

Admirers of Scott will remember that in "Peveril of the Peak" that consummate master of English literature portrays with dramatic effect the discovery that Fenella was malingering when she assumed the rôle of a deaf mute. The following is the passage referred to :

Said the King :

"I will instantly convince you of the fact, though the experiment is too delicate to be made by any but your ladyship. Yonder she stands, looking as if she heard no more than the marble pillar against which she leans. Now, if Lady Derby will contrive either to place her hand near the region of the damsel's heart, or at least on her arm, so that she can feel the sensation of the blood when the pulse increases, then do you, my Lord of Ormond, beckon Julian Peveril out of sight. I will show you in a moment that it can stir at sounds spoken."

The Countess, much surprised, afraid of some embarrassing pleasantry on the part of Charles, yet unable to repress her curiosity, placed herself near Fenella—as she called her little mute—and, while making signs to her, contrived to place her hand on her wrist.

At this moment the King, passing near them, said : "This is a horrid deed—the villain Christian has stabbed young Peveril !"

The mute evidence of the pulse, which bounded as if a cannon had been discharged close by the poor girl's ear, was accompanied by such a loud scream of agony as distressed, while it startled, the good-natured monarch himself. "I did but jest," he said ; "Julian is well, my pretty maiden. I only used the wand of a certain blind deity called Cupid to bring a deaf and dumb vassal of his to the exercise of her faculties."

"I am betrayed !" she said, with her eyes fixed on the ground—"I am betrayed ! and it is fit that she whose life has been spent in practising treason on others should be caught in her own snare. But where is my tutor in iniquity ? Where is Christian, who taught me to play the part of spy on this unsuspecting lady, until I had wellnigh delivered her into his bloody hands ?"

It is a good plan to count the pulse-rate at the commencement of a medico-legal examination and again at the end, and to judge of the condition of the nervous system by a comparison of the two rates. Under the excitement of a medical examina-

tion the pulse-rate is likely to be accelerated, but the absence of increase in the number of beats per minute is some evidence against the allegation of a neurasthenic condition, which is so often alleged in the "statement of claim."

Of the two other signs previously mentioned, the dilatation of the pupil is the more important.

The Absence of Evidence of Pain.—One of the best and simplest means of forming a rough idea as to whether pain is as persistent and severe as is alleged, is to find out whether it does or does not cause sleeplessness.

In conclusion, although none of these signs taken by themselves are conclusive, a general consideration of the whole of them will leave the examiner in little doubt as to his diagnosis. Alleged pain in a healthy able-bodied workman which is unaccompanied by objective signs capable of explaining it, which varies from day to day, and which pressure accentuates only when the attention is directed to the spot, may well arouse suspicion.

The following case is typical of a large class of cases which many will readily recognize :

History.—B. N., aged forty-four, employed as a donkeyman, walked into the hatchway of the engine-room, slipped and fell, injuring his right side. Within forty-eight hours, when the ship reached port, he had medical attendance, and resumed work after a month. But on reaching this country some weeks later he put himself on the sick-list again, under the care of a doctor who saw him once a week for the purpose of furnishing a certificate of unfitness for work, but who prescribed no treatment whatever. After continuing compensation for several weeks the shipping company stopped payment, two medical men of good standing having certified the man fit for duty.

Examination.—After an interval of three and a half months, I was asked to examine the plaintiff, with a view to giving evidence at the arbitration proceedings fixed to take place a few days later.

When B. N. came to me, he informed me with evident relish that his doctor had told him he would be unable to do any work for a long time ; but when asked on what grounds his doctor made this assertion, B. N. said : " I don't know ; I suppose he said so because I still complain of pain ! "

He complained of pain in the chest at three places : A, near the middle of the ninth rib on the right side ; B and C, at the attachments to the breastbone of the third and fifth right ribs respectively.

With regard to the pain at A, I pressed very firmly on the back of his ribs near the spine, and also at the same time near the breast-bone

in front, and by compressing his chest bent all his ribs. If there had been any pain at A, this procedure would have caused it to become apparent ; but he complained of no pain, except at the spots where my hands were pressing him. Again, on directing his attention to the area of his heart and pressing meantime firmly on A, I asked him if he had pain at his heart (on the left side), and he did not notice the very considerable pressure upon A on the *right* side. Further, I asked him to indicate, without looking, the exact position of the pain in the area A ; three times he indicated different spots, two of them being $1\frac{1}{2}$ inches apart.

With regard to the alleged pain at B and C, although he complained only of pain at these spots in *front*, I noted that at the time of the accident he had complained only of injury to his *side*. It was quite obvious he had no pain at any of these spots, for the following reasons : Whilst examining his lungs (which were healthy), I firmly percussed this region, and, his attention being distracted, he did not complain of pain. Whilst using the stethoscope, I pressed firmly on his chest without eliciting complaint. When asked to take long breaths, whilst I used the stethoscope, the movement of his chest was everywhere perfectly free, which would not have been the case had there been any genuinely painful region. Further, on applying the faradic current, he told me quite truthfully when he felt the current and when he did not. I took advantage of his attention being directed to this method of testing to press very firmly over the alleged painful regions, but he made no complaint. While dressing and undressing, it was quite obvious that no movement was painful.

Result.—At the arbitration proceedings, I gave reasons for stating that this man was an impostor, and was making a fraudulent claim. The case was referred to a medical referee, who decided in favour of the employers. The referee stated he found no objective signs of illness, and expressed the opinion that the man had been able to do his work on and from the date on which compensation had been stopped, three and a half months previous to the trial.

Functional and Organic Nerve Disease.—It is of the utmost importance to be able to distinguish between functional and organic nerve disease. The assertion that a patient is suffering only from functional disease has been well said to be the “positive affirmation of a universal negative.”

It must not be forgotten that organic disease is often very insidious, and it may be months before recognizable physical signs show themselves.

It is a good and safe clinical rule not to give a diagnosis of functional disease as the result of a single examination. However useful this rule may be in general and consulting practice, it is, for obvious reasons, an extremely difficult one to adhere to in medico-legal cases. Yet even here, although a definite

opinion is generally expected after a single examination, one occasionally has to admit that it cannot be given on the data thus obtained, and the opportunity of making a second examination has to be asked for. Indeed, in extremely difficult cases it is my custom to have the patient under hospital observation prior to taking a strong line.

The following signs are inconsistent with functional nerve disease :

1. Absence of the knee-jerks. It is stated that very rarely do cases occur where in health the knee-jerks are absent.
2. Babinski extensor response.
3. An Argyll-Robertson pupil. Inequality of the pupils is not necessarily indicative of disease, especially if mobile. It must be remembered that the iris is sometimes adherent to the lens capsule, owing to an old inflammatory attack.
4. Hemianopia.
5. Incontinence of urine and fæces.
6. All other definite objective signs of disease.
7. Marked muscular wasting, when localized and associated with the reaction of degeneration. Such wasting is uniform, and affects groups of muscles. It is an interesting observation that the nerves of the face, tongue, and eye are very rarely affected with functional disease.

A paralysis which after continuing for months does not become spastic, and is not associated with wasting, is very suggestive indeed of functional nerve disease ; but, on the other hand, spasticity does not actually *prove* that the disease is organic, and even wasting may result from disuse of functional origin.

It is well to keep ever in mind that one has in disseminated sclerosis a disease which is very likely to cause one to trip. The mental and physical manifestations so closely resemble those of hysteria that mistakes are often made. At the early stage, when the disease is being gradually established, the symptoms fluctuate ; they become at one time pronounced, and then seem almost to disappear, and it is well to be on one's guard when meeting with a group of symptoms such as the following : weakness, spasticity and ataxia of the lower limbs, alteration in the speech, and a tendency to nystagmus, especially when these symptoms present themselves one at a

time, and are combined with some alteration in the mentality of the patient.

The anæsthesia of functional nerve disease is not always deep. It never maps out the nerve-roots, but is generally of the stocking or glove type. Anæsthesia which is functional extends to the mucous membrane, which is rarely the case with that due to organic changes.

Report on Nervous System.—The report of an examination of the nervous system should be couched in plain, simple language which will make it clear that a searching inquiry has in fact taken place. Should the result be negative, and no abnormality be discovered, the report may be modelled on the following lines:

The pupils are equal and react to light and in accommodation. Vision is good. All the eye movements are of full range, and there is no weakness and no involuntary movement of the muscles of the eyes. The face muscles act well, and the nerves of the face show no changes. Hearing is normal. The palate movements are normal. The tongue is protruded normally, and it shows no wasting.

There is no weakness or wasting of the muscles of body or limbs. There is no disturbance of balance or of adjustment of the muscles. There is no organic tremor. No defect in power of localization of sensation is present.

There is no loss of sense of position. All the principal nerve responses, such as those of the knees, ankles, and great toes, are normal and equal on both sides. There are no sensory changes. When asked to walk along a straight line it is done steadily. The memory is normal. The speech is normal.

There is, therefore, no organic nerve disease.

CHAPTER VI

FUNCTIONAL NERVOUS DISEASE

FUNCTIONAL nervous diseases appear to be disorders of the mind rather than of the body, and are unaccompanied by any ascertainable structural change. Their pathological anatomy and chemistry is unknown.

Influence of Mind on Body.—The influence of the body on the mind has been recognized and more or less understood from remote antiquity, but the reaction of the mind upon the body has only occasionally been recognized, and even now is very imperfectly appreciated by the laity, still less understood.

Part of the difficulty of understanding the influence of the mind on the body arises from the fact that, in the majority of cases, along with the altered mental attitude there are co-existent bodily disorders, which may be either causes or consequences of the mental condition. The mental disturbance spoken of in this connection does not mean any certifiable disorder of mind rendering the sufferer liable to detention in an asylum, but merely such mental states as obsession, the well-known phobias, and other feelings, or changes of feeling, which are out of correspondence with the environment as appreciated by ordinary healthy and impartial outsiders, the common men of our time and country.

The objective signs of bodily disease can be fairly easily discovered by an expert observer, but *symptoms*, whether of body or mind, are purely subjective, and great difficulty, therefore, often arises, not so much in discovering these (for patients as a rule talk freely enough with a little encouragement), as in sifting them, and forming an opinion as to their relative value and reliability. It is by no means easy, even for a thoughtful general practitioner who is in sympathy with his patient, to appreciate how much of that patient's statement

is literally true, and how much is attributable to a conscious or unconscious effort to deceive the medical attendant. It is, in truth, never easy to form an opinion as to how much of a patient's complaint is due to a substantial substratum of bodily defect, and how much is coloured by concurrent mental disorder.

In the more difficult and tricky cases, the services of an expert are required to carry out (as often only an independent outsider can) immediate and adequate psycho-therapeutic treatment, cut short the malady, and get the patient back to work.

The extreme importance of this step in the interests of all—patient, friends, doctor, employer, or insurance company—will be apparent when the influence of the mind on the body is more fully appreciated. Such influence may be illustrated by the following extreme cases:

Sir James Simpson tells of a patient who suddenly expired during the shaving of the groin preparatory to an operation for hernia.

In another case a mask without any chloroform was held over a patient's face, and almost immediately respiration ceased. The patient's life was only saved by prolonged artificial respiration.

A man of forty was to have an amputation performed; he was so feeble that chloroform was not considered advisable. A pretence was made to administer the anæsthetic by means of a cloth, but no chloroform was used. After four inspirations, respiration and circulation suddenly ceased. The man was dead.

I well remember the case of a young man who was submitted to me for examination after being ill for three weeks.

B. T.'s temperature appeared to range between 97.4° and 103.4° F. When the doctor took the temperature in the morning, it was always normal or subnormal; the patient himself took it sometimes as often as six times in the day, waking occasionally in the middle of the night for this purpose. Neither the doctor nor a consultant who had been called in could form any opinion as to what was the matter with the patient. His blood was tested for typhoid.

I found that if the doctor did not call once daily he was always sent for in a hurry—that the patient was very nervous and worried. His wife was hourly expecting her baby. There was only one bed in the

house, and I suspected that his anxiety to get well before the event was keeping up his temperature.

I induced the doctor to take the thermometer from B. T. He did so, and called subsequently once or twice in the afternoons, when the temperature, which previously had, as a rule, been above normal, was found to be normal. From the time the thermometer was taken away from him the patient made a rapid and uninterrupted recovery !

Here is another case :

E. I. was in a recent accident. He admitted that he received but slight injury, not even any concussion; but the mental effect of the scene, in broad daylight, so influenced him that shortly afterwards he was seized with violent, spasmodic hiccough. This continued at intervals of a few seconds *during his waking hours* for over a year, but ceased when asleep.

Even in the lower animals the influence of mind on body is seen in what is known as "psychological secretion." When a dog smells the preparation of meat for his dinner, he secretes one kind of saliva, but when he smells a meal of biscuit or bread the secretion is of a different character.

Blushing and the flush of anger are familiar examples of the ability of mental conditions to produce definite physical results. That blisters, ecchymoses, and erythemata of the skin have been produced in positions and shapes determined by verbal suggestion seems to be an indisputable fact. Even printed verbal suggestion may, by inducing unusual introspection, lead people to suppose that they are suffering from disease.

In Jerome K. Jerome's story "Three Men in a Boat," he describes how one of the characters, after reading a considerable amount of medical literature, came to the conclusion that he had suffered from every disease except housemaid's knee.

When Napoleon III. was operated on for stone, the symptoms of the disease were much discussed in newspapers. Sir Henry Thompson stated that as a result several gentlemen consulted him, believing that they would require operation. They had no stones; the pains, etc., which they undoubtedly felt, were purely subjective, the result of suggestion acting upon vivid imaginations.

A friend relates a somewhat similar case. He says: "A very loquacious patient of mine suffering from stricture crossed the Atlantic with a friend, who, without any symptoms,

became convinced that he also had a stricture, and went to a quack in New York, who 'electrolyzed' the stricture, and incidentally gave him an attack of gonorrhœa by the use of dirty instruments!"

Results of Forcible Suggestion.—Suggestion of a more forcible kind produces much graver effects. Here are two instances:

E. J., one of the motor fire-engine drivers of the London Fire Brigade, whilst driving an appliance knocked down a child. One of the wheels went over its head; cerebral tissue protruded from the fractured skull. The dead body was placed at the driver's feet, and he was instructed to drive to the nearest station. The driver received no sort of injury—indeed, he was not even unseated—but he suffered from a pronounced attack of traumatic neurasthenia. He slept badly, and was nervous, depressed, tremulous, and obsessed with the details of the accident. He was sent to his own village in the country for a few weeks, but returned not one whit the better.

Admission was procured for him into Maida Vale Hospital for Nervous Diseases, where he had a modified Weir Mitchell treatment, consisting in isolation, rest, massage, etc. In a few weeks he was nearly himself, became impatient to leave, broke the rules by smoking in bed, and otherwise showed symptoms of normal health. He was discharged from the hospital, and I returned him as fit for full duty.

In a very short time he was sent to me again as being wholly unfit for work; it was said that he became nervous when driving to a fire, and was in a "collapsed" condition. Suspecting hysteria, I ordered him back to duty, suggesting that he should still be employed in driving, but that at first he should not be sent to fires, because driving to a fire in the crowded streets of London is an inspiring but formidable task. I was then told that in the London Fire Brigade there was no driving except to fires, and that the driver in question was either fit for duty or he was not. I reported that he was not fit for duty, but could be made so, and he was then handed over to be dealt with by the chief coachman, who adopted his own methods.

He was instructed by this individual, who accompanied him, to drive a pair of horses through the crowded streets of London, and even into the City itself, changing the horses as they got tired. For ten days he was kept driving relays of horses, covering some forty or fifty miles a day. In the course of this somewhat novel treatment I took occasion to examine him medically, and his instructor reported to me each time that he was "doing well," adding that driving was, in his opinion, the best medicine for the case.

The result was somewhat astonishing; he was soon himself, and returned to duty. He preferred, however, to return to the less showy occupation of driving horses.

E. K., a fireman in the London Fire Brigade, whilst at drill was struck on the shoulder by a fellow-fireman who fell many feet. The force of the fall was broken before it reached E. K., who only received

a glancing blow. The man who fell was killed, and, not unnaturally, the incident produced a profound effect upon the survivor. He walked quietly to the station, and, as he appeared ill, was then sent to a hospital, where some strapping was applied to his chest, after which he was sent home. In the absence of his district medical officer, he was seen by another doctor, who ordered him rest in bed. Five days later the district medical officer, who then returned from a holiday, could after examination find no injury, but noticed that E. K. was obviously dwelling unnecessarily upon the fate of the fireman who had been killed. Feeling that the illness was really mental, he recommended that he should sit up in bed. Three days later he removed the strapping which had been applied by the house surgeon at the hospital, and, as there were no injuries of any kind, he told the patient to get up. After two days he was encouraged to go on very light duty.

It appeared that his wife was extremely lachrymose, and deaf. She was apparently much impressed by the fact that the accident had proved fatal to her husband's comrade, and, instead of encouraging him, made the most of everything.

On the day of the man's return to duty, whilst at work away from the fire-station, he reported that he became sick and faint, and was given brandy by a stranger. Next day he consulted the district medical officer again, and the following day reported that he was too ill to visit the doctor, who advised that the man be submitted to me in my capacity as chief medical examiner.

His appearance was that of one who was afraid that every movement would pain him. He held himself stiffly, his facial expression was one of deep melancholy, and it was obvious that he was consumed with introspection.

I pointed out to him that he really had suffered no physical injury, that it was his duty to pull himself together, and he must not give way to his own morbid thoughts; that he should forget the past, and it was cowardly to behave as he was doing. I forthwith ordered him to duty, making this proviso (*unknown to him*), that for a week he should do all the ordinary work of a fireman except going to fires or ladder work, or anything which might cause him to be a danger to himself or to others. I ordered that he should be sent to me in a week.

When he called seven days later, the change was remarkable. Although he did not look in robust health, he had obviously taken the lesson to heart, and thrown aside his invalidism. He frankly declared himself well, and anxious to take full duty, which he was, of course, permitted to do.

These are typical cases of what is constantly happening. Had these two men not been employed in a service where medical supervision is strictly enforced, they would in all probability have drifted into a condition of typical neurasthenia.

It will be noticed that each of these two cases of functional

disease, originally induced by shock and suggestion, was cured by powerful counter-suggestion—by forcing, as it were, into the patient's consciousness the idea that he was quite capable of doing his work if only he knew it. A continual succession of graded experiences was used to push out from the mind the delusive feeling of inability to work. Unfortunately, success does not always follow treatment of this kind, however carefully applied, as the following case illustrates:

E. L., who was an employee in a large public body, joined His Majesty's Navy. His pay was supplemented by his former employers, so as to bring it up to his former wages. He served for nearly a year. Towards the end of that period, whilst on three days' leave, he sprained his left ankle badly, and was taken to a military hospital. The foot was in a condition of acute talipes equino-varus. Under an anæsthetic it was replaced, and the limb fixed in a plaster of Paris splint. He was then discharged, and in due time the restraining apparatus was removed, when the condition relapsed. He was again taken to the hospital, and was on this occasion operated on. The exact nature of the operation I am unable to say, but a large linear incision was found over the outside of the ankle.

When seen some four months later, he walked on the fore part of the outer edge of the foot, and was a helpless cripple. As his injury was not received on duty, he was discharged from the navy without a pension. He now applied to his former employers for very light work at his old rate of wages, but it was pointed out to him that as he was not injured on duty, no work could be found for him.

There was marked wasting of the peroneal muscles, and the condition so resembled a true paresis that the case seemed one suitable for electrical treatment. On testing him, however, the faradic current of a strength which contracted the normal muscles of the opposite side produced no effect on the injured limb; but when the strength was much increased slight response was noticed in the peroneal muscles, but the contractions did not always correspond accurately in time with the make and break of the current. My suspicions were aroused, and ultimately the functional nature of the complaint was made clear by the occurrence of contractions when the electrodes were applied, even when the current was cut off, the noisy action of the battery being alone sufficient. The current was then applied vigorously, and he was told with much assurance that the application of the battery had in fact suddenly effected a radical and complete cure. It was pointed out to him that the fact that the muscles contracted under the electric stimulus was an infallible sign of his recovery, and he was forthwith ordered to get up and walk. This he did.

Fearing a subsequent relapse, a friend who was with him was then called into the room, and his sudden recovery pointed out to her. He was instructed to call every day, in order that the improvement

should be maintained. His attendance, however, was somewhat erratic. A few days later he was declared well and fit for work.

Although he walked well when in my consulting-room, he was so lame an hour later, when he called on his employer, that he was found unemployable. He seemed to be obsessed with the idea that his employers should either pay him a lump sum or find him work of a very light nature. He subsequently consulted a medical practitioner who failed to recognize the condition, and gave him a certificate of unfitness for work, with the result that he at once relapsed into his former condition.

That the line of treatment above indicated rests upon a sound theoretical basis is evident from the following psychological considerations.

Counter-Suggestion in Functional Cases.—While a man is fostering the feeling of inability to do certain work entailing responsibility, he may be prevented from keeping that idea in mind by encouraging and constraining him to perform *some* work, of as nearly as possible the same kind, but without, at first, the burden of responsibility.

In this way graded counter-suggestion may be used to expel from consciousness the morbid feelings that follow shock to the nervous system.

In many cases, unfortunately, it is not only the *sensation*, but also the *concept* of inability that must needs be expelled from consciousness to effect a cure.

Herbert Spencer points out that we remember for a long time with accuracy the spot in which an acute pain was felt, though the pain itself is not re-presentable with anything like its original acuteness.

A man sometimes remembers easily, and for a long time, the circumstances under which he met with an accident, and its causal relation to his inability to work and his legal claim for compensation, though he does not reproduce in consciousness, easily or at all *completely*, either the pain suffered at the time of the accident or the feeling of inability to work caused thereby.

Yet by constantly recalling the circumstances of the accident and its relation to material gain he can keep alive *some representative part* of his (then) feeling of inability; and this he can do almost indefinitely if the circumstances are suitable.

The problem is—How to expel this accidental *inability*, this

indefinitely prolonged re-presentation of inability, from his consciousness?

Spencer says: "The re-presentation of any relations is hindered by the presence in consciousness of other re-presented relations."* A tune keeps running in the head, and cannot be expelled by thoughts of scenery, actions, or business, but may be expelled by rehearsing in thought another tune. Owing to the necessity of legal proceedings, a man keeps brooding over the sequence—accident, inability, compensation; and this sequence is too often not dislodged by the mere repair of the bodily effects of the accident. It may be, and in many cases is, dislodged by the extinction of the final term; by the award, or even the refusal, of "damages": the mere settlement cures the case.

But the law is leaden-footed, if long-armed and iron-handed, and owing to the law's delay legal settlement is not always available as a cure. In general, every endeavour should be made to find a cure in immediate, or at worst *early*, "settlement out of court."

When this proves impossible, counter-suggestion of every kind must be employed to correct the re-presentation of the feeling of inability. This is best done by the provision of light and graded work. The hope of monetary gain is best discouraged by implanting a desire for the greater gain of health and self-respect.

These psychological methods have their parallel in the use of physiological counter-irritants. As mustard poultices are used against colic, and blisters against neuralgia, so voluminous feelings of a tolerable kind are substituted for comparatively small but acute feelings of an intolerable nature.

Counter-suggestion, if it is to succeed, must be *immediate, opportune, forcible, and continued*. By "immediate" it is not necessarily meant that the counter-suggestion should be applied directly after the injury has been felt; but it should be applied, as will be hereafter pointed out more in detail in particular cases, *at the psychological moment*.

The value of immediate counter-suggestion may be compared with the value of immediate injection of antitoxin in diphtheria. This remedy, as is well known, is of enormous

* "Psychology," p. 246.

value on the first day of the development of the disease, but its value declines hour by hour, until at the end of a week it is practically negligible.

Hysteria should be diagnosed early, for two reasons: First, it is an obvious injustice to brand as a malingerer anyone who is really suffering from hysteria; and, second, because, for a speedy cure, it must be treated at once.

It is a well-known feature in the treatment of hysteria that the influence of the physician who is attending the case is at its maximum the first time he sees the patient, and gradually dwindles away from that time onwards. It is, therefore, of paramount importance that the hysterical taint should be recognized at once, and treated with the utmost promptitude and vigour; for, if it is not, the patient may readily become one of those hopelessly incurable neurotic wrecks with which the shores of the medico-legal world are strewn.

It is no argument that a case cannot be one of hysteria because the symptoms do not immediately follow the accident, for in many well-authenticated cases there has been an interval of days or weeks between the injury and the onset of the hysterical symptoms.

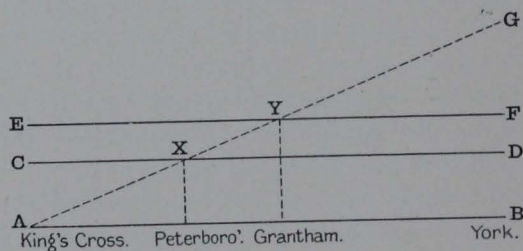
Now, what happens in the ordinary treatment of cases of accident? So far from counter-suggestion being immediately or presently applied, the patient is often subjected to the following factors, which militate against return to work: "Suggestion" of illness and injury by relatives, by the doctor, and later by the lawyer. Not infrequently the hesitation of the family doctor (who naturally sympathizes with his patient) acts as a powerful "suggestion" to the patient that his illness is serious, and the outlook unpromising.

The one essential point in the treatment of these cases is isolation from sympathetic environment, which, if it is not the cause, certainly contributes to the upkeep of the condition. Next to the removal from home circumstances is the influence of an independent, experienced, and judicious nurse, and lastly a doctor who is sure of his diagnosis, confident of his success from previous experience, and one who is possessed of a strong and optimistic personality.

Morbid introspection is easily implanted on one who, accustomed to do laborious work, suddenly finds himself living

in comparative ease on club money, whose environment is suddenly converted into a sympathetic one, and whose new circumstances invite self-examination, and in almost every detail present a vast contrast to his ordinary everyday life before the accident. What wonder if he misinterprets and magnifies various body stimuli which would in his ordinary daily life have been ignored?

I am indebted to my friend Major Crichton Miller for the following illustration, which will help to make my meaning clear. Assume, he says, a journey is being made from King's Cross to York. The weather is cold, the journey is taken under distressing circumstances; the traveller is very bored, he has left his pipe at home, and is unable to read owing to the dim light. At King's Cross his feet are normal—that is, he is unconscious of them, because there is no stimulus from the skin of the feet which reaches the brain. By the time he reaches Peterborough his feet are cold, and the discomfort naturally attracts his attention to them. The remainder of the journey is a misery. If the same journey is undertaken under similar climatic conditions, the pipe is in good working order, the light is sufficient, and the book interesting, the probability is that Grantham will be reached before it is realized that the feet are not so warm as they might be, or the journey may even be completed without any discomfort. The drawing makes the idea clear.



AB represents the journey from King's Cross to York; *AG* represents the line of gradual increase in the stimulus from the feet; *CD* the lower plane, *EF* the higher plane. The letter *X* on the line *AG* represents the point on the lower plane *CD* at which the traveller's attention was directed to his cold feet during the first unhappy journey, and the letter *Y* on the line *AG* marks the point where on the higher plane

EY he first noticed discomfort on the second and happier journey.

All traumatic neurasthenics have the power of disregarding their sensations temporarily diminished, and in the zone between the two planes *CD* and *EF* in the above diagram is contained the entire gamut of all the so-called neuropathic symptoms, such as backache, giddiness, weakness, etc.

They are all prone to exaggerate their symptoms, and, being at home with nothing to do, their minds naturally turn to the consideration of the effects of the accident, and attention becomes concentrated upon it. For instance, whilst sitting in a public conveyance, and looking, it may be, at the person opposite, one may be vaguely aware that a fresh traveller is entering. If the eyes are directed to the door itself, the perception is no longer hazy, but accurate. In the first instance the neighbourhood of the door of the car is seen only with the periphery of the retina, while in the second case it is seen with the fovea centralis. Similarly, the man who is healthy and fully occupied makes light of slight pain or inconveniences, because he perceives it, so to speak, only with the periphery of his mental retina. He is aware of his bodily sensations only in the vague way that the stranger was seen to enter the car, whilst the attention was directed to the person opposite. The neurasthenic, on the other hand, perceives his complaints, trivial or otherwise, as the new traveller is seen when the gaze is turned directly to the door of the car. He perceives symptoms with the fovea centralis of his mind, and so becomes aware of every slight ache, and suffers an intensity of discomfort which only a very severe injury would cause to a normal man.

The essential thing is to place the patient in the best possible environment. When in hospital, automatically, and by no effort of his own, he thinks of other things than himself, and there are immediately fewer complaints. What is required is that these unfortunate people should be trained to realize that the consciousness of their sensations is to some extent self-induced, and that it is their duty to help those who are trying to lift them above the level of the stimuli which are causing their discomfort. This is the golden thread which runs through the illuminating argument of Dubois's work on

psychic treatment of nervous diseases. The mental effect of suggestion as a curative agent, combined as it now is with the detachment of the patient from the sympathetic environment of injudicious friends, and the scientific study of the mental processes of his case, is the method now adopted by all scientific physicians in Europe, and can be seen in daily practice in all our hospitals where functional nerve disease is treated.

Drawbacks of Most Convalescent Homes.—While dealing with the later stages of the treatment of functional nerve cases, I think it is necessary to call attention to a great defect in many existing convalescent homes. Although the furnishing is good, the accommodation clean, and the food wholesome, yet the whole environment is dull and dispiriting. The total absence of any attempt to provide wholesome occupation must have a prejudicial effect upon those who are of the self-pitying, introspective type. In the best sanatoria patients convalescing from tubercular disease of the lungs are, for many months before leaving, expected to engage in hard laborious work. The late superintendent of Frimley Sanatorium used to show with pride a large reservoir which his convalescent patients had dug for the institution. Too often a convalescent home reminds one of the epileptic or demented wards of a lunatic asylum. Sitting accommodation strikes one as obtruding itself everywhere, chairs are found arranged in groups; but nothing in the way of healthy, useful, purposeful occupation, such as carpentry, gardening, etc., seems to be thought of. Enforced idleness combined with segregation obviously opens the door to that interchange of medical experiences so fatal to the convalescent stage of all diseases, especially neurasthenia.

Provision of Suitable Work after Recovery.—Another factor which operates against the creation of the condition of mind which is necessary for a normal recovery is the fear of finding work extra laborious and painful, or, still worse, of being unable to find work at all. This especially applies to men over forty years of age.

E. M., aged thirty-two, was in an omnibus which was overturned by collision with a tramcar. There was never any evidence of serious injury, or, indeed, of any injury at all. After the accident he was taken to a London hospital, but was not detained; he appears to have walked from the hospital to a tramcar which conveyed him home.

It is difficult to understand why he journeyed by tramcar, if the impression on his mind at the time was great that the car was an instrument of destruction.

A medical man who examined him within a fortnight of the accident reported as follows:

"Patient complains of pain and tenderness in lower dorsal spine, of being weak and nervous, of starting in sleep, and having had some teeth knocked out." He found no objective signs of injury. "No injury to lips or gums. No paralysis. No ankle clonus or other evidence of spinal lesion. Patellar reflexes somewhat excessive. Pulse 72." He stated his opinion that it was a case of slight concussion, likely to develop into traumatic neurasthenia.

The man was sent to me two months after the accident, when I reported as follows:

"E. M. is puny, nervous, self-centred, depressed; afraid to go out without his wife. Visits his doctor every other day. Always physicking. He states that he has pains in the top of his head and back; eyesight worse since accident; cannot hold his water. This last obviously incorrect, demonstrated by examination of clothes. This man suffers from neurasthenia, fostered by unfavourable surroundings, doctor's exaggerated attention, and wife's excessive sympathy. I advise four to six weeks' Weir Mitchell treatment in hospital."

A few days later he entered a hospital, and soon improved; but after a week he became intolerant of isolation, so, as a compromise, his wife was allowed to see him once a fortnight. Three weeks after admission to hospital he reported himself as "nearly well," and in less than a month was sent to the seaside for three weeks. Seven weeks from the date of his entering the hospital he was obviously well, his own statement being: "I am all right now; the only thing I want to put me on my feet now is to get something to do."

Unfortunately, owing to market conditions E. M. could not obtain work.

Six weeks later he was seen by a nerve specialist who reported that he was not to resume work of any kind, and is stated to have advised him that the £150 which had been offered him by the defendant company was insufficient.

Two days later I was again asked to examine him. I reported that his then condition was obviously due to his failure to obtain work, and his return to his old environment—i.e., that of his sympathetic wife and family practitioner. It was clear that his removal from his old environment, and the treatment of the hospital, had cured him. There had, indeed, never been any evidence of severe shock. I pointed out that, unfortunately, it was impossible for the defendants, in considering his present condition in relation to the extent of their liability, not to take into account the man's previous accident, but in fact the present condition was really a new illness (neurasthenia of a non-traumatic type) which had developed in consequence of his bad environment, and arose largely, if not wholly, from his inability to obtain work.

His solicitors shortly afterwards reported that he was very unwell and had had "a fit," and was again in his doctor's hands. I was asked to see him at the seaside in consultation with his new doctor, who stated that the patient was suffering from loss of appetite, weak back and legs, difficulty in reading, sleeplessness, and "nerves." I satisfied myself that there had been no fits as alleged, but he had had one slight fainting attack. The doctor at the seaside reported that he was a "damaged article" and only fit for the "scrap-heap"!

E. M. next found his way to the National Epileptic Hospital, where he remained for many weeks. The trial of the action took place whilst he was an inmate of the hospital, and he attended accompanied by a house surgeon and a nurse from the hospital in uniform. He was awarded £500 damages.

One month after the trial he left the hospital, and eleven months after that commenced work. He had continued at work for nine months at the time I made my inquiry.

Frequently the occurrence of an accident so perverts the mental outlook of the victim that he persistently dwells upon and exaggerates all his unusual sensations, and in process of time they come to fill so large a portion of his field of consciousness, that, to a certain extent, he genuinely believes he is not fit for work. This belief, fostered by self-interest and an unfavourable environment, grows at the expense of the rest of the mind, like the delusions of the paranoiac, or the growth of a cancer at the expense of the body. Physically these men are perfectly able to work, provided they have sufficient stimulus. The possession of club money deprives them for the time being of a good deal of the necessary stimulus, and if they have an allowance under the Workmen's Compensation Act, or the expectation of "damages," that deprivation may be prolonged for months or years; and the idleness in which they live during such lengthy periods makes them more and more unfit for any real laborious work.

The results of cessation of work are twofold—mental and physical. The *physical* effect is deterioration of health, which is the direct and natural result of insufficient nourishment.

The *mental* effect of idleness, enforced or otherwise, is that the idea of invalidism takes possession of the workman; he broods over trifling abnormal sensations, with the inevitable result that, whether capable or otherwise, he gradually becomes indisposed to work.

These two effects act and react on each other, and produce

a vicious circle entailing much misery both on the breadwinner himself and those who are dependent on him.

Provision of Light Work.—Large employers of labour would do well to keep certain classes of work of not too severe a nature for injured workmen to be employed in until their full strength has been recovered.

If the favourable opportunity is allowed to slip by, if the patient is not induced to return to work, or if he cannot, after honest endeavour, get work, then too often he falls into the miserable condition of hystero-neurasthenia, which is not directly due to the accident, but partly to the man's unhealthy auto-suggestion, and partly to the unfavourable nature of his environment.

It is very important that a man who, after medical examination, is found to be fit for light work should be so informed, and that light work should be offered to him. In the event of subsequent arbitration proceedings being taken to reduce the award, the suggestion may be made that, whilst it is perfectly true that the man was fit for light work at a certain date, not having been informed of that fact, he is to be excused on the ground of his ignorance.

To an ordinary layman this may sound far-fetched, and most honest people would return to some sort of work when they were able; but on two occasions I have heard County Court Judges refuse to reduce an award at a date prior to the proceedings because the workman had not been definitely and formally informed some weeks before that he was in fact fit for light work.

If a workman who is work-shy is categorically told that he is fit for work or light work, as the case may be, and such work is actually offered to him, it is of much value, in subsequent Court proceedings, if it can be proved that he has neither worked nor made any effort to procure work.

Unfortunately, however, the provision of *light* work is not always beneficial; in some cases it seems to imply a feeling of sympathy, and this militates against the recognition of complete recovery by the workman. The following is a good illustration of the class of case in which nothing but an enforced return to full work, in spite of the little disabilities which must attend it, will be effective:

E. N., a stoker, whilst engaged in his work, fell through a hole in the floor which had been left uncovered. When discovered he was hanging from a beam, and was at once taken to a hospital and temporarily treated, as he alleged, for a "dislocated right shoulder and fractured clavicle." A few days after the accident he was sent to me for examination, and it was apparent there was neither a dislocation nor a fracture. I advised a radiogram to be taken, and it disclosed obvious *old-standing* arthritic degeneration of the right acromio-clavicular joint, but no signs of recent injury of the bones of the shoulder-joint. At the end of three weeks, examination showed no apparent improvement. At a further examination fifty-six days after the accident, it was obvious he was grossly exaggerating, and he was ordered to be sent to me for weekly examination. A fortnight later he announced, before he was even asked how he felt, that he was "worse rather than better." All bruising and swelling had now entirely disappeared, and the shoulder was practically well. He protested, however, that any attempt to move the shoulder caused intense pain, and his own efforts to move it were grotesque in the extreme. It was clear that he was making *no* effort to get well, and I arranged for a surgeon to give him an anæsthetic at a hospital, and asked him to report the degree of pliability of the joint. To my surprise, it was reported that the joint was, in fact, stiff under the anæsthetic. Not being satisfied, I asked to be present when an anæsthetic was again administered. It was as I expected—the anæsthesia had in the first instance not been pushed; for on the second occasion, when deeply under anæsthesia, the arm was *freely movable*. When conscious he still made grotesque attempts at raising the arm, but it was noticeable that *all* the opposing muscles were brought into violent spasm, which really had the effect of preventing rather than causing movement. The conclusion I came to was that he was not altogether a shammer, but he was an ignorant and stupid man who had the *fixed idea* that he *could not* raise his arm. I now insisted on his suspending himself by both hands from a trapeze, which necessitated his putting both hands above his head.

It was therefore clear that it was his mental state that had to be dealt with. He was told that he must now and at once return to his *ordinary* work, or I should report him as a malingerer. He went to work, but unfortunately, instead of being given *full* work, he was put on *light* cleaning work, and was in consequence a week or two later again sent to me, with the intimation that, as he did not seem capable of doing even this light work, he was of no use to the service, and superannuation was suggested. This I declined to agree to.

The sympathy implied by giving him light work had had the worst possible results. He had not seriously tried to do even the light work given to him. Instead of doing as suggested, and reporting him as permanently unfit, thereby entitling him to a pension, I told him that unless he returned to full work, that of stoking, and did it effectively and continuously, he would be discharged as a malingerer and lose the pension which in time he would be entitled to. I let him

clearly understand that I now had abundant evidence that he was quite capable of doing his fair share of hard, laborious work, and that I knew he was trying to shirk it. The effect was marvellous; he straightway returned to his ordinary work, and did it. I had him kept under observation for some time to see that he did a proper amount. Two months afterwards I received a report that he was still at work, doing it satisfactorily, and he had made no further complaint.

The importance of environment in cases of accident is illustrated daily in homes where there are young children. When a child falls, it may generally be prevented from crying by diversion of attention and encouragement to run about as though nothing had happened. The mentality of sufferers from shock, accident, and illness generally, is reduced more or less to the level of that of young children, with their small powers of self-control, tendency to impulsive display of emotion, and marked suggestibility. This is, of course, especially true of sufferers from hysteria.

Since the passing of the Workmen's Compensation Act cases of functional disease have multiplied with great rapidity. The reason for this can easily be seen; for whereas in former times the victim of an industrial accident had either to get back to work as soon as possible or break up his home and go into the workhouse, he is now provided for by legislation, and in many cases comes to regard his accident as a valid reason for living at the expense of his (former) employer. Moreover, trade-unions, to save their own funds, sometimes, it is to be feared, encourage their members to thus live at the employer's expense.

Recovery retarded when Club Money is Excessive.—Speaking generally, it may be said that, as labour has for the most part become more and more monotonous and irksome, the stimulus to return to work has become very much less than it formerly was; indeed, it is sometimes non-existent, and the club member with his half-wages compensation and club moneys is often better off when idle than when at work.

The following case illustrates the malign influence of excessive club money in prolonging disability:

History.—B. R., a market gardener, aged thirty-five, slipped from the thirteenth rung of a ladder, falling on the small of his back. This happened seven and a half months before the date on which I was

asked by an insurance company to examine him, in consultation with a medical man who had previously seen the case.

Examination.—B. R., who had done no work since the accident, was a healthy, able-bodied, florid-looking man. He complained of a pain that went up his back and across the front of his chest, of pain in his head, and inability to sleep well.

Application of the faradic current proved that he was not truthful in his allegation of pain in the back. He said he could not stoop without difficulty; on one occasion, whilst in the stooping position, I told him I could find nothing whatever the matter with him, at which he was so surprised and indignant that for the moment he forgot himself, and assumed very nimbly an erect position. Although he said he could only bend his back with very great difficulty, he stooped easily to pick up his belt which had been dropped on the floor.

Careful examination of the spinous processes showed that there was no disease of the spinal column. The alleged pain in the back existed in his imagination only. Whilst he complained bitterly when his back was pressed in the ordinary course, he allowed firm pressure with a metal electrode when his attention was directed away from himself.

Examination of the nervous system showed no sign of disease; his doctor even stated that B. R. had increased in weight. When asked to walk about, he separated his legs and bent his back, making a ridiculous feint of walking, but marched about pretty quickly when his arm was taken in a jocular way and he was made to do so.

From first to last, during a protracted examination, he exhibited no sign of disease or traumatism, except that he had the happening of the accident on his mind.

It transpired that during the first six months following the accident he was in receipt of club money which made his income two shillings a week more than when he was at work, and that he was still in receipt of only two shillings a week less than his usual income, therefore he had no pecuniary inducement to resume his occupation.

B. R.'s doctor maintained that his patient was unfit for work. The claimant's solicitors stated that their client was unable to attend at my house, so that fourteen weeks later I had to make a considerable journey to his house in order to examine him.

His statement that he had not slept five hours consecutively for nearly a year was inconsistent with his appearance. He complained of pain in the top of his head (which, being a subjective symptom, it was impossible to deny or confirm), and of involuntary micturition, which I ascertained to be untrue from an inspection of his clothes.

The case was in some ways an exceptional one. Here was a strong, well-nourished, robust young man, who stoutly declared that he was wholly unfit for work in consequence of a comparatively slight accident which he had sustained nearly twelve months previously. He was suffering solely from an obsession that he could not work, and from the demoralizing effect that twelve months' idleness has upon healthy, full-blooded individuals of his class. The two most potent causes of

his present condition were, first, the club allowance, which made his income almost as much as he could get when at work ; and, secondly, his doctor, who, whilst the best of fellows, was the club doctor, and happened not to have the knack of dealing with these difficult cases. B. R. remarked to me that in a very short time his club allowance would be reduced to the sum of seven shillings a week for life. He was not likely to get better so long as he had the prospect of this annuity and half-wages under the Workmen's Compensation Act.

Compensation was stopped immediately after my examination, and proceedings were instituted.

Result.—Some weeks later, at the County Court, I gave evidence at the hearing of the case. The Judge decided in favour of the defendants.

The following is the case of a man in receipt of club money sufficient, together with half-wages under the Workmen's Compensation Act, to make his income exactly what it would have been had he been at work :

History.—B. U., a carman, aged sixty-two, whilst driving his van under an archway, was struck on the head, and also sustained a broken rib. Five months after the accident I was asked to call and examine him on behalf of the insurance company with whom his employers were insured.

Examination.—He told me he was unable to work, and complained of a feeling of weariness at his neck and the upper part of his back after walking for an hour or so.

From the history of his case and my examination, it appeared that he had never been really seriously injured, and certainly, after five months' idleness, the time had come when he should resume work. It was pointed out to him that idleness very naturally made him apt to examine his sensations, that from time to time on first returning to duty he might have some slight inconvenience in his back, but that he was now well and able to resume work. After reasoning with him in this way, he replied : "Very well ; if you say I am fit for work, I will go back." He pointed out, however, that his duties compelled him to assist sometimes in the actual moving of furniture. I told him I had no doubt his employer would make it easy for him in this particular for a week or two. In this case the point was to get the claimant back to work.

Second Examination.—Seven weeks later B. U. was sent to me again, because, although he had returned to his work, he persistently declined to do full work.

Now, this man was a cripple before the accident, his condition being what is popularly known as "hunchback," and on this account the case was a difficult one to deal with ; for a working-man with a bent spine is, even when well, seriously handicapped in his daily work. Doubtless long before the accident his daily work must at times have been unduly irksome, and he must have felt his back painful when

assisting in the removal of furniture. At this juncture the somewhat dramatic nature of his accident, the sympathy which would be afforded to a little deformed man at hospital and convalescent home, prolonged idleness before he returned to work, the fact that when he did return he was very rightly allowed to go easy for a time, and his sixty-two years, all conspired to endow him with what appeared to be a fixed determination that he would not, as he expressed it, "take to his old job." He probably understood, moreover, that his deformed appearance alone would command success in the Law Court.

Result.—I was loth to advise the insurance company to contest this case in Court, though convinced that the man was quite as fit for his work as he had been before the accident. He was not really a malingerer, but, having all along been reluctant to resume, had convinced himself that certain feelings of weakness—which, in fact, he must have always had—were accentuated as the result of his accident.

I put myself to some considerable trouble in reasoning with this man, and was pleased to hear from the insurance company that they were able to settle with him satisfactorily without having recourse to further proceedings.

Functional Disease kept up by Legal Delay.—In cases which are contested, the "Law's delay" accounts for a great deal of prolonged disability, and the development *meantime* of functional disease. In many cases the keynote to the situation is found in the workman's desire for a lump sum settlement.

Can we wonder that sometimes a working-man appears almost to welcome an accident that may bring him an otherwise unattainable fortune? Moreover, while waiting for a settlement, and especially while waiting for the trial of his case, he has little or nothing but his health to think of, being usually devoid of literary resources, and being rigorously prevented from helping in house work by the visiting officials of his club and trade-union. In a large number of such cases subjective sensations are unwittingly fostered by constant introspection, and a "traumatic neurosis" is brought into being which is of psychic origin, and rests not so much on the physical injury itself as upon the *exaggerated idea* of the injury; and this, in turn, mainly depends on the personal equation of the "sufferer," and of those associated with him in making out his claim for damages.

The close questioning, oft repeated, as to the exact details of the accident and his feelings, by both lawyer and doctor, and the everlasting inquiries of well-meaning but injudicious

friends and acquaintances, all help to rivet the man's attention on his internal anatomy and general condition, and bar all possibility of his ignoring, and so dismissing, those minor aches and pains which assail us all during periods of idleness and enforced inactivity.

The extra attention which under these conditions is paid to a simple man of the working-class, both by his friends and his employer, impresses him with the conviction that he is the central figure of some quite extraordinary occurrence.

Too often the abnormal condition thus engendered will remain until the dispute arising from the accident is settled, and generally, so far as recovery is concerned, it matters less than one would expect whether the claimant wins or loses.

Experience teaches that if active steps are not taken to hurry on legal proceedings, or to settle these cases out of court, the apprehensive condition into which the plaintiff, more especially if a woman, allows herself to drift *postpones* indefinitely the date of recovery.

Neurasthenia after Accident without Trauma.—It is not generally appreciated that traumatic neurasthenia can occur without any actual traumatism. Many such instances have come under my observation.

History.—Miss B. S., a teacher in a day school, was travelling inside a public conveyance, when a horse suddenly put its head through the window. She received no physical injury, but stated she had been so frightened she was quite incapacitated for work.

Examination.—Seventeen days after the occurrence I was asked to examine her, and found her in bed. She was evidently of a nervous temperament. I learned she had had a nervous breakdown some time previously. Her doctor had taken her to a nerve specialist, who had diagnosed neurasthenia, and ordered her to bed, where she was being assiduously attended by a trained nurse. The doctor intended to send his patient to the seaside after a few days, and I strongly urged this course as the best means to cut short the illness. The question of damages, assuming liability, being one which often looms largely in the minds of those who are the subject of accidents, I considered that the sooner the case was settled the sooner the patient would return to her duties.

Result.—No settlement, however, was arrived at, and seven months after the accident the case came to Court, resulting in a verdict for the defendants.

E. O.—Recently I had under my care a woman who, whilst at work, heard a loud explosion in an adjoining building. She happened at

the time to be in a poor state of health, and, both her husband and father having died in accidents, the mental effect of the shock produced symptoms indistinguishable from those which would have occurred had she been actually physically injured.

The fact that an individual happens to have met with an accident, and shows no courage, is no reason why he should be permitted to welcome every abnormal sensation as something of possible value from the point of view of the Law Courts. In these cases the usual clinical tests show the absence of organic changes in the various parts of the nervous system. These people have, as a rule, the full measure of control over the power of equilibrium and muscular co-ordination, but they have a weakened self-control, and have developed a wonderful capacity for dwelling on their imaginary pains and of educating themselves into invalidism. They are so anxiously on the lookout for fresh symptoms that it is surprising they are not possessed of a better stock than they usually have. On the other hand, they have an entire absence of true neurasthenic symptoms, such as nervous tremors, the characteristic mask-like expression of indifference, and so forth.

Many of these cases are not malingerers in the first instance, but their want of pluck, combined with many months of idleness, introspection, and medical attendance, so demoralizes them that they become a little difficult to classify.

E. P., a fireman aged thirty-one, sustained bruises of the head and back under circumstances which entailed much notoriety and many newspaper paragraphs. He did not suffer any really serious injury, but, when sent to me two months after the accident, kept his back bent at an obtuse angle, declaring he could not take off his clothes, but eventually did so, and put them on with some alacrity.

His woebegone appearance and his apparent helplessness during my examination were in strong contrast to his subsequent behaviour, for he was observed outside my house laughing and gossiping with strangers.

As is so usual in these cases, his medical attendant diagnosed an obscure spinal lesion. He was obviously fit for work, and, as I so reported, he resumed forthwith.

After forty-one days he again put himself on the sick-list, and his medical attendant reported that his pluck and nerve were gone beyond all recall.

He obviously did not intend to resume his usual work again, so I obtained his admission into hospital, where it was noted that his

appetite was good, that he slept well, that he was mentally clear, that all his reflexes were normal, but that he had an hysterical loss of sensation. He remained in the hospital for thirty-three days, and was then sent for three weeks to a convalescent home, after which he was ordered to return to work. This he did for a month only.

He was now said to be unable to stoop or kneel on account of pain, and his medical attendant became more convinced that he had an "organic lesion" of the spinal column. He was accordingly again sent to me for examination and report. It was obvious that he had no desire to get well, that he was hysterical, and was suffering markedly from pensionitis.

He was a self-made neurasthenic for medico-legal purposes, but I hoped prolonged hospital treatment would lead him out of his morbid mentality; therefore I arranged for his admission into another nerve hospital.

He remained for four months in the hospital. The house surgeon reported that he still had "pain and tenderness in the back" (presumably he *said* he had pain and tenderness in the back); that at first he improved "to a slight extent, and latterly very little." No organic disease of any sort had been discovered.

On leaving the hospital he still held his back at an obtuse angle, and when asked to touch his toes his attempt was a pantomime display. He was then sent to a convalescent home for four weeks. On his return from the convalescent home he was seen by his medical attendant, who now attempted a more exact diagnosis, and suggested locomotor ataxia as being approximately correct. It was now thirteen months since his accident, and I was called upon to report definitely as to his fitness or otherwise for work, a decision which is always sooner or later forced upon me. I certified him as permanently unfit for further service, and stated the cause as traumatic neurasthenia, but I was well assured that he really was a malingerer. I so certified, because I knew that I could not substantiate a charge of malingering. In reporting him unfit I detailed the circumstances, and ventured to predict that after receiving his pension (which must follow my report) he would be at work within six months. Curiously, it turned out that that was the exact period at which he did in fact return to work, with, of course, his pension of 25s. a week for life!

Cases of nervous shock apart from physical injury occasionally occur, and the Court of Appeal has held that such cases come within the terms of the Workmen's Compensation Act. An illustrative case will be found on p. 548.

Mental Outlook of the Injured.—The subtle distinction between unwillingness to return to work and a loss of will power to do so, is not really obscure, though seldom recognized. What has been well described as the driving force of routine keeps most of us at the point of duty when we

would much rather be elsewhere, and it is not difficult to see that when the habit of daily work is broken in the case of those whose education is very incomplete, and whose perspective is blurred when dealing with themselves in relation to their environment, delay in returning to work is by no means necessarily culpable laziness, but is due to obscure mental processes leading to defective reasoning for which they are not wholly responsible. Nevertheless, I am of opinion that, provided the physical disability which caused the cessation from work has ceased to operate, firmness and the *vis a tergo* method is always the best, and sometimes the only effectual method.

Statistics with regard to the effect of our various Compensation and Insurance Acts have not been exhaustively collated; but the increased number of non-fatal accidents, and the lengthened incapacity arising therefrom, cannot be the unassisted result of modern conditions of labour, or even the speeding up of machinery, etc. If we look abroad, where they are apparently more fond of figures, Dr. Lidwick Bernhard, a German professor of political science, affirms that German statistics prove that, in spite of improving medical and surgical methods, the duration of incapacity in some ailments and in accidents is greater than it was in pre-insurance days; while Dr. Kortwig, a Dutch professor, points out that before the Netherlands adopted insurance, the German working-man took much longer to recover than men injured in the same way in his country. In due time, however, the Netherlands adopted an accident insurance, and the duration of sickness suddenly increased. The following remarkable statistics speak for themselves: In Denmark it is the practice to pay insured workmen lump sum settlements at a very early stage of their incapacity, and in consequence 93.6 per cent. recover from what in this country is known as traumatic neurasthenia. In Germany, however, where the sick man is entitled to a pension, only 9.3 per cent. recover from the same disease.

Pseudo-Traumatic Neurosis.—A very fine line divides traumatic neurosis from a form of nervous apprehension, which is shown in its full intensity in so-called highly-strung people. After an accident the latter may become nervous, querulous, introspective, and complain of sleeplessness, giddiness, buzzing

in the ears, and of pain almost anywhere, which has no real basis locally, but has its origin in the mind. These subjective symptoms are, perhaps, best seen when the patient happens to be a Jewess, who is unfortunate enough to live with near relations who consciously or unconsciously assist in magnifying every morbid sensation which the tyranny of her neurotic organization suggests. These cases are, from the point of view of the defendant, very serious, but when, in addition, the medical man of her choice happens to be unacquainted with the nature of the case he is treating, or for commercial reasons will not be faithful, the prospect is indeed a dreary one.

Cases of this sort are incurable in their existing environment, and they must either be sent to the seaside or country, away from their relatives, friends, and medical attendant, and placed under the care of those who have some understanding of what is required, or, better still, placed some six weeks or two months in the healthy environment of a *good* nursing-home or hospital. If neither of these alternatives is possible, or will be acceded to, a line of less resistance, and occasionally a successful method, is to introduce into the household a good nurse.

Some of these cases are pseudo-neurasthenics for medico-legal purposes ; others are hysterics, with not a little guile. All are obviously suffering from the prospect of litigation with all its possibilities. They are, in fact, professional valetudinarians, and how far they differ from real malingerers is an ethical point of great subtlety. As a rule they have a small mental banking account, little sense of responsibility, very little idea of the proportion of things, and are quite ignorant of the fact that the only true happiness in life lies in work.

Auto-Suggestion.—It is my firm belief that nine-tenths of the subjective symptoms (not, of course, the physical signs) which I meet with in trifling accidents are the results of auto-suggestion.

It is always exceedingly difficult *after a serious accident* to determine how much of the alleged disability is due to a physical condition consequent upon the accident, and how much to true neurosis. To act fairly in a case of this sort both to employer and employee is a task which can only be successfully performed by those who are constantly in touch, not only with nervous disease, but also with claims for damages.

Is there Organic Disease?—When confronted with these difficult cases, especially those which cannot readily be classified either as pure hysteria or pure neurasthenia, the first and all-important step to take is to make as sure as one can that there is *no organic disease present*. This is by no means easy, as certain organic diseases in their incipient stages closely resemble hysteria, neurasthenia, or still more the hybrid hysteroneurasthenia. Of these the most likely to cause mistakes are disseminated sclerosis, general paralysis of the insane, tabes, the parasyphilitic nervous affections generally (parenchymatous syphilis), tumour of the brain, and melancholia. The differential diagnosis of these diseases from the functional diseases here under consideration is given in detail in Chapter V.

In all cases of nerve disease, our first duty is to decide whether the physical signs are the result of organic or of functional disease.

Treatment.—If the disease is functional, it is important to appreciate that we have to do with a psychological condition, and the next step is to discover the mental attitude of the patient towards his condition and its treatment.

The only remedial measures of any value are those which are directed towards altering or adjusting the mental attitude of the patient towards his condition and environment. The essential question in all these cases is: Does the patient desire to recover? Apart from the comparatively small number of cases where there is a determined effort not to recover, there is a large number of those who unconsciously cling to their symptoms, which they appreciate are a passport to sympathy. Many of these cases have succeeded in deceiving themselves; their former attitude was culpable, yet they should not be treated as malingerers, for their morbid thoughts have now become a habit, and are independent of volition.

Successful treatment in these cases is best attained by a preliminary careful, even an ostentatious, physical examination. Where the result proves the condition to be functional, it should be followed by a patient, painstaking explanation that the nervous symptoms show no evidence of a "stroke," that there is no "clot on the brain," no "paralysis," and that there is, in fact, no real disease of the brain or nervous

system. It should be explained that the symptoms complained of are admittedly present, but that they are not brought about by disease, but are the result of impressions made on their minds which can gradually be got rid of by a strong effort of will.

It should be remembered that the mental impression of invalidism—the result, perhaps, of months of thought—is a very real one to the patient, and that the only way to effect a cure is to convince him that he certainly will recover. The sooner he is so convinced, the sooner he will recover. His whole environment should be of confident assurance of complete recovery.

The function of the conscious brain of our waking hours is recognized by everyone, but that of the subconscious brain, which never sleeps, is not fully appreciated. It is by subconscious cerebration we are inspired with ideas, and names and facts are recalled; and there is no doubt that in this way character and conduct are largely, but unconsciously, influenced.

In the vast majority of cases where litigation is pending, it is impossible to practise hypnotic suggestion; but the remarkably rapid cures which have been performed by neurologists attached to military hospitals speak well for the future of this method of treatment, which unfortunately is still under a ban, the result of having in early stages been exploited by mountebanks. Fortunately, the suggestion of cure can be implanted without hypnosis, and is practised by all successful physicians.

Having by careful examination and the usual tests, detailed in Chapter V., put organic disease out of the question, the next thing to be decided is: How far are the symptoms complained of real, exaggerated, or assumed? This can best be done by careful questioning, by watching how the patient behaves, how he enters the room, approaches the examiner, shakes hands (generally an advisable procedure), takes his seat, undresses, dresses, and so forth; by suggesting to him impossible symptoms, and utilizing all the various methods of examination detailed in other parts of this book.

The enormous importance of making a painstaking and scientific examination, and of taking careful notes at the time of every result arrived at, will be obvious when we reflect

that no examiner can possibly take the strong line so essential for successful treatment unless he is sure of his own ground, unembarrassed by misgiving as to diagnosis and unimpeded by hesitation as to appropriate treatment.

To form an opinion as to how far a patient's symptoms are attributable to his or her own faulty mental processes, the examiner must have a thorough understanding of the two chief forms of functional nervous disease—neurasthenia (more especially traumatic neurasthenia), and hysteria; and, furthermore, must be prepared to distinguish these from deliberate malingering.