CONCLUSION.

To sum up, we may say that there are two operations which have proved fairly satisfactory for approaching the pituitary fossa, the Hirsch-Cushing submucous nasal method, and the fronto-orbital method of Frazier. Though it is not possible yet to decide finally between these, the opinion can be expressed that the fronto-orbital route is more suitable in the great majority of cases. In the three cases which the speaker has operated on this method has been adopted with success. All three of these cases were almost blind before brought for operation. In the first case a portion of an endothelium was removed and the general condition improved though the sight did not improve. The third case obtained great improvement of vision after a cyst was evacuated. The second case proved to be one of syphilitic meningitis, and though the patient said he was a little better after the operation there was no obvious improvement in his condition. Now that the mortality of the operation has diminished surgeons can more readily urge that patients with coming blindness due to pressure on the chiasma should be treated by operation more early than is now the case. An extended and more fully illustrated account of the whole subject will appear in the British Journal of Surgery in July.

CONTRIBUTIONS TO THE STUDY OF SHELL SHOCK.

BEING AN ACCOUNT OF CERTAIN DISORDERS OF CUTANEOUS SENSIBILITY.

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III.

In my first communication on this subject I described three of the earliest cases of shell shock I had seen, which were characterised especially by defects of memory, vision, smell, and taste. Among the large number of cases which have since come under my observation I have met (in about 25 per cent.) with various disorders of cutaneous sensibility, some distinctive features of which form the subject of the present contribution.

Over-reaction and "Hyperesthesia."

The following is a pronounced instance of general over-reaction:

CASE 9 (Case-number 227).—Stretcher-bearer, aged 19, with 13 months' service, and 6 months' service in France. Was seen by me on the day after admission to a base hospital. Four days before admission he had been "blown up three times by aerio-torpedo trench mortars," while attending to the defects of memory, vision, smell, and taste. According to the second cases which have since come under my observation I have met (in about 25 per cent.) with various disorders of cutaneous sensibility, some distinctive features of which form the subject of the present contribution.

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leg and lasts longer as an after-tingling; "its sharper and itches more."

As would be expected, such over-reaction when limited to one side of the body usually made localisation of the sensation at all the more difficult and more inaccurate than in the normal side. No doubt the spatial threshold would have been raised, but I have not yet applied the compass tests to such cases.

In case of far closer inquiry is needed to establish more than the superficial resemblance which is here indicated. In view of the relation already recognised between emotion and, on the one hand, shock, and on the other, thalamic inquiry, this would have special interest. Unfortunately (or fortunately, in relation to freedom from prejudice) the relation was not in my mind when these observations were recorded.

As Head and Holmes observed, the paths of cortical control "come from all parts of the cortex to impinge on the thalamus" (p. 179). No doubt in unilateral lesions of the optic thalamus many of the striking features observed are due to the more or less complete abolition of the thalamus as a sensory relay station.

But in the cases with which we are now dealing, the interruption, if it occurs, is of a functional character, and the cortical centres here deprived of their normal inhibitory action are in a situation far "higher" than those of which we have at present any topographical knowledge, acting, in a sense, as a sensory relay station. The patient's replies indicate a sensory relay station as much as an affective over-reaction. And in this connexion we may recall certain features of what Head and his fellow workers have called "protopathic" sensibility where one peripheral system of sensibility obtains full play, not over-controlled by the inhibitory influence of the higher ("epiphanic") system — yet another instance of unleashed primitive sensibility.

In none of their cases did Head and Holmes observe with a lowered threshold, i.e., a true hypesthetic reaction on the affected side, although the affective over-reaction was throughout a characteristic feature. The patient typically replied that a prick was less sharp and less pain over the affected side, although it hurt him more, and in several cases an actually higher threshold was found on that side.

We have, therefore, to consider whether the "hyperesthesia" which is met with in certain cases of shell shock is the outcome of genuine increase in sensibility or whether it is not due to sensory diffuseness and increased affective response. At first sight it would appear that this question could be settled by comparing, in hemi-hyperesthetic patients, the thresholds to pain or touch of the two sides. But even had I had the opportunity of employing an algometer or von Frey's hairs in suitable cases, I am very doubtful if any accurate readings on the affected side would have been possible, in the case of pain, at least. It would always have been difficult to ascertain whether the patients were responding to the minimal sensation of pain or of touch or to the deeper discomfort which they expected the stimulus to produce, so "jumpy" was their invariable condition. Moreover, it is quite conceivable that even if the threshold for pain and touch were found normal, the sensation might, nevertheless, be abnormally strong after once that threshold had been passed—that is to say, when the stimulus was powerful enough to give rise to any sensation at all. We might, for example, account for the fact that in several of my unilateral "hyperesthetic" cases a warm or cool touch felt warmer or cooler on the affected than on the normal side.

At all events, attention must be drawn to the fact that in several of my cases the condition of "hypersensitiveness" whatever may have been its nature, passed over into one of distinct hypesthesia, without, however, losing all its features. Thus, one patient, during a stage of mutism, had shown unilateral (left) "hypersensitiveness," which 12 days later gave place to diminished sensibility; whereupon he complained that "the prick is more numb on this (left) side and seems like a blunt point, but I feel it more, because it seems more," and he averred that light touch "tingles up the left side, but it does not feel numb on the right as it does on the left."

In another case the state of "hypersensitiveness" over an achy, tender, "jumping" palm (areas which sand-bags had been blown through a shell explosion) was accompanied by "dullness" to cotton-wool over that area. In yet another, previous "hypersensitiveness" of the right leg and foot ("it seems to jab all over") was followed by a "sleepy pins-and-needles feeling" in the right calf, but the prick still seemed to "run up more" than on the left side.

Another case is noteworthy of loss of sensibility on one side, on which patches were found giving a sensation to pin prick of "tickling like a hair, more ticklish than usual, felt over a wider area" on the opposite side.

Anesthesia.

But whatever be the cause and nature of the disorders of sensibility already considered, there can be little doubt as to the origin of the far commoner (2:1) condition of simple anesthesia or hypesthesia. It is the outcome of a state of complete control but on the side of dissociation or inhibition in the higher cortical regions. How far suggestion plays a part in this process may be deferred for the present; I need only now remark that I was alive to the possibility of the anesthesia being produced by medical investigation and took every precaution to avoid it.

The loss of sensibility varied considerably in degree. In the slightest cases it could only be demonstrated by comparing normal with abnormal regions of the skin surface. Loss of pain was commonest, the prick of a pin being (a) merely dulled, or (b) recognised as the end of a match or pencil, or as my finger or finger-nail, or (c) not even felt as a touch. Only in the severest cases was sensitivity to deep pain demonstrable.

Defective power of localisation (because "I can't feel it so well") was often present over hypesthetic regions. Thermal sensibility was also found to be deficient, when there was pronounced loss of sensibility to light touch, but sensation to deep stimuli appearing less hot or less cold over the affected areas. The surface temperature, especially of the extremities, was sometimes very cold; and in one case a bilateral difference of body temperature accompanied a bilateral difference of sensibility to light touch and to cutaneous and deep pain, yielding correspondingly different answers to moderately warm and cold stimuli on the two sides owing to the different "temperatures of adaptation" thus arising.

It was this kind of disturbance of sensibility which was alluded to in Case 6, described in my second communication.
Sometimes such anesthesia or hyposthesia arose immediately, especially in patients who had been buried; and in several of these cases, as we shall see, the loss of sensation occurred in regions which had become painful or numb after being hidden under sandbags or other objects. In other cases the onset occurred later, and was more widely distributed. It then appeared to be the result of emotional stress (terror, horror, or anxiety) often uncomplicated by initial bodily pain, but almost invariably subsequent to a period of amnesia.

Hemi-anesthesia.

It was especially in such cases that the condition of hemi-anesthesia, so well known among hysterical patients, occurred. The two following cases may be cited as examples of this condition. (In the description of them, and henceforth in this article, the words anesthesia and hyposthesia will be used in their narrower sense of defective sensibility to touch, while analgesia and hypalgiesis will be employed for defective sensibility to pain.)

**CASE 10 (Case-number 129).—Rifleman, aged 33, with 12 years' service, and 5 months' service in France.**

Was admitted to a base hospital for inquiry into his mental condition. He stated to the surgeon he had been sent to hospital, replying: "I don't know" to nearly every question, and only slowly able to recall the names of his children, but able to give their ages. He later admitted to past abuse of alcohol. He complained of right temporal headache. His right arm was very tremulous even when at rest, and the grip of the right hand was distinctly weak. The knee-jerks were somewhat exaggerated, the plantar reflexes were flexor, and the abdominal reflexes were not obtainable. He stood and walked naturally; no Rombergism. His pupils reacted normally to light; no nystagmus.

Two days later the patient seemed distinctly brighter. On investigation of his cutaneous sensibility, he proved to be totally insensitive to pain and light touch on the right side of the face, trunk, and on the right arms. Sensibility to deep pressure, as tested by Castell's algometer, on the thumbs, was completely absent on the right thumb but present to a base hospital for inquiry into his mental condition. He stated to the surgeon he had been sent to hospital, replying: "I don't know" to nearly every question, and only slowly able to recall the names of his children, but able to give their ages. He later admitted to past abuse of alcohol. He complained of right temporal headache. His right arm was very tremulous even when at rest, and the grip of the right hand was distinctly weak. The knee-jerks were somewhat exaggerated, the plantar reflexes were flexor, and the abdominal reflexes were not obtainable. He stood and walked naturally; no Rombergism. His pupils reacted normally to light; no nystagmus.

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**CASE 11 (Case-number 94).—Sergeant, aged 32, with 11 years' service and 3 months' service in France.**

Was admitted to a base hospital for inquiry into his mental condition. He stated to the surgeon he had been charged with maltreating another. For seven years before the war he had been teaching in an army school. On arrival in the field he had at once found the heavy marching too much for him. He had fainted several times during the retreat from Mons and during the fighting on the Aisne, where he had reported sick for dysentery. He stated that on that occasion he went to a field ambulance for two days, and that owing to the bursting of shells, one of which struck the ground and knocked him into a ditch, the ambulance was forced to move for shelter into a shell. Since then he had suffered from tremor which, he stated, was much worse when he moved his limbs or was addressed, or when he felt himself watched. After discharge from hospital he had been employed for three months as despatch rider on a motorcycle, but he lost his nerve for this work and was then given the duty of looking after charge of fatigue parties. Again he had found the work—"long distances and long standing"—too much for him. Finally, the charge of malingerers was referred against him. He had always been a total abstainer.

The patient was a very nervous, delicate-looking man, with widely dilated pupils, a pronounced tremor of the right arm, and a pulse frequency of 102. No signs of goitre. The tremor was markedly diminished when he was left alone and was increased, extending to the head, when he stood, and to the lower arm when both arms were outstretched. He could control the tremor to a certain extent. He complained that he frequently woke at night, but said that he had no dreams. He had noticed that he forgot the names and faces of people he had known and the earlier parts of books he read. Memory tests demonstrated the defective state of his memory. He said that he felt very despondent and exhausted after the railway journey to hospital.

Two days after admission the patient said that he had slept much better last night. Pulse on admission 78; on the following morning Pulse-rate 75. Sensibility to pain distinctly reduced over the whole of the right side of the face, trunk, and on the right upper and lower limbs. He generally described a prick of the right arm or leg as the touch of my finger. There was almost complete hemi-anesthesia on the right side, pepermint leaf was felt "cold" to the right nostril, amnesia being present. Visual acuity; right eye read two letters; left eye all letters at 5/6. Right eye read only a few words of No. 1 Jaeger, and the print blurred; left eye read this type easily. Visual fields: general limitation in right eye; normal in left eye. Hearing not examined. Patient transferred to England, where, after one month in hospital and two months' leave, he was discharged from the army, physically fit for active service. He is still (eleven months later) very well, physically and mentally, is subject to severe headaches but becomes taut, especially in the right arm, when tired.

The Influence of Past History.

About two-thirds of the cases of disturbed sensibility were accompanied by spontaneous (subjective) disorders of sensation or by disorders of movement. Local aching, tenderness, muscular over-reaction, rigidity, and spasms were common accompaniments of "increase" of sensibility; similarly, local numbness and tremor, paresis, or palsy often went with loss of sensibility. Into the details of these disorders it is hoped to enter on another occasion. Such disorders could often be suppressed by the patient's attempt to actual blows upon the region in question due to the impact of sandbags or other objects, or to the patient's face after being lifted or pushed by the force of the concussion.

In a considerable number of cases the site of the sensory disorder caused by the shock was determined by a previous history of pain in that region. For example, one patient who had suffered four years previously from "ruptured kidney" and shock blood in the urine" after a football match, complained of pain in his "back and kidneys" after being buried by a shell. Another, who on admission complained of pains in the left leg, when he breathed, gave a history of severe pleurisy which he had suffered 12 months previously. Yet another, who after being lifted by a shell began to suffer from such pains in the left lower costal region and in pain in the left leg, recalled that he had had
plemry on that side many years ago and that a piece of glass once entered his left leg, from which, he believed, it had never been removed.

His admission to the military institution as to how far the earlier experiences may be actually revived in consciousness the following case deserves mention:

**CASE 12 (Case-number 422).—Private, aged 26, with 11 months' service and 1 month's service in France.** Was admitted to a base hospital on the day after receiving a shock. The concussion produced by a shell had caused the drag-out in which he was standing to collapse. The passage gave way and a beam hit him on the left side of his chest (pointed to a bruise on the face). It forced him forwards to the ground on his right side and pinned him there; as the same time a fragment of ragged iron fell on the left side of his back, and his right leg became pinned by a cross-beam which fell on the back of his thigh. He did not lose consciousness, but was merely dazed. He had about three tons of mud on his person, he explained; "one of my mates was my legs broken and the others were badly shook up. The rest of the platoon dug as out. Two men helped me to the dressing-station. He had been able to walk since.

He stated that he had a pain in the right groin and that his right knee gave way. He was quite certain that about 15 minutes' time the accident he had of the left "one of the other fellows" that he had "no feeling" in his right thigh. His medical officer did not arrive until about half an hour later. This "as his weakness (as it) increased, he says, until the day before my first visit, when the right thigh was found to be totally analgesic, to the level of the upper margin of the patella, save for a narrow strip in the mid-line on which the skin was still present. Since then the "numbness feeling" of the thigh had improved, and correspondingly I found that whereas the thigh was now generally hypesthesic and hypesthesic over its anterior surface, the only area of complete anesthesia and analgesia was on the outer side of the lower half, the posterior surface having regained its normal sensibility.

The patient explained that three years ago he had been buried 4 feet deep in a brickyard beneath a heap of clay which fell upon him. "I fell as most," he said, "in the right leg. I fell face downwards, like this time. My thigh was stiff and sore, not numb as it is this time. The back of it got black and blue." He admitted that this present accident immediately reminded him of his previous occurrence.

There was slight weakness of the lower facial muscle on the left side, of the left orbicularis palpebrarum, and of the arms, but no tremors or any disturbance of sensibility on the side of the accident. The left hand was as good as the right. The left biceps across which a plank fell, showed diminished sensibility to cotton-wool ("it feels number"), while a prick felt "like a match" until the biceps was inserted deeply when it was recognized as a prick, but the pain was "duller" than over the right buttock. Sensibility to warmth and coolness and to the vibrations of a tuning-fork was diminished over the right thigh, especially over the anaesthetic and analgesic area, where sensibility to deep pressure and to deep pain was also very markedly diminished. No threshold could be obtained over this area with the compass tests. The visual fields and taste and smell seemed unaffected.

The corneal and conjunctival reflexes were diminished. No jaw jerk was obtainable; the palatal, pupillary, abdominal, and plantar reflexes were normal. A knee-jerk was obtainable with the aid of reinforcement on the left side, but not on the right. Three days later the left buttock had regained its sensibility and the small area of total cutaneous anesthesia and analgesia on the right thigh had become one of hypesthesia and hypalgesia, with corresponding improvement in the sensibility of the rest of the thigh. The patient was now up and feeling very much stronger. He was sent to a convalescent camp.

Even in cases where there could have been no actual hurt from the effect of the shock, the subjective disorders produced could occasionally be elicited by reference to the previous history of the patient. For example:

**CASE 13 (Case-number 330).—Private, aged 22, with 13 months' service, 3 months' service in France.** Was seen by me in a casualty clearing station the day after admission. Two nights before my visit he had been out in a wood getting timber, when a shell came falling at some distance, about a hundred yards from him. He said he would not have minded it had it not been for the dead lying in the wood, he having just picked up a human head which in the dark he had mistaken for a piece of wood. The shell did not hit him down. He fell among the dead and remembered no more until he found himself running out of the wood, whereupon he again lost consciousness, and recovering which he found two stretcher-bearers helping him, with whom he returned.

The patient was a big burly fellow. He complained of pains in the back. On questioning him, he told me that he had had exactly the same sensation as a subsequent shock to the mental system. I may add that I have met with similar recurrences of other past disorders after shell shock.

**Spontaneous Spread of the Disorder.**

In many cases (e.g., CASE 12) the anesthesia spontaneously cleared up, without any suggestion and despite occasional examination. But in few instances evidence was forthcoming of a gradual spread of the subjective sensory disorder and an increase of the insensibility to pain after its first onset. For example:

**CASE 14 (Case-number 129).—Stretcher-bearer, aged 44, with 11 years' service and 2 months' service in France.** Was admitted into a base hospital and seen by me there eight days after report of injury. He stated that three days before this, while sheltering in a cellar, a shell jammed the door and that poisonous fumes from it entered the cellar. Later in the day in another cellar he was blown off his seat by a shell and his "surgeon and five men got laid out." That day and the two following days he was continuously startled and he worked at the wounded without any rest, afterwards returning to his regiment. Then he lay down, but on waking found himself useless in the left arm as if there was "something wrong with the circulation," it being numb and cold. This patient, but the numbness had since spread to the legs, especially the left. He complained of continual tingling in the terminal joints of the fingers of the left hand. There was distinct hypesthesia over both forearms and hands, especially on the palmar surface over the dorsum of the left hand there was total analgesia.

Two days later the patient said: "I can now feel articles I am touching. I couldn't before. They are only numb now in the early morning. The tingling comes on when the numbness is passing off." But on the same day the hands and forearms showed a total loss of sensibility to pain everywhere save over a small area on the flexor surface just below the elbow-joint.

**The Effects of Protracted Examination.**

**Improvement.—In the case just narrated the second occasion of examination showed a more severe loss of sensibility to pain than had been found on the first. Often, however, especially in those cases in which a spread of defective sensibility had occurred, a distinct improvement could be brought about by examination, provided that it was long enough continued at any one sitting. Thus one patient, after being blown over by a shell and later frightened by another, developed hypesthesia and hypalgesia over the left side of the chest down to the nipple line, over the left arm down to the elbow, and over the forehead especially on the left side. The first few pin prick tests applied to his face were felt, the next were described as my finger nail, but finally they produced a definite sensation of prickling pain. On the following day he felt far less shaky, his hands had almost lost their
previous tremulousness, his pupils were less dilated, and no difference in sensibility could be distinguished between the two sides of the head, chest, and the two arms. Other cases showed similar recovery during examination. One patient, for example, whose records had been distinguished Conducted Make exclusive investigation by a marked hypalgesia and slight hypalgesia over the left arm, and slight hypalgesia over the right arm; but after a series of deep pricks which were felt, the arms regained their sensibility. In another case light touches over the right thigh, but touch from the back of the hand became sensitive to light touch; but after an examination of the normal surface of the skin higher up on the back, the lumbar region recovered its sensibility.

Deterioration.—On the other hand, certain cases in the course of prolonged examination showed deterioration in sensibility. Thus in one patient the bilateral differences become more marked, and the state of hypalgesia becoming apparently one of analgesia, the subject being at length unable to distinguish (almost solely on the affected side) between the two sides and the point of a pin. This deterioration often appeared to result from the onset of a "jumpy," "nervous" condition, a state of mental confusion occasioned by the examination.

Perseveration.—Yet another change in the answers obtained directly from the subject was the result of perseveration, i.e., persistence of sensation and response. In one patient, for example, who had suffered from stupor and mutism consequent on shell shock, the flexor surface of the left forearm and palmar were "hyperesthetic," and "hypalgesic," and the left side of the forehead and chest were "hypalgesic," while over the back of the neck and over both scapula (where the patient complained of pain) a state of complete anesthesia prevailed. This order was that in which the examination was carried out. Yet when later applications of cotton-wool and pin were begun over the back of the neck and shoulders and extended on to the chest, the condition of anesthesia was found to spread over both sides of the chest down to the nipples, the left arm remaining in its former condition. These three features, of improvement through experience, of deterioration through mental exhaustion, and of perseveration, are well exemplified in the two following cases.

CASE 15 (Case-number 332).—Private, aged 33, with 5 years' service and 5 months' service in France. Was seen by me the morning after admission to a casualty clearing station, having been buried for a few hours before admission by a shell while he was in a dug-out. He said that he had come to himself shortly before my visit and had no recollection of being moved. He was alone in the dug-out when it was shelled. He admitted to having felt very bad lately owing to the depth of water in the trench. He had been kept back for two or three days for observation by his regimental medical officer before being sent back to the trenches. His general appearance, I find recorded in his notes, was that of one who has control over a stormy surface which might at any time get the upper hand and result in an hysterical attack. He complained of headache and of buzzing noises in the ears. The visual fields were distinctly restricted. The palatal reflex was absent. The patellar and plantar reflexes were normal. He stood unsteadily, especially when trying to walk. When his eyes were shut, he showed no tremor of the hands or tongue. His left arm was anesthetic to light touch. He could not distinguish the point from the head of a pin applied to his left arm. When it was pricked, he said that my finger was pressing. The right arm showed normal sensibility; but at first, over the right biceps, he momentarily carried over the immediately preceding answers of the opposite side, unable, but only for a few seconds, to distinguish the head from the arm. On subsequent re-examination of the left arm continual pricking resulted in a recovery of sensibility to pain over the flexor surface of the forearm, and at length the back of the hand became sensitive to light touch; but on the extensor surface of the forearm there was no sensation on the limb nothing whatever was felt. The forehead and arms were no more sensitive to light touch on the left side, but pain was felt equally on both sides. At first he said that the left side of the chest was more sensitive to touch than the right, and then he carried this difference over to the upper arms until the forearm was reached. Whereupon the difference of sensibility became reversed. Meanwhile the patient was a big, robust-looking man, showing very tremulous movements of the arms and legs, and a peculiar kind of walking movement. His gait appeared normal, but he stood very straight when he attempted to walk, and with his eyes closed. "I am strong enough," he explained, "but only a bit shaky. My legs have been very unsteady, especially when someone is looking at me. They cause me to lose my balance. I have had them checked once at a medical shop. They must have been short," he concluded. He had been successfully treated for the same complaint by a surgeon prescribed for the condition. But further trials, especially when aided by comparison with the effects of stimuli applied to the dorsum of the feet, resulted in the most satisfactory return of right answers. Tested with warm and cool tubes, he at first called both the fingers of one hand to the soles, and he gave generally wrong answers over the dorsum of the feet, often wrong answers over the legs, and occasionally wrong answers over the arms. Yet over the arms he was invariably correct, and when stimulated to attend by such injunctions as "Now, O., attend well, you know what you are doing," he could answer correctly over the legs and dorsum of the feet and usually over the soles. But in the course of further examination his legs became very markedly different in sensibility, "a silly childish fear came over me" (as he explained it), his hands began to "trickle" and, at the height of this "attack," he replied "very" or "cold," even when the tubes were not being applied at all to his skin, evidently suffering from hallucination. So, too, a few hours later, during re-investigation of the sensibility of the soles of the foot to pain, he finally repeated, "You're pricking me," when the pin's head was applied instead of its point. When the compasses were applied to the dorsum of the left foot (sometimes two points, sometimes one point being pressed in irregular order), his answers to the two-point touches, when separated by 3 cm., were all correct. At 3.5 cm., he made one error in ten two-point touches, but at 3 cm., his answers became very incorrect. Returning now to the distances of 3.5 cm. and of 4 cm., I obtained extremely incorrect replies for the two-point touches. At 3 cm., he made one error in every two-point touches, whereas his replies were correct for the two-point touches, but he made occasional mistakes in the one-point touches (as he had done at the outset), when the two points were separated by 4 cm., whereas he had made none for the one-point touch when the two points were separated by distances of 3.5 cm. and 4 cm.

I have seen several other cases showing the effects of perseveration, improvement through practice, and deterioration through confusion, insufficiency, or fatigue. In all the cases showing practice, there was evidence of exhaustion preceding the shock. Now it is especially in such
cases that we should expect to find a state of instability in those portions of the central areas which have been functionally affected by the shock, the inhibition or the loss of control being at one moment manifest, at another inexpressible, according to the condition of the examination. In these and in other cases it is reasonable to believe that certain cutaneous areas are hence in a state of "hesitating" sensibility, on a knife-edge, as it were, ready to be influenced in one or other direction by the past replies to stimuli applied elsewhere, by the summation effects of stimuli, by unconscious suggestion on the part of the investigator, or by express counter suggestion on his part. Thus we may account for the occasionally wide variability of replies, with which I have met, his legs by the same patient (1) at any one sitting (one apparently honest fellow, for example, when brought to book for his inconsistent replies retorting, "All I can say is what I feel"), (2) at different sittings with the same, or (3) with a different, investigator.

None of the cases showing deterioration in replies through confusion, hallucination, inattention, or fatigue was under treatment for purely the immediate effects of shell shock. Two of the cases have been already described (Cases 11 and 16); another was that of a sergeant who had previously been invalided for overwork to England, three months after his return from which he fell to the ground during a bombardment when two guns close to him were blown out of action; since that time his legs had been feeling weak, but he had "managed to keep going on light duty" for two months before he finally reported sick and came under my observation.

Such phenomena are especially liable to occur when to the effects of shock conditions of previous long-continued anxiety and nervous exhaustion are superadded. That is to say, they imply a certain instability of cerebral activity, and in this connection it is noteworthy that the condition is more frequent after previous confusion, inattention, fatigue, and hallucination, and the tendency to perseveration, occurring in the above-mentioned cases, are the very symptoms observed by Homer and Holmes as the effects of cortical injuries.

MENTAL AFTER-CARE ASSOCIATION.—The annual meeting of this association, which assists poor persons convalescent or recovered from institutions for the insane, was held March last at Dr. William's Library, Gordon-square, by invitation of Dr. Henry Bayner, chairman of the association. The opening address was given by the Right Rev. Bishop Ryle, Dean of Westminster, who presided. Dr. Bayner read the report, showing a satisfactory increase of the membership during 1915, and also the improved financial position of a charity which does work untouched by any other philanthropic body. Several typical cases were quoted which proved the varied scope of the work and the saving efforts of the staff who labour to help those who have been mentally afflicted to make a fresh start in life. The council expressed deep regret at the resignation of a former local officer and medical superintendent of Claybury Asylum, and seconded by the Rev. F. H. A. Hawkins, son of the founder of the association.

SOME NOTES ON THE TREATMENT OF THE TURKISH WOUNDED FROM THE SUZ CANAL.

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EARLY in January, 1915, the long-threatened invasion of Egypt by the Central Powers appeared to be materialising, and preliminary arrangements were made in Cairo to provide for the Turkish wounded, whom it was expected would arrive in considerable numbers from the Suez Canal. Kass-al-Ainy hospital is the general base hospital, and by limiting the local admissions to accidents urgent cases several wards were at once left available for any wounded that might be sent on to Cairo. As it became increasingly evident that an urgent demand for beds was certain to be made to break through the line of defences on the Canal, the hospital was subsequently cleared of all its patients and everything prepared for the reception of wounded at a moment's notice.

The most severe fighting took place on Feb. 2nd and 3rd, and after the wounded had been collected by the Royal Medical Corps attached to the British forces, they were attended at the clearing hospitals at Port Said, Ismailia, and Suez, and thence despatched by hospital train to Cairo. On their arrival they were brought to the hospital by the excellent Australian motor ambulance fleet. A careful examination was then made of every individual, and notes of their condition taken by the registrars at the dictation of the surgeons in charge, who at once proceeded to take the necessary measures for their appropriate treatment.

The men generally were in good condition, and not by any means as bad as anticipated. It had been a record year in the Peninsula with much rain and plenty of green feed for camels and transport animals, and water in abundance in the valleys. The food consisted largely of hard satisfying biscuit, and the men, after a few weeks of muddy and dusty and travel-stained, showed very few signs of having encountered any real hardships on their trek across the desert, which on this occasion belied its reputation and was intersected with beautiful green valleys and "blossomed like the rose." Their equipment, too, was wonderfully complete and practical. Each man carried a book of identification, a "housewife" (containing needles, thread, buttons, etc.), soap, toothbrush, and even a small copy of the Koran. They were also provided with first field dressing. Many of them being recruited from Syria spoke Arabic to some extent, and most of the officers had some knowledge of French and acted as interpreters for some of our own students in Turkish. In this way we had very little difficulty on the question of language. The men were all very grateful for the attention they received and we never had the least trouble with them from a disciplinary point of view.

1 It is interesting to note that this is not the first occasion in his history that Kass-al-Ainy has been commanded for military purposes. The French turned it into a military hospital during Napoleon's invasion of Egypt in 1798-1801, and in 1856. The hospital was taken over by Napoleon's chief surgeon, studied an epidemic of fever, ophthalmia, scrofula, babies, and many other diseases in 1890. Later, in 1906, while fighting in Mesopotamia, the other arm of the army, under their own Kass-al-Ainy (close to the present wireless station transferred it to Kass-al-Ainy in 1917 and continued it as a military hospital for some years afterwards. (Sandwich, History of Kass-al-Ainy, p. 186-191.)