been for many years, "the terror of the middle-aged." Males appear to be a little more susceptible than females generally, but in our town it occurs in the large proportion of nearly four males to one female. It appears to be more common in cities, and natives appear to be more susceptible than newcomers. This, I believe, to be true of Middlesbrough also. I have no doubt whatever that it prevails to a much greater extent among working men and the "casual" class than among business men or the leisured classes. The highest incidence is said to occur in winter and spring, but in Middlesbrough more appears to depend upon the state of the atmosphere, and I have thought from my own observation that a dry season is more favourable to attacks of pneumonia than a wet.

I have not found figures dealing with the factor of occupation either in respect to Middlesbrough or any other industrial district, but I am convinced that in Middlesbrough at any rate men engaged in iron and steel manufacture are much more liable to the disease than others. I have endeavoured to glean information in this connexion from the statistics for 1912 kindly supplied to me by Dr. Dingle. It is not possible to be exact, but approximately it may be said that of the total number of deaths between 25 and 65 years of age a little under one-fourth were females, about one-third were men outside ironworks, and almost exactly one-half were men employed at works.

I have already pointed out, however, that more than twice the number of men between the ages of 25 and 55 are engaged in those trades than there are at all other age-periods put together—5,306 to 2,495. With respect to occupational causes I would like to emphasize the following:

- (a) Working in high temperatures with sudden exposure to cold, strong currents of air, and to powerful blasts of fiery and suffocating gases. Chilly air besets every form of half-open shed within which there is high temperature.
- (b) Inhalation of dust of various kinds. This is specially true of the dust given off in the manufacture of slag manure.
- (c) Injuries of any kind, but especially in the neighbourhood of the chest.
- (d) Excessive fatigue, especially after night work.
- (e) Careless habits after leaving work.
- (f) Intemperance in food and drink.

Prophylaxis.

In the majority of cases the disease is conveyed by auto-infection. A condition of lowered resistance, due to one or more of the above-mentioned causes, furnishes a state of ill health favourable to the growth of an organism either already present in the mouth or throat of the patient or inhaled with dust or bad air. Patients, therefore, who have suffered from pneumonia (as well as those who have not) should exercise the greatest care in keeping the teeth, mouth, and throat in a healthy condition. Oral sepsis should receive energetic treatment; bad teeth should either be removed or filled; enlarged and unhealthy tonsils and adenoids should be removed; indigestion and constipation corrected.

The sputum should be carefully destroyed as soon as possible. For this purpose the patient should expectorate into squares of paper, or into small cardboard receptacles containing a layer of common salt or other suitable disinfectant, and the whole destroyed at frequent intervals by fire. Every reasonable care should be taken to prevent the patient coughing into the faces of the attendants, or on to the bedclothes, or upon the floor; such accidents frequently happen, especially in the case of semi-conscious patients; the infected spots should be scrupulously cleansed with turpentine or spirit, and the clothing of the nurses and of those in attendance should be protected by overalls. The rooms in which pneumonia patients have been treated should be thoroughly disinfected, and I am glad to observe that this is now undertaken by the municipality. In Middlesbrough we find a very fatal type of pneumonia, accounting for one-fifth of all deaths in 1911.

Treatment.

In regard to treatment, I may be allowed to make a few observations, fully realizing, however, that each practitioner has his own way of treating the disease, and that each man is successful in his treatment.

(a) *General Management.*—The patient should be placed in a warm room which admits a large amount of sunlight

and fresh air without draughts; he should not be burdened with bedclothes, but it is important that the lower limbs should be well covered and tucked in with blankets (and rubber or paper sheet); poultices should be discouraged as far as possible; a cotton-wool jacket or sheet may be applied to the chest in such a way as to permit of examination and daily sponging of the skin with the least possible disturbance to the patient. I think rubbing the chest walls with camphorated oil promotes the local circulation, relieves pain, and comforts the patient. The mouth may be kept clean by frequent drops of plain or lemon water and glycerine and lemon juice.

Antitoxin treatment with either serum or vaccine has not been very successful so far. I have used the vaccine in a few cases only; the patients did not die.

(b) *Diet.*—For the first three days I think little more is necessary than water, and I allow plenty of water, plain lemonade, or weak tea, six to eight glasses in twenty-four hours. It is difficult to persuade the patient's friends that this is right, and they want to be giving milk and soda every few minutes, with quantities of beef-tea and whisky between times. After three days we should try hot milk and hot beef-tea every alternate three hours, but not oftener. Carbohydrates may be given as milk sugar in the milk or ordinary sugar in the lemonade.

(c) *Bowels, Skin, and Kidneys.*—An initial dose of calomel is very useful, and may be repeated with or without a saline aperient occasionally when necessary. In children a small alterative dose every six or eight hours may be given. Meteorism should be treated by preventing constipation, restricting the diet, and giving plenty of water. It is very important to get the skin and kidneys to act freely. I give large doses of ammonium acetate or ammonium citrate at the outset.

(d) *Hydrotherapy.*—For high fever, constant tepid sponging of accessible parts of body.

(e) *Pain.*—I have found small doses of aconite and antimony at frequent intervals useful; also Dover's powder, grey powder, and quinine in powder or capsule, together with a good diaphoretic, very useful in many cases. In some cases leeches or cupping.

(f) *In toxæmia* more water should be given and means used to promote diaphoresis and diuresis; constant sponging; calomel followed by a saline and alcohol (as whisky or brandy) with the milk and bovril every three hours in doses of one teaspoonful to a tablespoonful or more if necessary. I have lately tried in alcoholic cases a mixture of potassium iodide and creosote with good results, and I think this mixture deserves a further trial in suitable cases.

(g) *Failure of Circulation.*—More fresh warm air; more sunlight, and a mixture of ammonium carbonate, liq. strychninae with or without tincture of digitalis.

(h) *Dyspnoea.*—I have found oxygen useful in some cases; it would possibly act better if it were used warm.

(i) *Sleeplessness.*—I do not think that any of the modern soporifics are very useful. I think we should trust rather to general measures, wise nursing, quietness, coaxing, and a dose of morphine with or without atropine at bedtime, if necessary. The patient should not be disturbed at all during the night, not even for nourishment, once he has been made comfortable.

HEAD INJURIES IN WAR.

BY

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It seems probable that the experience of this war will confirm the principle that no injury of the head is too slight to make light of or too severe to despair of.

The treatment of wounds of the head must always be a matter both of anxiety and importance. This has been intensified in certain aspects by the appearance of an article in the *BRITISH MEDICAL JOURNAL* of February 19th by Colonel Gray, C.B. No apology, therefore, is needed for the consideration of a subject of such vital moment.

The interest that this article has aroused lies not in the fact that we have been taught anything new, but that the

doctrines inculcated are liable to be accepted by many junior officers, having very little experience to guide them, as the authoritative utterance—the “last word”—on head surgery.

We are told that “practically always” depressed fracture of the inner table is accompanied by “a cone-shaped pulping of the underlying brain,” which is described as “a mixture of useless brain matter and blood which acts as an immediate source of irritation to the surrounding brain,” and therefore the “apparently wounded dura” should be opened. If this useless brain matter does not immediately come forth, a pair of forceps is inserted to aid its exit.

Dr. Buzzard has very pertinently asked how this pulping is to be recognized before the dura is opened, and what evidence there is that softened brain tissue is a source of irritation.

In those cases in which I have removed pieces of depressed bone and foreign bodies, and the dura has been intact, I have not opened it, and I have refrained for the following reasons:

1. There is no direct evidence that the brain underlying the depressed bone is “pulsed and useless beyond recovery.”
2. If the underlying brain be damaged there is much less risk of it becoming infected with a dura intact than with a dura incised, and the process of repair has a far greater chance of success than if it be interfered with by a pair of forceps or a finger.
3. If there be evidence of intracranial pressure, lumbar puncture is easily performed and may easily be repeated.
4. The scar that is formed as a result of the healing process is probably less likely to bring about serious remote consequences, such as epilepsy, if the dura be not involved.

Perhaps the time is yet too short, but it would be of interest if some indication could be given us as to what is happening to those patients who have been operated on, and are being kept under observation in England; for, after all, it is the remote result that is of chief importance.

Here at the base our immediate concern is with the septic wound, the fractured skull, or with the localization of the foreign body in the brain. But our interest in these problems must not entirely obliterate our view of the patient's future.

During the last eight months thirty-seven cases of injury to the head have come under my personal observation, and I propose to limit my comments entirely to my own experience, because I believe that the recording of individual methods is the most satisfactory way to arrive at the best line of treatment. This contribution, therefore, may be regarded as a pebble thrown upon a heap. But each pebble has its place.

The plan usually adopted is to let the patient have complete rest for three or four days, unless the symptoms be very urgent calling for immediate interference.

I believe this rest and quiet to be great value. The prolonged exposure and work of the trenches, or the charge; the shock of the injury; the unavoidable but frequent moves until the patient reaches the base, must all tend to bring about a condition of exhaustion and a longing for rest in a comfortable bed.

During the first forty-eight hours much may be learnt. Symptoms of shock or concussion, or of pressure due to oedema from cerebral disturbance, may disappear, or show signs of improving. On the other hand, local paralysis, at first slight, may deepen. Evidence of cerebral irritation may manifest itself. Symptoms and signs, at first vague, may become definite.

Subsequent action greatly depends upon this period of inactivity. There is time to deliberate and decide. No operation is done “as a matter of course.”

My present attitude, therefore, is to be content to follow the policy which has been found to produce the least unsatisfactory results, and that is to avoid surgical interference unless it be urgently and insistently called for.

I pass on to the consideration of a group of cases in which the disappearance of symptoms after operation has

been so complete and immediate that one feels justified in attributing a large share of the credit for recovery to the operation.

I realize full well that concussion may play an important part in the early symptoms of these head injuries, and that paralysis and other symptoms may disappear without any operation, but in a number of cases that have come under my own observation the results have been so striking and so satisfactory that one feels encouraged to continue one's present practice.

Perhaps a brief description will best illustrate the type of case to which I refer.

CASE I.

Private A. B., wounded by rifle bullet in the trenches on October 12th, 1915, was admitted to a general hospital on October 14th.

On admission he was dull and apathetic, and it was difficult to elicit any history. There was a long “gutter” wound of the scalp passing obliquely downwards from the vertex to the left temporal region. The right leg was a little spastic. There were no other focal symptoms.

The dullness and apathy improved greatly with rest in bed.

Early on the morning of October 20th, six days after admission, he had an epileptic fit. The first sign was a spasm of the right arm, with a cry. The right leg was next involved, and the spasms very quickly became general. When he recovered there was complete right-sided hemiplegia. A second seizure followed about two hours after he had recovered from the first.

Trephining.

The x rays did not show any depression of bone, but as the outer table was grooved it was decided to trephine. The operation was done three hours after the second seizure. A depressed fracture of the inner table was found lying over the Rolandic area. The fragments of bone were removed. The dura was intact and was left intact. A lumbar puncture was done. A drainage tube was placed in the lower angle of the flap and left there for twenty-four hours.

After-History.

The man had a slight seizure eight hours after the operation. On October 22nd—that is, forty-eight hours after leaving the theatre—there was a slight movement of his fingers; the next day he could move his hand; movements rapidly returned in the right arm and leg. The patient went to England on November 29th, able to walk well, and the grip of the right hand was indistinguishable from that of the left.

CASE II.

Private T. A. W. was wounded on January 28th, 1916. He was admitted with four small punctured scalp wounds. There were no intracranial symptoms; the scalp wounds were cleaned and the patient kept in bed; the man seemed to be perfectly well. He was quite bright, and said he felt “in the pink.” However, at 9 a.m. on February 3rd, five days after his admission, he was seized with an epileptic fit. The right side of his face was first affected, then the right arm, then the right leg, and then the convulsions became general. After recovering from the attack there was marked weakness of his right arm. A second and a third fit followed in quick succession, leaving his right arm and leg completely paralysed.

Trephining.

At 2 p.m.—five hours after his first seizure—he was trephined over the right arm area. The inner table was found to be fractured, with spicules of bone penetrating the dura. The bone was removed; the dura was not further opened; a flap of aponeurosis was reflected over the excised wound. A drainage tube was placed in the angle of the flap and retained there for forty-eight hours. Lumbar puncture was done.

After-History.

Two hours after the operation the man had another fit. During the next day—February 4th—he had no more fits; the temperature was normal, and the pulse 78.

On February 5th the right hand was weaker than the left, but movements had returned in both arm and leg.

On February 8th the grip of the right hand was almost equal to that of the left.

On February 18th it was noted that he had had no fits since February 4th, and that his general condition was excellent. He went to England a month afterwards apparently well.

I have cited these two cases because they illustrate several principles to which I attach importance.

Both these men lay in bed—one for six and the other for five days—with remarkably few signs or symptoms; one of them, indeed, had none at all, and in the other the dullness and apathy were improving rapidly and had almost disappeared, yet quite suddenly both had epileptiform seizures, leaving paralysis in their train. In both instances the damage to the outer surface of the skull was trivial, and the depressed inner table was not revealed by the x rays. Yet the consequences were severe.

The cases show that a wound of the skull, however slight, should not be regarded too lightly. They also go to show that the damage by the depressed bone to the underlying brain was irritative rather than destructive, and that even if a cone-shaped area of underlying brain had been beaten into a "mixture of useless brain matter and blood," its presence did not act as a source of irritation, because directly the bone was removed the symptoms disappeared. Another point they seem to show is that when definite focal symptoms arise whilst the case is under careful observation they should be dealt with promptly if they be within the reach of legitimate surgery.

It may be argued by the advocates of more heroic measures that had I operated at once the epilepsy would not have occurred. That may be true, but the negative examination of the *x* rays and the entire absence of symptoms justified an expectant attitude.

Again, it may be, and probably will be, urged that had I continued to leave them alone and had refrained altogether from interference, the epileptiform seizures would have ceased and the paralysis have disappeared. That also may be true, but it cannot be proved.

All that can be proved is that some cases of early epilepsy which have been left alone have got apparently well without operation.

On the other hand, one of the cases quoted above was rapidly passing into a condition of status epilepticus, and it seemed obvious that the first thing to do was to try and relieve the cortex of the source of irritation. An empty house is better than a bad tenant. The early onset of epilepsy is comparatively rare, and is probably due to cortical irritation, and if that be so, the sooner the cause of irritation be removed the better.

But I must not venture into the labyrinthine paths of neurological pathology. I content myself with stating that all of the patients who have developed epileptiform seizures and paralysis while they have been in hospital, and whom I have operated upon for depressed fragments of bone, have either recovered from their symptoms or improved, and in none have the symptoms returned prior to their transference to England.

What their subsequent history may be I cannot say, but there is one case that has been reported since his arrival in England which presents several features of such interest that I venture to record it.

CASE III.

The patient was struck by a piece of shell in the occipital region on February 10th, 1916. The wound was incised and cleaned under novocain at a clearing station at the front. The cranium was furrowed, there was loss of consciousness, and the man vomited and complained of headache. There was no obvious paralysis, but he was very drowsy and his mental condition was dazed.

On admission to a general hospital on February 13th, 1916, the patient was very drowsy; the pulse was 44. There was no paralysis, no optic neuritis, and no ocular signs, but he complained of severe headache. The *x* rays showed a fracture of the skull in the right occipital region with a foreign body in the left temporo-sphenoidal region.

The wound was kept clean, and healed rapidly. The pulse-rate varied between 44 and 54. No further symptoms developed, but right-sided hemianopsia was observed.

On March 6th, twenty-six days after the infliction of his wound, at 2 p.m. the patient complained, saying "My eyes feel funny"; at 2.20 p.m. the nurse noticed his right eyelid twitching; immediately afterwards his right leg was drawn up; this was followed by convulsions of the whole of the right side, which quickly became general, and when I saw him at 2.25 p.m. the patient was unconscious, and the convulsive movements were quieting down. When he had regained consciousness it was observed that the left pupil was rather more dilated than the right. The knee-jerks were present on both sides; Babinski's sign was absent; there was slight ankle-clonus on the right side. Mr. Verdon then reported right-sided hemianopsia; pupils active to light, no squint, no optic neuritis.

Captain McDonald reported that the *x* rays showed the presence of a foreign body in the left temporo-sphenoidal lobe in a line directly upwards from the mastoid process, and at a depth of 0.6 centimetre from the surface of the brain.

Trephining.

At the operation, which took place at 5 p.m. on that day, a needle was driven through the scalp, making a fine point on the bone, which corresponded with the surface marking on the scalp made by Captain McDonald. A flap was turned down, the point of a trephine was placed on the spot marked by the needle, a disc of bone was removed and brought into view the posterior branch of the middle meningeal artery. The dura

was incised a little above this; a fine telephone probe struck the foreign body; this was removed, though from a slightly greater depth than had been estimated.

The dura was stitched up. A lumbar puncture was done.

After-History.

Forty-eight hours after the operation Mr. Verdon reported: Optic discs healthy. Full field of vision in each eye to hand test; can read large print with difficulty.

The wound healed by first intention, and the patient made an uninterrupted recovery. His pulse varied from 64 to 80, and his temperature remained normal.

I have recently (May 12th) seen this man in the Maida Vale Hospital. He continues well, has had no more fits, and his headaches have disappeared.

However apt one may be to attribute to the *propter* that which only belongs to the *post*, it is difficult to deprive the former of its share of credit in this instance. The prompt disappearance of all headache, though only a subjective phenomenon, was nevertheless an intense relief to the sufferer, and the immediate rise in pulse-rate from 44 to 68, together with the return within forty-eight hours of a complete field of vision and the non-return of any epileptiform seizures, would seem to point to the conclusion that the removal of the piece of metal from this man's brain had some direct relation to his improvement.

Mr. Verdon tells me that he can only account for the disappearance of the hemianopsia by the suggestion that the removal of the foreign body in some way relieved tension on the cortical centre for vision.

There is one other matter to which I should like briefly to refer, and that is the question of drainage. Personally I rarely use a drain inside the skull. If the damage to the skull and the dura be so extensive that the brain matter oozes out, there seems to be no need for one. This principle applies not only to those cases which are brought down to the base with brain matter exuding before any operation is attempted, but equally to a large number of cases in which the removal from the brain of pieces of bone and foreign matter is immediately followed by exudation of destroyed brain matter.

What has happened in this latter class of case? The driven-in bone or the missile, or both, have destroyed the brain matter in their course, the removal of this foreign material opens up a track along which the destroyed brain matter passes, along the line of least resistance, impelled by the intracranial pressure. A silver tube, or a perforated zinc tube or a solid rubber tube, have never appealed to me as suitable for putting inside the brain, so I rely, whenever the wound of the brain is not too deep, upon intracranial pressure for getting rid of destroyed tissue.

There are, however, a certain number of instances in which the wound of the brain is so deep as to give rise to grave risk of the destroyed and infected brain matter finding its way into the ventricles. In these cases drainage is necessary; for, as Sargent and Holmes point out, cerebral oedema and increased intracranial pressure are factors tending to bring together the walls of the track, and thus act as a block to the free discharge of the infected brain tissue. Still the greatest care must be exercised in using a solid drain, and it should never be inserted too deeply.

My attention has several times been drawn to the great difference in consistency of the brain matter in these cases of cerebral injury. In some the surrounding brain matter is firm and resistant and altogether different from that of the damaged area; whereas in others the surrounding brain is soft and yielding, differing very little in resistance from the damaged tissue in the region of the wound.

The danger of damaging uninjured brain matter with a solid drain tube seems to me to be very real, and I have seen more than one instance in which the solid drain has worked its way into normal brain tissue.

One other practical point is the matter of the incision of the scalp. I nearly always turn down a flap. In quite an appreciable number of scalp wounds caused by shrapnel the injury through the soft tissues is oblique, and the wound of the skull is not directly under the external opening in the scalp. The result is that if a linear incision be made for the purpose of examining the bone, the bone injury may easily be missed. This condition, in my experience, is never found in wounds by bullets of high

velocity, but I have seen quite a number of cases where small pieces of shell or shrapnel have pierced the scalp in an oblique direction, and the fracture to the skull has occurred at some distance from the wound of entrance in the scalp.

One of the last operations I did illustrated this point. The piece of metal lay on the dura, without having torn it, but in getting there it had pierced both outer and inner tables of the skull in the thickest part of the occipital region in an oblique direction, and was found fully an inch away from the entrance of the scalp wound.

A flap avoids all risk of missing a skull fracture, gives an ample field for operation, and the septic wound of entrance can be adequately dealt with.

In closing the wound I make no attempt to tie any arteries of the flap, relying upon accurate apposition and firm stitching.

If the medical and surgical literature of this war is to possess any value, it must, in my view, be based solely upon individual experience. There can be no such thing as a hard-and-fast rule binding our practice. If it were so, surgery would cease to be an art. It would become a trade.

The utterance of pious opinions, unsupported by careful observations, can have no place in these records of facts, the examination and sifting of which may be destined to prove of supreme importance to future generations of soldiers who fall wounded in the fight. Our views as to technique may change, time may modify our practice, but, whatever else may alter, the principle of applying to each case full deliberation and well-considered judgement should "stand like stone."

NOTES ON THE TREATMENT OF HERNIA CEREBRI.

BY

S. SMITH, M.B., B.S., CAPTAIN (TEMP.) R.A.M.C.

DURING eighteen months' experience at a base hospital in France, during which time between six and seven hundred cases of gunshot wound of the head have passed through my hands, one of the most difficult problems which have arisen has been the prevention, or where this has been impossible, the treatment, of hernia cerebri.

The life of the patient is in grave jeopardy as long as this serious complication exists, especially if it shows a tendency to progress, constituting as it does both a warning and a menace.

It warns us of increased and increasing intracranial pressure, and, unless a state of equilibrium be speedily established, the patient will die from compression, causing paralysis of his vital centres. The progressive protrusion of brain matter through a small cranial wound may also produce further or new functional disturbance, not only because the herniated brain is disintegrated, but because the fibres in its neighbourhood are displaced, stretched, and often ruptured. It is not, for instance, rare to find hemiplegia supervene where a hernia develops either in the frontal or post-parietal region.

A hernia, too, especially if large, acts as a direct menace, by reason of the tendency for it to become gravely infected, and for this infection to spread to the underlying brain substance, leading to a generalized cerebritis, or to the spread of infection into the lateral ventricle. The danger of this latter event is all the greater because often there is a diverticulum of the ventricle in the hernia.

Serious infection of the hernia is most likely to occur in those cases where it is strangulated, as so often happens when the bony opening through which it protrudes is too small, the familiar "button" hernia, with its attenuated and constricted pedicle, being thus produced; such strangulation of the protrusion is followed by softening and sloughing, and thus the facility for deep infection is increased.

It has seemed to me that the brain, perhaps because normally it is so effectually covered and protected by its bony envelope, evinces, more than any other tissue of the body, a tendency when exposed to become ulcerated and sloughy, and this should be given great weight when the question of operative measures comes to be considered.

1. Limitation and Protection of Exposed Brain.

It has been our constant endeavour, therefore, to limit as far as possible the amount of brain exposed, making wherever feasible the plastic floor, and draining by rubber tubes passed in at the angles of the flap, a procedure introduced and advocated by Lieutenant-Colonel Sargent, R.A.M.C.¹ The technique of this operation is simple, and in suitable cases it gives excellent results. The larger the dural defect, the larger is the extent of the exposed brain and the greater the risk of infection. Consequently, I consider it of importance, apart from the danger of opening up the highly susceptible subarachnoid space, that the dural opening already produced by the wound should not be enlarged.

Still more important is it not to incise the dura if it be found intact, as this procedure is accompanied by grave risk of infecting the damaged, but not septic, brain underneath, thus leading to the very condition of affairs favourable to the formation of a hernia that we are doing our utmost to prevent.

As a means of diminishing the cerebral exposure we have found suture of the edges of the scalp wound after excision of the edges of the original wound only possible in a relatively small proportion of our cases, the wound generally having been far too extensive and septic for the performance of such a desirable procedure. Moreover, where such a method of closure has seemed practicable, the tension necessarily produced would have made efficient drainage very difficult, and there is an obvious objection to a tight suture line lying pressed up against the exposed brain, which we are trying both to protect and to drain.

2. Antisepsis and Drainage.

It goes almost without saying that another eminently desirable factor in the prevention or limitation of hernia cerebri is the effective treatment of the ever prevalent sepsis, both by the use of efficient drainage with frequent dressings where necessary, and also by the use of antiseptic lotions.

After many experiments with various lotions, I have used latterly a mixture consisting of equal parts of carbolic lotion (1 in 20), hydrogen peroxide (10 vols.), and water, as suggested to me by Mr. Parry Morgan, M.B. (late Captain (temp.) R.A.M.C.). The hydrogen peroxide is specially valuable by reason of its faculty of breaking up and facilitating the removal of sloughs, clots, and disintegrated brain matter that may have blocked up the lumen of the lateral rubber drains, and may so be interfering with the efficient drainage of the underlying brain. This lotion has also been found most useful in the treatment of those cases in which an exposed hernia cerebri already exists. It is very necessary that old dry dressings should be "wetted" off such a hernia and not torn away, for not only does a hernia from which a dressing has been roughly torn evince a tendency to troublesome haemorrhage, which is often difficult to stop, but frequently once the thin outer wall of the hernia is removed there is a marked tendency to the onset of rapid sepsis with the subsequent breaking down of the septic mass.

Before settling down to the routine use of the peroxide-carbolic mixture, I used at one time saline solutions of various strengths, even putting saline tablets rolled up in gauze in direct contact with the brain in certain cases; saline, however, was not very satisfactory, and had a marked tendency to render the brain in contact with it "boggy," with increase in the size of the hernia. Various spirit solutions—among them mercury biniodide in spirit, formalin, and even absolute alcohol—were also tried with a view to drying up the excrescence, but although in many cases the hernia itself dried up satisfactorily enough, the general hardening and fixing of its surface produced by the spirit did not allow the septic foci from bone fragments, etc., at any depth to come to the surface; and although the hernia looked clean and shrunken, the patient frequently died from meningitis or cerebritis extending from such bottled-up foci.

3. Postural Treatment.

It is important to make use of gravity in the treatment of hernia cerebri and also in its prevention, and with this end in view we always, when possible, sit our patients up