utter impossibility of remedying the injury by an operation. There is but one part of the spinal canal that can be attacked surgically, as has been pointed out by all writers from early times to the present, and that is from the posterior part through the laminae. To attempt it from the front or side is impossible at sight.

Macewen, whose results have excited the admiration of all surgeons, says: "Traumatic lesions are, as a rule, so gross, and the destruction so complete, that, in such, operative treatment can be of little service. Still there are cases in which traumatism has produced localized pressure, primary or secondary, which can be relieved."

In this case, although the laminae were fractured through, there were no fragments pressing on the cord from this source; but the entire direct pressure came on the anterior part of the cord from the crushing in of the body of the vertebra, and as time progressed the attempted process of repair also being thrown out, added to this, and gradually diminished the lumen of spinal canal. It is true that, by removing a portion of the posterior arches, the indirect pressure would have been relieved; but the direct pressure, which was doing the mischief, pressing upon the cord precisely as a bridge of a violin presses upon the strings, could not be relieved, and any operation with such an end in view would only have added injury to injury to a most unfortunate man. Certainly at the present day no case of injury to the bony spine where there is any evidence of pressure upon the posterior part of the cord should go unrelieved by operation, but where such evidence does not exist, is a surgeon justified in making an exploratory operation on patients in the condition in which we observe this class of cases? I am not yet convinced that past experience or present and future prospects justify such a course, and desire for myself, should I meet with such an injury, to be spared from such surgery.

The relief from pain, and the ease in which this patient could be moved by his attendants after the plaster-of-Paris jacket was applied, were very evident and satisfactory.

In regard to the second point, namely, the cause of death in this case, it has occurred to me that the severe effects in the nerve centres, in this class of injuries, are often underrated.

This man did not die from septic causes and exhaustion produced by bed-sores and cystitis, as many cases with such injuries appear to do, for in both these respects he was nearly well.

Of what did he die?

In that admirable paper on "Shock," read before the last meeting of the American Surgical Association by Prof. D. W. Cheever, of Boston, he states that as a first degree of shock we have apprehension, and, going on through the degrees, at last we have collapse.

In the case above reported there was severe primary shock, and the degree of apprehension was marked and prominent from first to last. The injury to the cord was sufficient to account for this. The crushed condition of the cord acting on the nerve centre reacted on the ganglia, the heart, the brain; the life kept the patient in a feverish apprehensive state of mind, and this condition of mind reacted in turn to depress the nerve centre and the life. Cheer and assurances from his surgeon and attendants would rally him somewhat

from this state, but he would soon relapse again. This went on until the effects of the increased pressure on the cord, together with the progressive ascending degeneration, at last turned the tide against our efforts, and death came with collapse after the patient had passed through all the degrees of primary and secondary shock of long duration.

I would offer by way of conclusion:

(1) The plaster-of-Paris jacket, as advocated by Dr. Burrell, affords at the present time the most promising and satisfactory treatment of all fractures of the spine where the bodies of the vertebrae are involved; but in the light of recent research, in all cases where there is evidence of pressure upon the posterior part of the cord, operation to remove the posterior arches is justifiable, and only in such cases.

(2) The existence of prolonged and dangerous shock, which is so often present in this class of injuries, renders operative measures, which must of necessity be of a very severe nature, highly objectionable, unless some positive evidence is present that such an operation may accomplish positive results by way of relieving pressure upon the cord.

IODIFORM IN DIPHTHERIA.

BY WALTER LINDLEY, M.D., LOS ANGELES, CAL.

AT the recent session of the California State Medical Society, Dr. Walter Lindley, of Los Angeles, read a paper on Diphtheria, in which, after accepting the theory that the microbe is the propagator of the diphtheritic poison, he continues, "How does this poison act?"

Frequently there are deaths from diphtheria where the disease has lasted but a few days. There is no exhaustion to cause heart-failure, and no strangulation; the patient, without a pang or a single struggle, sinks into a gentle lethargy and thus passes peacefully away. In such cases there is usually scanty urine, containing from twenty to fifty per cent. of albumen. Yet there are rarely uræmic convulsions. There is no other disease in which this combination occurs:—scanty urine, retained urea, abundance of albumen, and no convulsions.

It is well known that morphine and chloroform, by soothing the nervous centres, control uræmic convulsions. Is it not possible that this diphtheritic ptomaine acts in a similar manner, quieting the nervous system, and preventing convulsions? As in the case of morphine, if there is an excess of the ptomaine, death ensues. . . .

There is one other point of great value in prognosis, and that is the amount of albumen in the urine. No physician should attend a case of diphtheria without making at least a daily examination of the patient's urine. Dr. G. W. Lasher, who has performed tracheotomy and intubation oftener than any other practitioner in our section, and who has made diphtheria a special study, recently announced in the Los Angeles County Medical Society, that he had never known a case of diphtheria to recover where there existed at any time over thirty per cent. of albumen.

Treatment.—My opinion is that the treatment of diphtheria should be based exactly on the same principles as the treatment of puerperal fever. Antidote the specific poison; the cardinal point in doing

this is to destroy, remove and neutralize as much of the poison at point of infection as possible.

When the obstetrician believes septic poisoning is taking place through the uterus, he immediately tries to destroy and remove all septic material at the point of entrance. Not harshly and with force, but with a gentle, soothing intra-uterine douche of hot water, carrying in solution a germicide.

So should the action of the physician be when he is called to a case of diphtheria. If the membrane can be removed without tearing or hæmorrhage, remove it. If it cannot be removed without force, then the utmost efforts should be used to neutralize the septic germs that infest that susceptible locality. It is true that the throat cannot be so satisfactorily disinfected as the uterus and vagina, because it is constantly open to the entrance of air, and nutrient liquids that encourage the development of bacteria are frequently passing over its surface.

Some person says, "If you cannot remove all, why remove any?" Suppose a man has taken a poisonous dose of strychnia, and you know some of it has been absorbed, would you say there was no use of removing the portion of the drug that yet remained in the stomach? We hope to destroy so much of this septic material that not enough will enter the system to cause death.

My own peculiar line of treatment is the use of iodoform, locally and constitutionally. I began employing this remedy several months ago. A case of mine has just proved fatal after intubation and tracheotomy had both been performed. The case then in hand was growing rapidly worse, and the temperature had risen to nearly 105°. The liberal insufflation of iodoform every three hours was then begun, and in twenty-four hours the temperature had fallen to 101½°. The membrane in twelve hours began to have a lifeless appearance, and in 36 hours dropped off entirely. Since that time I have had eight other cases, varying from severe to mild; two being slightly laryngeal in character, four showing from ten to fifty (one case) per cent. of albumen, and all but one recovering. In all these, iodoform has been my chief reliance.

The fatal case was a delicate girl, twelve years of age, suffering from chronic bronchitis. The first day I saw her the temperature was 104°, and the membrane covered the fauces. The urine, immediately on testing with heat and acid, appeared almost solid with albumen, and after settling for twenty-four hours, was half albumen. The nasal complication was also severe. Iodoform was insufflated through mouth and nostrils at least every four hours, after spraying the parts with listerine. The instructions to the nurse were to see that all perceptible membrane was covered with the powder.

After the third day the patient began to improve, and on the seventh day there was no albumen to be found in the urine. The patient was very bright, and I felt happy at the thought that I had a case with which to negative the dictum of Dr. Lasher, that none recovered where there was over thirty per cent. of albumen.

On the thirteenth day, when we thought our patient was about well, she had a severe chill, followed by high temperature and pain in the cardiac region. On examination, consolidation of the base of the left lung was found. The breathing from this time on was

very rapid, the temperature high, and the pulse weak and rapid; but neither the membrane nor the albumen returned. On the seventeenth day the patient died from exhaustion. In this case the intercurrent pneumonia evidently caused death. My experience with iodoform justifies its having a further trial. Since beginning its use I have found in current literature six brief references to the subject. In conclusion, I recommend the use of iodoform because:

- (1) It prevents the multiplication of bacteria.
- (2) It is a soothing local anodyne.
- (3) It is like alcohol, in having no toxic dose where the patient is suffering from the diphtheritic poison.
- (4) It is so near impalpable that it reaches all portions of the diseased surface.
- (5) It adheres for a long time to the surface where it is applied, and thus has excellent local effect before it is absorbed.
- (6) It does not cause nausea, and thus interfere with nutrition.
- (7) It does not produce diarrhœa or salivation, as is possible from an overdose of the bichloride.
- (8) It is quickly and easily applied.

REPORT ON RECENT PROGRESS IN SURGERY.¹

BY H. L. BURRELL, M.D., AND H. W. CUSHING, M.D.

EXTIRPATION OF THE RECTUM.

W. LEVY, Berlin, proposes the following method for resection of the rectum, which he claims to have evolved from experiments and dissection.¹² An incision is made over the sacrum eight to ten centimetres in length, and about two fingers' breadth, above the cornua of the coccyx, through the superjacent soft parts to the bone. From the ends of this incision, two others about eight centimetres long, and at right angles to it, are made through the skin and gluteus maximus muscle. A broad blunt hook is now placed in one of the latter incisions, and it is retracted strongly outward. The greater and lesser sacro-sciatic ligaments are divided to the edge of the bone in the direction of the first incision. This is now repeated on the opposite side, and the fascia separated from the anterior surface of the sacrum with an elevator. The sacrum is now cut across with bone forceps. The flap is thus formed of bone soft parts, and the skin is drawn downward, exposing the rectum, which can be removed, if desired, from near the sigmoid flexure to within two centimetres of the anus. If necessary, on account of the large size of the tumor, the left wing of the sacrum can also be removed as in the Kraske operation. The resected ends of the rectum are united by a double row of sutures carefully set. The reflected sacral flap is replaced and sutured in position, after which the skin wound in its first portion is united. The side incisions are either packed with iodoform gauze, or united, and drained through the lower ends, through tubes which reach to the vicinity of the rectum. An antiseptic dressing or continued irrigation is the subsequent treatment.

THE TREATMENT OF TRAUMATIC SEPARATION OF THE SUPERIOR EPIPHYSIS OF THE HUMERUS.

Helferich¹⁴ treated successfully a boy who had sus-

¹ Concluded from page 230 of the Journal.

¹² *Contrib. f. Chir.* 1889, Bd. xvi, p. 218.

¹⁴ *München Med. Wochn.* 1887, No. 40.