

trusts to this for giving a firm, even a bony covering for the canal after healing); pressure for hæmorrhage; division of the bony arches by a special rongeur on the same principle as Hoffmann's, removing them completely. He criticises Horsley's advice to open the dura mater in all cases, and would not do so in cases of tubercular inflammation outside of the dura, or any extradural tumour, but would invariably open the dura in cases of traumatism. He dwells upon the importance of the pulsation of the cord as a sign of its integrity before the dura is incised, and states that the return of the pulsation is a good proof of its vitality after compression has been relieved. The extra-dural layer of connective tissue is often an important factor in these operations, as it may be very thick and vascular, may be the seat of extravasation of blood, or may be hypertrophied and cicatricial as the result of tubercular inflammation. By incising it in the middle line, this hæmorrhage is reduced to the minimum. As a rule the dural incision also will be made in the median line. The effusion of cerebro-spinal fluid will soon cease if the patient is kept quietly on his face with the head low. Blood-clots, foreign bodies, and tumours may now be removed, and any other abnormal conditions noted. It has been suggested to unite the ends of a severed cord, or even to excise a diseased segment and then unite the ends with sutures. Chipault considers the former easy and worth trial, but he has found it an anatomical impossibility to bring the ends together when a gap existed between them, the tissues being so inelastic. The important parts of the operation completed, Chipault strongly advises suture of the dura, for the escape of spinal fluid will be inconvenient and even dangerous, as the loss of large quantities of it has been followed by alarming sinking attacks, and even death in the young. If it is necessary in these operations to reach the anterior surface of the cord, this may be accomplished by placing cushions under the patient above and below the region of the spine which is attacked, and so that the cord will come to lie in the concavity of the spinal curve, and will be relaxed to such an extent that it can be displaced considerably to one side, as well as rotated. This surface of the cord may also be reached by resecting the head of a rib or two and attacking the vertebral arches laterally, as

suggested by Treves and Vincent.—*International Medical Magazine*.

ON THE QUESTION OF ASEPSIS IN LAPAROTOMY. —Abdominal surgery (*Centralblatt für Gynäkologie*) came in with antiseptics; but its developments soon became largely independent of the assistance of germicides. While the results in obstetrics have been simply revolutionized by antiseptics, the most brilliant abdominal surgery has been done by a careful study of the conditions necessary for asepsis. Mironow's contribution essays to aid the clear comprehension of the essential factors in success, by reporting a series of bacteriological observations made during the progress of some thirty-one laparotomies, and conducted on the air of the operating room as well as on the fluids of the abdomen.

He describes the precautions taken to ensure aseptic conditions for operation. All tables, instruments, brushes and aprons were strictly reserved for abdominal operations alone. Instruments and towels were sterilized by exposure to a steam-current for an hour immediately before operation. The water used was similarly sterilized by an hour's boiling. The sponges were first carbolized and then washed out in sterilized water; the instruments were immersed in a two per cent. solution of carbolic acid. Silk ligatures were likewise sterilized by the steam-current; and the hands of the surgeon and assistants were well washed with sublimate solution immediately before operation.

These precautions against the introduction of germs from without being taken, observations on the degree of bacterial infection of the atmosphere were also made in some cases. The routine method followed in each operation was the insertion of sterilized folds of gauze (1) immediately after the opening of the abdomen; and (2) at the close of the operation, well down in the pelvis, and in the abdominal hollows among the intestines. On the withdrawal of the gauze, pieces were cut away, and submitted to bacteriological examination in the usual way.

In eight cases no micro-organisms were found either at the beginning or the end of operation: none of these operations lasted over twenty-one minutes. In twenty-one out of twenty-three cases, the gauze sponges showed no sign of bacteria