

the canula; or it may spurt. During the past winter we have been doing it a good deal in the Toronto General Hospital and find the results interesting and sometimes of value.

The apparatus we use is of the simplest, and consists of a long glass tube bent at a right angle near to one end. This end is connected by a flexible rubber tube with the canula, and upon the rubber tube is placed a clamp. The whole apparatus is sterilised, and then filled with sterilised normal saline solution, and by the use of the clamp this fluid is allowed to escape until there is about 120mm standing in the vertical arm of the glass tube. The object of thus filling the tube up to this mark with the saline solution is that we may estimate the pressure of the cerebro-spinal fluid without much of this escaping first from the spinal canal, as would be the case if it ran into an empty tube. I have not seen this method mentioned anywhere and it seems of value.

The method of lumbar puncture that we use is the ordinary one; the patient being upon his side with the head low, and the back as much bent as possible. The only anesthetic that we have employed has been ethyl chloride. The little operation seems to give some pain at times, but not to a great extent, and often no more than is caused by the administering of a hypodermic injection. We puncture in the third lumbar space, where one is well below the level of the spinal cord, and it seems easiest to reach the spinal canal by keeping to the middle line. As soon as the first drop of fluid escapes from the canula showing that the subarachnoid space has been reached, the rubber tube is passed over the end of the canula, and the cerebro-spinal fluid pressure is quickly registered. It is more convenient not to use any scale upon the vertical tube, but merely to mark the levels of the fluid with a glass marking pencil, and afterwards to measure the height at one's leisure.

In a normal individual the fluid pressure is about 100 mm. of water, but anything between 40 and 150 is, according to Quincke, within the limits of health.

There are three fluctuations of a normal character noticed in the column of fluid: (a) One synchronous with the heart beat, (b) one synchronous with the respiration, the pressure falling with inspiration and rising with expiration, (c) a slower variation of a somewhat rhythmical character occurring about every ten to thirty seconds, and causing a variation in the height of the column of from 10 to 30 mm. The exact nature of this fluctuation is not clear. Further, any straining