

4. The vestibular response of the beriberi rat shows a rapid change toward normal following treatment with brewer's yeast or heat-labile fraction. After complete loss of nystagmus the characteristic response appears as early as 4 hours following treatment, although it is still prolonged. When treatment is continued daily the duration of the response drops to normal limits within a week. 5. The increased duration of the vestibular response, together with certain qualitative changes, appears to be characteristic of deficiency of the heat-labile fraction of vitamin B. All other factors so far investigated, including partial and complete starvation, middle and inner ear infections ("mastoid disease" of Detlefsen²), vitamin A deficiency, and vitamin G deficiency, either diminish the duration of the response or are without effect. 6. These results indicate an early involvement in beriberi of the vestibular system or of the nerve pathways serving vestibular nystagmus.

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An Easily Inserted Flexible Cannula.

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In the development of a technique for constant intravenous injection a cannula was devised which is easily manipulated and which has proved useful for the injection and removal of fluids over extended periods of time. It is introduced into a vein through a needle, after the manner of a trocar and cannula, and, when in place, provides a flexible, elastic, and resilient channel for the passage of liquid. It has been found satisfactory not only for intravenous work but also—by Dr. Henry N. Harkins of our Department of Surgery—for experimentation with cerebrospinal fluid through cisterna puncture. No doubt it will prove to be a useful instrument for the cannulation of many of the spaces in the body.

The cannula is made of high grade anode rubber in the form of a capillary tube. Although there is no theoretical limit to the size of a cannula which may be used in this manner, one with an outside diameter of 0.04 inch has been found satisfactory. The cannula is inserted in the following way. First, the cannula is "threaded" in a syringe partly filled with injectable liquid (Fig. 1). A knot should

be tied in the proximal end of the cannula to prevent its complete escape. Then a Luer needle (Size 15 with this tube) of proper length is introduced into the space to be cannulated. The "threaded" syringe is attached to the needle, and, with a thrust on the plunger, the cannula is ejected through the needle. The syringe is detached,

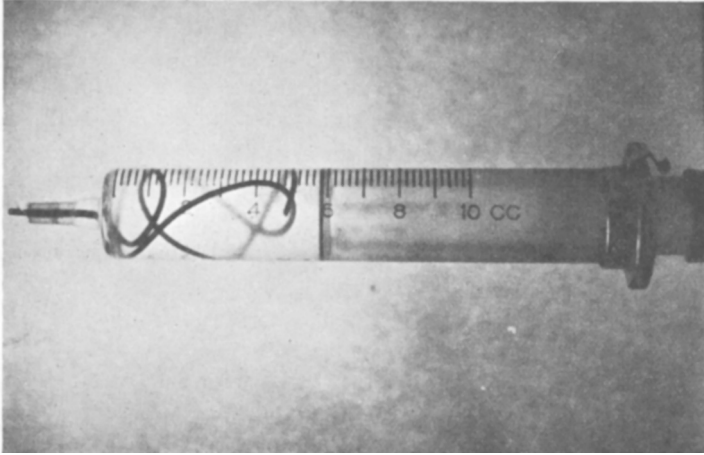


FIG. 1.

A syringe "threaded" with the cannula.

the knot in the tube cut off, and the needle withdrawn. The cannula now lies free in the tissues and connects the space with the exterior. It may be attached to the rest of the apparatus through a fine Luer needle. If the cannula is to remain in place for a long time, it should be fastened to the skin near its point of exit by a strip of adhesive tape.

The advantages which this type of cannula offers are that cannulation of many quite inaccessible spaces is made easy and bloodless; that the procedure can be made a sterile one; that the cannula may remain in place indefinitely without discomfort to the subject; and that, because the cannula is flexible, the subject need not be kept motionless during the experiment.

(This cannula can be had from the Oak Mfg. Co., 711 West Lake Street, Chicago, Illinois.)