A NEW ESTHESIOMETER

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In the *Münchener medizinische Wochenschrift*, in 1907, I presented a brief description of a pocket esthesiometer, which can be utilized in the examination of patients suffering from nervous and mental disease.

Since that time increasing experience has afforded me the opportunity for improving upon this instrument, and I now desire to call the attention of neurologists to it in the perfected form which I have finally elaborated.

While it is by no means indispensable, I do believe that it is capable of filling a want in the armamentarium of the neurologist who often has to make a series of sensory examinations in a relatively short time. It offers the possibility of testing all the qualities of sensation of the skin, excepting the faculty of perceiving both points of a compass, at different intervals, and also excepting electrocutaneous sensibility, which, however, do not often concern us in practice.

The advantages of an esthesiometer are that it occupies only a very small space, and may be easily carried in the pocket, and with it one can work quickly, and yet very exactly. I consider it a special advantage to be able to trace immediately the limits of sensation, and even to have one hand free during the determination of the sensibility to contact, pressure and pain. Both hands are in use in the delineation of the limits of sensibility to temperature.

The instrument [which is manufactured by Kny, Scherer & Company and costs seven dollars] required many experiments and frequent alterations before it acquired its present form. It now consists of two parts. One of these (see Fig. 1) is slender, shaped like a penholder and covered at both ends with caps which are removable by simply pulling them off. The camel's hair brush used for testing tactile sensibility may be placed at the end of one of these caps. Inside of one cap is the needle for testing pain

sensibility. This needle may be heated to redness before each examination without blunting. The other cap encloses a dermatograph. Between this and the needle lies a spring which may be graduated to three different degrees of strength by means of weights. A turn to the left loosens the mechanism, enabling one to test the pressure sense by using either the dermatograph, or the cap which covers the needle, and then compressing the spring.

FIGS. 1 AND 2.

When for this purpose the needle is used the gradation of irritation to pain may be estimated by compressing the spring, just as with Aly's instrument. With this part of the esthesiometer tactile sensibility as well as that of pain and pressure may be tested, while simultaneously tracing the obtained limits.

The other part of the instrument is broader and serves to examine the sense of temperature. It has three divisions, namely two hollow metallic cylinders, separated by a solid rubber cylinder, which serves both as handle and insulator (see Fig. 2). The metallic cylinder which lies nearer the corrugation in the rubber handle is filled with sodium acetate, like a thermophore. This salt when melted over a spirit lamp quickly communicates its heat to the surrounding parts, its re-crystallizing properties making it possible to use it a number of times without renewal. This part of the instrument is used to test sensitiveness to heat, the other cylinder being used to test sensitiveness to cold. For this purpose the natural coldness of the metal may be sufficient (especially in winter), or the cylinder may be filled with cold water or ice. Experiments made in the Frankfort Physical Society by a chemist (Dr. W. Epstein) and myself have shown that for tests with high degrees of cold, which seldom come into consideration, since intense cold (like excessive heat) causes the irritation of

pain, ammonium nitrate is the most suitable material. It is inexpensive, may be obtained in large crystals and is easily introduced into the cylinder. The fact, however, that it does not re-crystallize spontaneously, after the addition of the water necessary to dissolve it and bring out this intense cold, makes a new filling requisite before each examination. Experiments have determined, however, that the differences in temperature may be plainly recognized by healthy persons for fully fifteen minutes when the cylinder is filled only with cold water, this time being amply sufficient even for very minute tests of the sense of temperature.

Both metallic cylinders are closed by screwing the caps on tight, permitting the alternate use of cold and heat without danger of leakage. It is obvious that this method of examination is much easier than the one in general use, with several test tubes of different temperature, not to mention the greater ease of transportation, and the advantage of being able to trace immediately with the dermatograph the limits obtained.