⅛ inch. This automatic acoustic valve † can be incorporated into any existing monitoring system.

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† Manufactured by Medical Products Division, 3M Company, 23 Bay State Road, Cambridge, Mass. 02138.

A Means of Recording Force of Thumb Adduction

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The common use of the nerve stimulator to monitor muscle relaxation has brought with it the desire to obtain a written record of the muscle response. We suggest a simple technique that has proved satisfactory for making such a recording.

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Our basic instrument is a Grass FT.03 transducer, an instrument previously suggested by Katz.[1] To attach the transducer to the hand with reasonable security we have added a rubber bicycle handlebar grip. A wire wound from the grip about the transducer holds the two together. Next to the lug of the cantilever of the transducer, we have placed a small cradle cut from a piece of pipe. This cradle is attached by means of a 4-40 screw which fits the already-threaded lug. The components are shown in figure 1 and the completed assembly in figure 2.

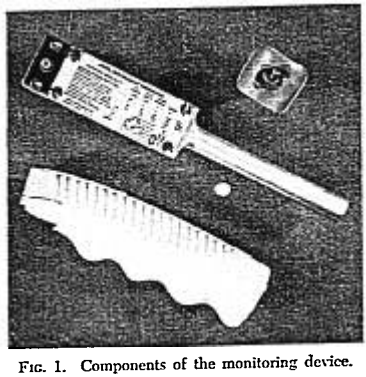

FIG. 1. Components of the monitoring device.

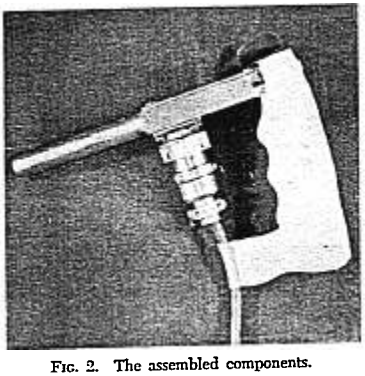

FIG. 2. The assembled components.

The device can be secured to the hand by five strips of one-inch adhesive tape. Two strips crossing at the fingertips hold the fingers to the handlebar grip so it will not be dropped by the unconscious patient. The thumb is aligned to the cradle by one long strip and is made secure by two shorter, right-angle strips (fig. 3).

We are able to attach the strain gauge rapidly, and once it is in place, it will remain secure for hours. The baseline has been stable, and the entire tracing free of artifacts.

Figure 4 shows a tracing of twitch force made after an injection of *d*-tubocurarine and reversal with neostigmine. This tracing was made on one channel of a Sanborn Twin Viso Recorder, Model 60-1300, geared to a paper speed of 1.5 cm. per minute. We have found a Brush Recorder, Mark 280, equally satisfactory. The quality of the tracing depends more on the way the transducer is secured to the hand than on the recording device used.

We realize that much useful information can be obtained by merely observing the hand movement. When more accurate measurements are required, however, we suggest this technique for obtaining an easily-readable written record of muscle response.

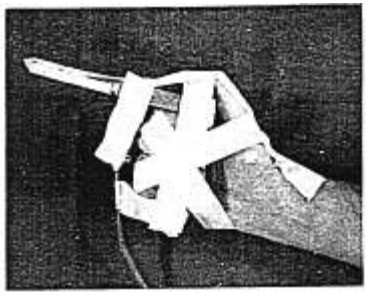

FIG. 3. Monitor secured in hand of patient.

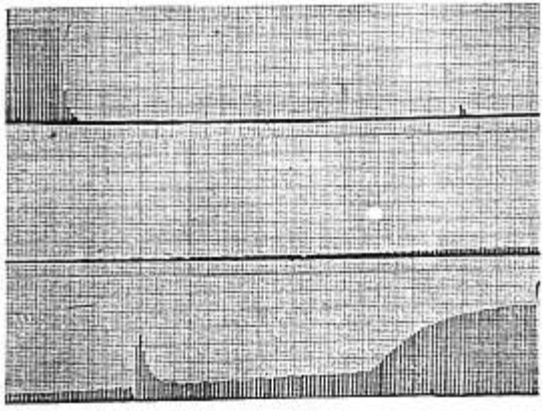

FIG. 4. Tracing of muscle response prior to and after injection of *d*-tubocurarine. On the bottom strip, the curare effect has been antagonized with neostigmine.

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