A CATHETER-PROTECTION SYSTEM FOR USE WITH MONKEYS¹

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One major problem in studies requiring chronic administration of drugs to rhesus monkeys is the maintenance of an intact indwelling-catheter system. One way to protect the catheter from the animal is to pass it through a flexible steel tube connected at one end to the animal and at the other end to the cage wall. Unlike other arrangements which require monkeys to be almost completely restrained (Niemann, Schuster, and Thompson, 1962), the present system offers more complete catheter protection while leaving the animals free to feed and water and to move rather freely about their cages.

The assembled device is shown in Fig. 1.

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The protective tube is a 12-in. length of $\frac{1}{2}$ -in. (nominal) diameter Sealtite Type EF electrical conduit, reinforced by epoxying a 2-in. length of $\frac{9}{16}$ -in. o.d. brass tubing to the inside of each end. One end of the reinforced conduit is attached by a Sealtite box-connector to an aluminum chassis-box, 2 in. deep by 4 in. wide by 6 in. long. The chassis-box is bolted or riveted to the back of a leather vest worn by the animal. Before it is attached to the vest, the open end of the chassis-box is cut to the shape of the monkey's back, and the part of the vest leather that would otherwise lie within the sides of the chassis-box is clipped away. The catheter runs subcutaneously from the site of placement (for example, the internal jugular vein) to its exit from the skin in mid-back at about the center of the area covered by the chassis-box, and passes through the flexible conduit to the outside

Fig. 1. Photograph of catheter-protection device.

of the cage. The conduit is attached to the cage wall by a bearing arrangement, which allows the animal to lie down or turn over without putting strain on the conduit. This end of the conduit is attached to a second box-connector that has been epoxied to the inner race of a flanged ball-bearing (Boston Gear #6725, \$.99). The screw-threads of the connector must be filed slightly before the connector can be inserted and cemented to the bearing. The bearing is mounted by press-fit into a hole in a sheet of aluminum bolted to the cage wall. To insure that the conduit will not pull away from the box-connectors, drill through the connector, the conduit, and the brass tube and bolt them together. Several holes may be drilled into the sides of the chassis-box to permit visual examination of the catheter.

The system has been in use for about six months and has served to protect both jugular and femoral catheters. Presumably it could be used to protect electrode wires as well. The failures of the system have been due almost entirely to improperly-fitted vests, which allowed the animal to reach the catheter by running its hand under the vest. Thus, care should be taken that each vest conforms as closely as possible to its wearer's shape and size.

The system could also be used with other types of monkeys or primates.

REFERENCE

- Niemann, W. H., Schuster, C. R., and Thompson, T.
A surgical preparation for chronic intravenous infusion in rhesus monkeys. Laboratory of Psychopharmacology, University of Maryland, Technical Report 30-62, September, 1962.