Repeated samples of fat obtained with a biopsy needle

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Summary
Repeated samples of fat obtained with a biopsy needle have on analyses led to an understanding of the pharmacodynamics of the organochlorine compound dieldrin in man.

Introduction
The established and large-scale use of certain synthetic chemicals, especially pesticides, has led to their absorption and deposition in animals and man. The authors' interest lay in the pharmacodynamics of the synthetic organochlorine insecticide, dieldrin, which is primarily deposited and stored in the body lipid. Its study required repeated measurements of the deposition of this compound in the adipose tissue of volunteer subjects deliberately ingesting dieldrin, and in a random selection of the general population fortuitously exposed to dieldrin (and similar compounds) in an average normal diet. Open surgical biopsy of subcutaneous adipose tissue entails local scarring and discomfort, and so recourse was made to needle biopsy.

Method
The most satisfactory instrument was that described by Deingott & Kerpel (1967), but modifications were made to the original design to allow the operator to know better the relative positions of the openings in the trocar and cannula, and to the cutting edge of the cannula to permit more efficient cutting of the fatty tissue. Also the cavity in the trocar was made slightly bigger by diminishing the thickness of the metal in its wall.

Fig. 2. Disassembled needle.

Results
With this instrument over fifty biopsies have been made under local anaesthesia of subcutaneous adipose tissue without complication other than occasional slight bruising and, in one case, a small haematoma. The fat was usually taken from the anterior abdominal wall just below the level of the umbilicus. In very thin subjects the

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FIG. 1. Cross-section of needle at mid-point of fenestra.
upper and outer third of the buttock was sometimes preferred.

The procedure can be carried out in the consulting room. An assistant is required to rotate the cannula sharply through a right angle whilst the operator steadies the trocar and applies negative pressure with a syringe.

The individual samples of adipose tissue obtained with the biopsy needle averaged 15.5 mg. This amount is adequate quantitatively and qualitatively for analyses of synthetic organochlorine pesticides in concentrations as low as 0.005 μg/g.

The designers' estimate of the value of this instrument is confirmed.

Reference
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