Table 1. Activity of Expired Carbon Dioxide after the Ingestion of 35 gm. of Sorbitol uniformly labelled with Carbon-14 (total activity 30 μ c.)

Time after ingestion of sorbitol (hr.)	Normal subject Counts/min./gm. carbon dioxide	Time after ingestion of sorbitol (hr.)	Diabetic subject Counts/min./gm. carbon dioxide
1	411	1	54
3	320	1	134
4	338	3	519
6	475	4	750
8	260	5	670
24	0	5	456
		7	260
		10	0
		24	

carbon dioxide production, which for experimental reasons could not be measured in these tests. Nevertheless, at least 70 per cent and probably 90 per cent of the activity administered can be accounted for in the expired carbon dioxide.

Our investigations so far throw no light on the pathway of metabolism of sorbitol, but show clearly that this polyhydric alcohol must provide calories. Its precise mechanism of metabolism in both the normal and diabetic subject requires further investigation.

We wish to thank Messrs. Howards of Ilford, Ltd., for financial support of this investigation.

L. H. ADCOCK
C. H. GRAY

Department of Chemical Pathology,
King's College Hospital Medical School,
London, S.E.5.
Nov. 25.

cases. Numerous well-preserved cells are found at term, and enough in the middle of pregnancy to allow a definite distinction between male and female cells by the absence or presence of the typical sex chromatin mass in the cell nuclei. Many of the cells have a close resemblance to those of oral smears and might conceivably be epithelial cells from the foetal alimentary or genito-urinary tracts.

The crucial point of the method is the avoidance of admixture of maternal cells. If the puncture is made through the uterine wall, a needle with a stylet should be used; and if the amniotic fluid is collected by rupture of the membranes from below, a catheter should be inserted into the bag of water. The specimens should be fixed as soon after collection as possible to avoid autolysis.

Although transabdominal puncture of the uterus has been carried out often for therapeutic and experimental reasons without accidents, mere curiosity does not justify the procedure, and its practical value is probably limited in the human. If the results are confirmed in animals, however, it might become of great significance in veterinary practice.

FRITZ FUCHS
Department A,
Royal Maternity Hospital,
Rigshospitalet,
Copenhagen.

POVL RIIS
Department F,
Copenhagen County
Hospital,
Hellerup.

Nov. 23.

¹ Barr, M. L., and Bertram, E. G., *Nature*, **163**, 676 (1949).

² Graham, M. A., *Nature*, **173**, 310 (1954).

³ Marberger, E., Boccabella, R. A., and Nelson, W. O., *Proc. Soc. Exp. Biol. Med.*, **89**, 488 (1955).

⁴ Moore, K. L., and Barr, M. L., *Lancet*, **ii**, 57 (1955).

Antenatal Sex Determination

For thousands of years people have had a desire to know the sex of an expected child. Many methods have been tried for antenatal sex determination; but even modern ones, based upon scientific hypotheses, have failed to receive sufficient confirmation for general acceptance.

Since Barr *et al.*¹, in 1949 in *Nature*, described morphological sex differences of the nerve cell nuclei of cats, their observations have been repeated on several human and animal cell types. The observation that the cell nuclei of the amniotic membrane in cats² and of the oral epithelium of newborn infants^{3,4} exhibit easily demonstrable sex differences led to an investigation whether human amniotic fluid contains enough well-preserved desquamated cells to make possible the determination of the foetal sex.

Amniotic fluid was collected from pregnant women at term by rupture of the membranes for induction of labour. In a few cases the fluid was obtained in the middle of pregnancy from cases for surgical interruption, by puncture of the membranes through the uterine wall either vaginally or through a laparotomy. Care was taken to avoid admixture of maternal cells. The specimens were centrifuged and the vernix and supernatant fluid removed. The cells were smeared on microscopical slides coated with egg-albumin or human serum and fixed in Papanicolaou's fixative. The staining procedure was carried out with cresyl violet as described by Moore and Barr⁴.

The smears were examined by one of us without knowledge of the foetal sex even in those cases where delivery had taken place before the examination could be carried out. One of our first specimens was misinterpreted owing to lack of experience, but after that our results have been correct in all of twenty

Effect of $\beta\beta$ -Methylethyl Glutarimide and Amytal on Rat-liver Mitochondrial Respiration

In 1954, Shaw *et al.*¹ showed that $\beta\beta$ -methylethyl glutarimide was capable of reducing the narcotic effect of barbiturates in animals and man, and suggested that in therapeutic dosage it exerts a direct antagonism to barbiturates.

It has been known for a long time that barbiturates depress the respiratory system of the cells, and preliminary experiments² seem to show that a certain correlation exists between the narcotic effect of barbiturates and their ability to depress the respiration in an isolated liver mitochondrial system. This prompted me to see if $\beta\beta$ -methylethyl glutarimide exerted an antagonistic effect on barbiturates in this system.

Mitochondria were prepared from rat-liver homogenates made in 0.25 M sucrose³ containing 0.01 M ethylenediaminetetraacetic acid (versene)⁴, and incubated in the presence of glutamate, orthophosphate, adenylic acid, glucose and yeast hexokinase. The amytal (5-ethyl-5-isoamylbarbituric acid) used was an ordinary commercial product. The $\beta\beta$ -methylethyl glutarimide was a sterile solution containing 50 mgm. in 10 ml. of normal saline ('Migimide' from Nicholas Products Laboratories, Ltd., Slough).

It appears from Table 1 that the oxygen consumption of the mitochondria decreased with increasing amytal concentrations. Addition of $\beta\beta$ -methylethyl glutarimide, 0.8 and 1.6 μ moles/ml., had no effect on the oxygen consumption, whereas $\beta\beta$ -methylethyl glutarimide in concentrations of 3.2