for the bacterium the less mature it is, irrespective of the pathogenic effect of the organism. Its absence in the adult nursing staff may thus be explained.

The results of our epidemiological investigations will be reported upon elsewhere.

We wish to express our thanks to Miss Elizabeth King, Bacteriologist, General Bacteriology Unit, Communicable Disease Center, Atlanta, Georgia, U.S.A., for her kind help extended to us.

—We are, etc.,

RACHEL SELIGMANN.
MIRIAM KOMAROV.
RUDOLPH REITLER.

Government Public Health
Laboratory,
Haifa, Israel.

REFERENCES

- 1 Brody, J. A., Moore, H., and King, E. O., *J. Dis. Child.*, 1958, 96, 1.
- 2 Cabrera, H. A., and Davis, G. H., *ibid.*, 1961, 101, 289.
- 3 King, E. O., *Amer. J. clin. Path.*, 1959, 31, 241.
- 4 Sugathadasa, A. A., and Arseculeratne, S. N., *Brit. med. J.*, 1963, 1, 37.

Jaundice After Halothane and Radiotherapy

SIR,—In support of the theory of Mr. K. J. O'Connor and others (September 28, p. 811) that a combination of radiation and halothane is more likely to cause liver damage than the administration of halothane alone, I make the following remarks and quote my only case of post-halothane jaundice.

I have given more than 3,000 administrations of halothane for major surgery since 1958. For most of these a closed circuit (basal oxygen=250–300 ml./min.) technique was used with controlled respiration and a modified Goldman Mark II vaporizer in the circuit. In many of these cases it was desirable to produce considerable hypotension, and only halothane and oxygen were used: the oxygen percentage was kept above 92%.

In addition I have used halothane in more than 1,800 dental administrations, lasting from three to over 20 minutes a case. Many of these patients had multiple administrations at short intervals of time, depending on the number of teeth the dental surgeons wished to extract at one sitting.

Only recently have I started giving halothane to patients for radiotherapy, but of three patients so anaesthetized one developed a fatal hepatitis, and I have now given up using it for radiotherapy cases. However, I am continually using it for other cases and regard it as a very great advance in anaesthetics.

The patient, a female aged 68 years, was admitted on July 1, 1963, with a diagnosis of carcinoma of the cervix uteri (proved histologically) for radium and x-ray treatment. She had three lots of radium inserted on July 9, 16, and 30, and removed in the ward under "trilene" analgesia on July 11, 18, and 31 respectively. The dose on these occasions was one medium tube and two medium ovoids inserted for 48 hours. On July 30 the same dose was inserted for 24 hours.

On July 11 she was given a course of H.V.T. (K.V. 300 H.V.L. 3.25 applicator T.D. 1350 Rads. This was stopped on July 30, 1963.

The same anaesthetic technique was used for each of the three radium insertions. She was given a premedication of atropine 1/100 gr. (65 mg.), pethidine 50 mg., "phenergan" (promethazine) 25 mg. Halothane and oxygen in a circle absorption unit was used for induction, and anaesthesia was maintained in a completely closed circuit. Recovery from the anaesthetic was normal.

On July 31, 1963, the patient complained of pain in the chest and there was slight pyrexia. She had nausea and a slight tinge of jaundice. The urine was bilirubin + and urobilinogen ++. On August 1 she became markedly jaundiced, and on the following day the liver was palpable. On August 13 the following investigations were carried out: blood S.G.P.T.=100 units/ml. S.G.O.T.=35 units/ml., serum bilirubin 11.4 mg.%. On August 21 the blood sugar was raised to 330 mg.% and soluble insulin was given. On August 24 the patient became lethargic and died on the following day.

The necropsy showed a cicatrizing carcinoma of the cervix, but no metastases were found anywhere. The liver showed a diffuse fine granularity with an early cirrhosis and small yellow nodules. Histological examination showed widespread focal necrosis, mainly centrilobular, with an early post-necrotic cirrhosis.—I am, etc.,

J. R. J. BEDDARD.

Bath, Somerset.

Halothane and Jaundice

SIR,—I should humbly like to suggest that Dr. J. Robinson (November 16, p. 1268) has added his name to the growing number who have described typical attacks of infectious hepatitis occurring after operations, under this or similar titles.

The connexion with halothane is tenuous in the extreme. What is a "sensitivity reaction" supposed to imply? I would be interested to hear an explanation of how these particular mesenchymal cells come to be uniquely involved in what one would imagine would be, for them, an impossible reaction.—I am, etc.,

M. D. VICKERS.

Department of Anaesthetics,
University of Newcastle upon Tyne.

Nitrous Oxide in Obstetrics

SIR.—Following your annotation on obstetric analgesia, and the leading article on hypothermia in resuscitation of the newborn (October 12, pp. 886 and 880), I should like, if I may, through your columns to draw attention to one other factor.

If equilibration of nitrous oxide tension is approached between the blood of the mother and that of the foetus at about the time of delivery, and it seems likely that this is so, then that nitrous oxide within the baby will tend to leave it very speedily during the first few breaths of life.

This nitrous oxide will then displace to some extent what oxygen the baby is able to inspire from the atmosphere (diffusion anoxia). This factor was first described by Fink in *Anesthesiology*.¹

I feel it is appropriate, at this time, to draw attention to this possibility for two reasons: firstly, there is a trend towards the use of higher concentrations of nitrous oxide in midwifery, albeit—praise be—with more than the 10% oxygen provided by the Minnitt apparatus. Secondly, we must remember that a great challenge to obstetricians and anaesthetists is to improve on the fact quoted in your leading article that . . . "over a quarter of all deaths that occur during the first day of life are due to asphyxia at birth."

Who knows how much morbidity results from the same cause?—I am, etc.,

T. H. CHRISTIE.

Ditchling, Sussex.

REFERENCE

- 1 Fink, B. R., *Anesthesiology*, 1955, 16, 511.

Radio Pills and Intestinal Motility

SIR,—I read with great interest the paper by the Central Middlesex Hospital group of workers on the use of radio pills for the recording of intestinal motility (September 28, p. 771). I think that the observation that pressure changes and propulsion need not be associated with each other is of considerable importance. I do not, however, agree that therefore "propulsion does not appear to depend on classical peristalsis." If the authors mean by "classical peristalsis" the waves of circular muscle contraction that pass in a caudad direction along the alimentary tract as described by Bayliss and Starling in the whole animal¹ and by P. Trendelenburg in isolated strips of intestine,² these may still be present, though no pressure changes are recorded by the pill. The radio pill is a small object that does not fill the lumen of the human intestine and carries one pressure-sensitive end only. One could well imagine that the pill be propelled for some distance without being subjected to any marked rise in pressure as long as it meets no resistance. Non-propulsive segmentation movements, during which both ends of a short length of intestine are closed simultaneously, would be more likely to show recordable pressure changes. Pressure changes are also to be expected during the passage of the pill through the pylorus, as it will be held up by this sphincter while it is exposed to antral contractions.—I am, etc.,

R. SCHNEIDER.

Department of Medical
Biochemistry and Pharmacology,
The Medical School,
Birmingham 15.

REFERENCES

- 1 Bayliss, W. M., and Starling, E. H., *J. Physiol. (Lond.)*, 1899, 24, 99.
- 2 Trendelenburg, P., *Naunyn-Schmiedeberg's Arch. exp. Path. Pharmacol.*, 1917, 81, 55.