or just below for the next 40 minutes. However, the tone of the jaw muscles was still clearly subnormal and it was considered unwise to extubate for a further two hours (about four hours after the last dose of curare). The patient made an uneventful recovery.

Case 2.—A man of 63, with moderate chronic bronchitis, had suffered from increasing abdominal pain and distension for one month. There had been no vomiting and there was no disturbance of serum electrolytes. Premedication was with atropine, mg. 0.9, and induction of anaesthesia with thiopentone, mg. 300, and succinyl choline, mg. 50. When respiration was re-established 75% N_2O/O_2 and a low concentration of ether were administered for three to four minutes. D-tubocurarine chloride was given in divided doses, mg. 10+10+10+5, and I.P.P.R. was established with N_2O/O_2. A further 5 mg. of curare was required 15 minutes later. The operation of colostomy lasted almost one hour and atropine, mg. 2.4, and neostigmine, mg. 5.0, were given in divided doses. Reversal of curarization was judged satisfactory by respiratory activity and strength of handgrip. However, when seen in the ward a few minutes later, the patient's respiration was inadequate. He had a gross tracheal tug and cyanosis. He was reintubated and hyperventilated for about 40 minutes. Spontaneous respiration was then re-established but showed features of residual curarization. Edrophonium, mg. 10, caused a marked improvement and atropine, mg. 0.6, and neostigmine, mg. 2.5, were therefore given. Respiration became clinically satisfactory. Half an hour later a rebreathed gas sample showed a normal mixed venous P_{CO_2}. Respiration and muscle tone were thereafter always adequate.

These two cases do not prove that oral neomycin can cause difficulty in reversal of curarization. But it is known that parenteral neomycin can affect neuromuscular transmission and that oral neomycin can, on occasion, be absorbed in appreciable quantities from the apparently normal intestinal tract. It may be that this absorption is increased in intestinal obstruction when it is likely that the concentration of neomycin in the gut is high due to stasis and the lack of normal food and fluid intake, and that the permeability of the wall is greater owing to distension. It is also likely that absorption may be rapid when the continuity of intestinal mucosa is lost, as at the site of a carcinoma or other ulceration. In this context, it is of interest that Dr. Ross's case was suffering from bleeding per rectum. It therefore seems that anaesthetists would be wise to regard oral neomycin as yet another potential hazard to safe practice.—We are, etc.,

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Antibiotic Cover for Dental Extractions

SIR,—The case of subacute bacterial endocarditis reported by Drs. C. G. Barnes and Rosalinde Hurley (November 9, p. 1205) is most interesting.

There are reports in the literature of endocarditis arising in spite of the provision of prophylactic penicillin during dental treatment on susceptible patients.[1-4] However, it is possible to explain the majority of these failures on two grounds: that the cover was inadequate in amount or timing, or that previous penicillin therapy had given rise to penicillin-resistant strains of oral streptococci—as Garrod and Waterworth[4] showed can so easily happen.

Neither of these explanations fit this particular case, but before attributing the infection to a failure of an apparently adequate regime it is worth considering that the responsible bacteriaemia might have occurred either before or after the dental extractions. It was not clear whether total extractions were performed.

This would be coincidence, no doubt, but bacteriaemia may occur whenever dental sepsis is present.—I am, etc.,

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Nicotine and Colonic Muscle

SIR,—In the letter of Dr. K. C. Dave and Dr. K. S. Sachdev (November 9, p. 1205), which discussed our report of the action of nicotine on human colonic circular muscle *in vitro* (September 14, p. 666), the question of premedication was raised.

The pre-operative medication given to our patients has varied. The majority received a combination of atropine 0.6 mg. or scopolamine 0.5 mg. with "omnopon" 20 mg. or morphine 16 mg. However, several received atropine with pethidine 100 mg. and a few received atropine with an antihistamine. We have found no difference in the response of colonic muscle that can be related to the various combinations of premedication. The premedication has been given at least an hour before the start of the operation, and the muscle strips have been obtained two to three hours after the premedication.

We have reported that the colonic circular muscle strip responds to a dose of 10 mμg./ml. (10^{-5}) of acetylcholine. However, some of our strips have been more sensitive than this, responding to 1–10 mμg./ml. (10^{-9}, 10^{-8}), and even these do not contract in response to nicotine.

The concentration of atropine in the tissues two to three hours after a dose of 0.6 mg. must be small; very much smaller, in fact, than the concentration found necessary by Gillespie and Mackenna[1] to block the parasympathetic effects of nicotine in the rabbit colon (10^{-4}). The effects of atropine on the human colon *in vivo* have been studied by Kern *et al.*,[2] who showed that the motility is depressed, but that even with doses of 1 mg. the effect was slight and of short duration, usually less than 30 minutes.

For these reasons we think that the pre-operative atropine is unlikely to affect the muscle in our *in vitro* experiments, but we must admit that we cannot be certain about this yet.—We are, etc.,

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Flavobacterium meningosepticum in Israel

SIR,—In 1957 Brody *et al.*[1] and in 1960 Cabrera and Davis[2] isolated a Gram-negative rod from the cerebrospinal fluid in nosocomial outbreaks of meningitis in newborn children, mostly prematures, which occurred in Greenville, South Carolina, Portsmouth, Virginia, and Columbus, Ohio, respectively. King[3] examined these strains in detail and called the hitherto unnamed organism "Flavobacterium meningosepticum." As far as we are aware, the bacterium has only once been reported upon from outside the U.S.A.[4]

We have recently identified the same bacterium in Israel, where it was cultured from the cerebrospinal fluid in seven cases of meningitis occurring during the summer of 1962 among the newborn infants in the nursery of a hospital. As late as three months after the occurrence of the last meningitis case we isolated it also from the throat swabs of eight healthy babies in the same section. For the isolation from this material with mixed flora we used MacConkey agar with 5% blood from the blood bank, a medium which we found to be very suitable for this purpose.

Three of our strains were submitted to Miss King, who confirmed our diagnosis and determined them as belonging to serotype C, the one responsible for most of the cases in U.S.A. (personal communication).

Although no treatment of the healthy carriers was attempted, the bacteria were never found a second time on repeated examinations of nose and throat of the same babies, one or two weeks after the first isolation. Obviously, they remained only for a short time in the carriers as harmless commensals. No positive findings were obtained from the adult contacts with the infants.

Four of our healthy carriers were found amongst 15 premature infants present in the nursery at the time of our examination, the other four amongst 95 full-term babies—that is, in 26.6% of the first and in 4.2% of the second group. This percentage distribution in healthy infants seems to indicate that a host organism is the better suited as substrate

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.,

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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.,

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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.,

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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.,

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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 animal[1] 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.,

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