This had lasted until the acute arthritic process died down, when her hearing reverted to normal. Another patient, hearing of this, reported that her experience had been similar; and I was able to observe her during an exacerbation of her arthritis. Her deafness was of conductive type, and there was no familial history or evidence of middle ear infection, past or present; nor was there any excess of cerumen. The ear-drums were normal in appearance, and the Eustachian tubes patent. Rinne's test was reported negative, and "air conduction much diminished."

Subsequently I questioned many patients, and so found a third case in whom an active phase of rheumatoid arthritis was associated with temporarily impaired hearing, and in this case with the addition of tinnitus; her deafness was also of conductive type. All aural clinical findings again proved normal. She said that she could hear more clearly in a room full of people or when travelling in a car, and also that children's voices were more audible than those of adults. Deafness disappeared rapidly after the institution of steroid therapy, as did the inflammatory signs and symptoms of her poly-arthritis.

It is suggested that the temporary interference with the transmission of sound impulses from the ear-drum to the auditory nerve in these patients was due to impairment of the articular movements of the chain of small movable bones which normally transmit these vibrations to the inner ear. The handle of the malleolus is attached to the inner surface of the tympanic membrane, and the joint between this bone and the body of the incus, and the articulation joining the latter and the stapes, are both of diarthrodial type with a synovial capsule. They presumably contain synovial fluid, as do joints of this type elsewhere. If for any reason movements of the joints in this ossicular chain become impaired, vibrations can no longer be conducted from the ear-drum to the inner ear and auditory nerve, and deafness of conductive type results; although sounds can still be transmitted normally through the bone direct to the cochlea, which remains unaffected.

The usual known causes of interference with mobility of the ossicular chain are obstruction or infection in the middle ear or Eustachian tubes; and also the poorly understood condition of otosclerosis, in the course of which the footplate of the stapes becomes ankylosed. This, however, results in permanent deafness, which is progressive and unremitting. It is suggested that deafness in the cases described may be due to the active rheumatoid process involving the synovial cavities of the small inter-ossicular joints, and so producing a temporary defect in the mechanism whereby sound is conducted from the air to the inner ear. Such an association may prove to be of comparatively common occurrence. Audiographic studies during and after acute exacerbations of arthritis

associated with deafness would be of interest, and will be included in any further studies made.

My thanks are due to my colleague Mr. Kenneth Rotter, F.R.C.S., who assisted me with this report, and who tells me that he can find no reference to the association of deafness with rheumatoid arthritis in otorhinological literature.

—I am, etc.,

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Thalidomide Neuropathy

SIR,—I have previously corresponded with you about the neuropathy associated with thalidomide. All who have seen this condition will agree that there is a typical clinical picture which has been well described by Fullerton and Kremer.¹

I have made some suggestions about its possible nature.^{2,3} With the withdrawal of the drug it seemed unlikely that more would be learned about this interesting toxic neuropathy. I now write to place on record that it appears to have a quite unusual natural history which I have not experienced in other toxic neuropathies. During the last year I have been seeing patients who have had symptoms and signs of thalidomide neuropathy since the drug was withdrawn from the market, but who have continued to deteriorate. To-day I have seen a typical case which certainly developed at least a year after the patient had discontinued the use of "distaval" as a night hypnotic. I would be interested to know if others have had a similar experience.—I am, etc.,

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Psoriasis and Arthritis

SIR,—We are surprised that Dr. M. H. Pappworth (November 16, p. 1267) is unaware that in psoriatic arthritis the joint disease may precede the psoriasis. In the largest series published in this country,¹ 27 of 118 cases presented in this way and other authors have made similar observations.^{2,3} In our own published series⁴ of 53 cases the arthritis preceded the psoriasis in seven.

Dr. Pappworth then says that we "proceed to label some patients as psoriaform (*sic*) arthritis" because they had negative Rose-Waaler tests and a family history of psoriasis in addition to "arthritis of the hands." Our description of their arthritis was in fact more precise than this, as in each case we pointed out clinical and radiological features previously described in psoriatic arthritis. In the case we classified as "definite psoriatic arthritis" there was a characteristic ero-

sive arthritis in the hands confined to the terminal interphalangeal joints.

Dr. Pappworth's reluctance to follow our argument seems to arise from his failure to realize that a proportion of patients with seronegative arthritis turn out to have conditions other than rheumatoid arthritis. For example, 11 of 61 cases of seronegative "rheumatoid arthritis" followed up by Dixon⁵ over an average of 5.4 years proved to have some other condition.—We are, etc.,

London.

Newcastle upon Tyne.

H. BAKER.

D. N. GOLDING.

M. THOMPSON.

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Oral Neomycin and Anaesthesia

SIR,—We were interested in the Medical Memorandum by Dr. E. D. T. Ross and others (November 2, p. 1109) reporting a case in which they thought that oral neomycin might have given rise to difficulty in reversal of curarization. Earlier this year we had similar trouble with two patients suffering from subtotal obstruction of the large bowel to whom 8 g. of neomycin had been given by mouth during the two days of pre-operative preparation.

Case 1.—A man of 64, otherwise in good health, had suffered from intestinal obstruction for one week prior to operation. The obstruction had been partially relieved by enemata, but some intestinal distension remained. There had been no vomiting, and there was no disturbance of serum electrolytes. Premedication and induction of anaesthesia were according to generally accepted principles: papaveretum, mg. 15, hyoscine, mg. 0.3; thiopentone, mg. 200, and succinylcholine for intubation, mg. 35. When respiration was fully re-established, D-tubocurarine chloride, mg. 25, was given and intermittent positive pressure respiration (I.P.P.R.) commenced with 75% N₂O/O₂. The operation of colonic resection for carcinoma took slightly over four hours, during which supplements of curare were given as judged necessary according to marked diaphragmatic action and muscle tone. A total of 60 mg. curare was administered. During this period the patient received no other drugs, but 2 pints (1.1 litres) of blood and one of plasma (0.6 litre) were given. After the operation, reversal of curarization was obviously incomplete after atropine, mg. 2, and neostigmine, mg. 5, in divided doses. Edrophonium ("tensilon"), mg. 10, had only slight effect. I.P.P.R. was therefore continued for a further hour. Subsequently atropine, mg. 0.6, and neostigmine, mg. 1.25, were given with some effect. Calcium gluconate, 1 g., caused a further marked improvement. A few minutes later atropine, mg. 1.2, and neostigmine, mg. 2.5, were given and the respiratory activity was thereafter satisfactory by clinical signs. The mixed venous Pco₂ (estimated by the re-breathing method) remained at 46 mm. Hg

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 succinylcholine, mg. 50. When respiration was re-established 75% N₂O/O₂ 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 N₂O/O₂. 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 hand-grip. 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 Pco₂. 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 Waterworth⁴ 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 bacteraemia 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 bacteraemia 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 "omnupon" 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 µg./ml. (10⁻⁴) of acetylcholine. However, some of our strips have been more sensitive than this, responding to 1–10 µg./ml. (10⁻⁵, 10⁻⁶), 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 Mackenna¹ 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 Davis² 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. King³ 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