centre. Some will respond satisfactorily to this lengthy period of discipline and character building; for others the provision will prove to have been purely preventive. In relatively few of the cases in which the intelligence quotient is below 90 will there be any permanent response to psychiatric treatment. In those cases in which the intelligence quotient is 90 or more (and I.Q.s as high as 140 will be encountered among those who are persistently delinquent) the primary need is to determine the level of social maturity. In the absence as yet of a social maturity scale of general applicability the most reliable guide is a study of the girl's personal history from infancy onwards. Precocious physical and emotional development is a common feature in the history of the more intelligent girl, and absence of understanding, help, and advice on the part of parents or teachers a contributory factor. It is this group of cases that provides the most favourable material for psychiatric investigation and treatment.

When the committee have obviously gone to much trouble to collect and sift facts relating to the problem of the unstable adolescent girl it seems unfortunate that the above general principles upon which recommendations must be based have not been more clearly enunciated.—I am, etc.,

Liverpool.

MURIEL BARTON HALL.

Migraine and the Sympathetic Nervous Pathways

SIR,—Mr. G. F. Rowbotham's article (Sept. 7, p. 319) on "Migraine and the Sympathetic Nervous Pathways" has just come to my notice. Several points seem worthy of comment. It is noted that Case IV did not respond satisfactorily to surgery. This it is felt could have been avoided by not subjecting him to the operation. The procedure we have adopted should obviate surgery on cases unlikely to respond.

I have personal experience of three cases of migraine which we have cured by cervical sympathectomy. In the first case stellate ganglionectomy was performed on account of status anginosus, and it was noticed that a left-sided migraine which had been present for years was abolished. The second case was that of a woman of rather neurotic tendencies who complained of a unilateral migrainous type of headache. In view of the possibility of a psychogenic origin it was decided to determine before embarking on any surgical procedure whether it was likely to improve her condition. Mr. Trumble first of all injected the region of her cervical sympathetic with normal saline, with no effect on her headache. He then substituted "novocain," and with the appearance of a Horner's syndrome the headache was abolished. The cervical sympathetic chain was then divided under local anaesthesia, and on stimulating the cut end of the latter the patient complained of having her "headache." Following operation she has remained well and has had no sign of any recurrence of symptoms over a period of nearly two years.

In the third case the patient complained of typical unilateral migraine of many years' duration. During an attack I injected her cervical sympathetic with "novocain," and with the appearance of a Horner's syndrome the migraine was abolished. Mr. Grayton-Brown performed a cervical sympathectomy, but could not reproduce her migraine by stimulating the cut end of the sympathetic chain. She has so far remained well and free from any untoward symptoms.

Three other cases in which operation might easily have been undertaken were found not only to be unrelieved by local anaesthesia of the cervical sympathetic but were made worse by it. Thus three failures were avoided. I would like to suggest to Mr. Rowbotham that he adopt the simple procedure of infiltrating the cervical sympathetic with "novocain" prior to operation so that cases suitable for this form of treatment can be selected. The ligation of the external carotid does not seem to be necessary and was not carried out in any of our cases.—I am, etc.,

Melbourne.

S. A. SEWELL.

Mental Deficiency

SIR,—I wish to draw your attention to what appears to be an inaccuracy in "Any Questions" under the heading "Mental Deficiency" (Dec. 14, p. 929) where there appears the statement, "The sole criterion is what is best in the interests of the child." Although that may have been the standard until recently, the

Education Act of 1944 gives to local education authorities the power to order special educational treatment for mentally deficient children not only in their own interests but also in the interests of the other children in the school which they would normally attend. The relevant section is 57 (4), which states:

For the purposes of this section, a child shall be deemed to be suffering from a disability of mind of such a nature and extent as to make him incapable of receiving education at school not only if the nature and extent of his disability are such as to make him incapable of receiving education, but also if they are such as to make it inexpedient that he should be educated in association with other children either in his own interests or in theirs.

I think you will agree that although the ten-year-old mongolian idiot may be quite happy in the village school, the local education authority would be justified in removing the child in the interests of the other pupils.—I am, etc.,

Leeds.

MARY N. M. PAULIN.

Use of Penicillin Pastilles

SIR,—Dr. G. C. Pether's letter (Dec. 14, p. 920) on the possible dangers of oral penicillin may indicate a rather wide interest in this matter and one or two further points may be made. The correspondence, to which a number of the readers of this *Journal* have contributed, arose from a Question and Answer in the issue of Sept. 21 (p. 447). Your technical expert there stated that stomatitis after oral penicillin was rare, only four cases having been reported. In subsequent issues there have been a number of letters reporting further cases, and the impression is growing that commercial penicillin pastilles supplied for the local treatment of sensitive oral infections may be quite a frequent cause of sore tongue and sore mouth. The matter seemed to be clinched by the communication of Drs. Ellinger and Shattock, "Nicotinamide Deficiency after Oral Administration of Penicillin," in the issue of Oct. 26 (p. 611). The authors demonstrated that a clinical picture of nicotinamide deficiency, associated with a diminution of nicotinamide methochloride output, might follow the oral ingestion of a few thousand units of penicillin daily for several days in a subject who was apparently rather sensitive to dietary nicotinamide deficiency. These workers concluded that the penicillin swallowed by their subject had inhibited the metabolism of intestinal flora and diminished the quantity of the vitamin usually available from this source.

That this may not be the whole story of "penicillin stomatitis" is suggested by the following two considerations: (1) Whether in the ordinary way penicillin derived from sucking pastilles would be likely to reach the colon in sufficient quantity. (There is evidence that little penicillin enters the intestine from the blood-stream—e.g., McDermott *et al.* (1946)—and so we may take it that the drug must reach the colon via the small intestine.) Supposing a 500-unit pastille is dissolved in the mouth in fifteen minutes: 2,000 units an hour are slowly swallowed or absorbed from the buccal membranes. Of that portion which reaches the small intestine a further fraction will be absorbed (Abraham *et al.*, 1941; Florey and Florey, 1943). This appears to occur mainly from the duodenum (McDermott *et al.*, *loc. cit.*). This small dose would probably be insufficient to give demonstrable blood levels, from the evidence of Burk, Ross, and Strauss (1945), McDermott *et al.* (1945), Krantz, Evans, and McAlpine (1945), the evidence assembled in a recent editorial in the *Lancet*, and other work.

The recent work of McDermott and his colleagues (*loc. cit.* 1946), quoted by Ellinger and Shattock, emphasizes the irregularity with which ingested penicillin is absorbed from or retained in the small intestine. Of two subjects who had received oral penicillin in a single dose of 5 million units, apparently in aqueous solution, the stools of one were found to contain 0.94 units of penicillin per gramme of stool, and of the other 1,200 units per gramme. In another subject, who took 100,000 units orally in water at two-hourly intervals for a twenty-four-hour period, the stool (held till the end of the experiment) contained no demonstrable penicillin. It is clear that the doses with which these authors worked far exceed the quantity one would swallow from sucking pastilles through a day, where ten or twenty probably represent as many as most patients would take.

(2) Whether the triad of sore tongue, sore mouth, and sores at the angles of the lips, which may be due to vitamin deficiency, could receive another explanation in these particular circumstances. Unfortunately most of the clinical work on oral penicillin has been limited to gonorrhoea, where the total dose is usually given inside of one day, but in this connexion it is perhaps worth noticing that in the very careful paper by Bushby and Harkness (1946), a subsection, "Toxic Manifestations," does not mention this particular complication. Florey and Florey (1943) treated a case of right orbital cellulitis with 60,000 units daily for seven days by capsules and duodenal tube, and a case of sensitive actinomycosis with 80,000 units daily for six days by duodenal tube, and do not mention that either case developed stomatitis or glossitis, although the second case (whose primary disease was unrelieved) developed coryza and gastro-intestinal disturbance.

It seems to me that Dr. T. V. Cooper is on the right lines when he suggests that the commercial lozenge base may be at fault. Until we have work of the quality of that of Ellinger and Shattock supplemented by readings of penicillin blood levels, gut levels from a Miller-Abbott intestinal tube (with its tip positioned by contrast fluoroscopy to be in the region of the ileo-caecal valve), and perhaps by urinary and stool penicillin levels, and by stool culture, I feel we may continue to use oral penicillin for oral infections, but that we should order lozenges made with agar or gelatin (as has Dr. Cooper) until it has been shown that the base alone and the heat-inactivated pastilles are not the cause of the stomatitis.—I am, etc.,

London, S.W.19.

G. I. C. INGRAM.

REFERENCES

- Abraham, E. P., Chain, E., Fletcher, C. M., Gardner, A. D., Heatley, N. G., Jennings, M. A., and Florey, H. W. (1941). *Lancet*, 2, 177.
 "Any Questions" (1946). *British Medical Journal*, 2, 447.
 Burk, F. G., Ross, S., and Strauss, C. (1945). *J. Amer. med. Ass.*, 128, 83.
 Bushby, S. R. M., and Harkness, A. H. (1946). *Lancet*, 2, 783.
 Cooper, T. V. (1946). *British Medical Journal*, 2, 600.
 Editorial (1946). *Lancet*, 2, 796.
 Ellinger, P., and Shattock, F. M. (1946). *British Medical Journal*, 2, 611.
 Florey, H. W., and Florey, H. W. (1943). *Lancet*, 1, 387.
 Krantz, J. C., Evans, W. E., and McAlpine, J. G. (1945). *Science*, 101, 618.
 McDermott, W., Bunn, P. A., Benoit, M., DuBois, R., and Reynolds, M. E. (1946). *J. clin. Invest.*, 25, 190.
 and Haynes, W. (1945). *Science*, 101, 228.
 Pether, G. C. (1946). *British Medical Journal*, 2, 920.

Epidemic Gastro-enteritis

SIR,—Having heard on the wireless and read in the newspapers about the outbreak of an epidemic of gastro-enteritis among maternity patients and newborn babies, I would like to mention how similar cases have been treated successfully by myself both abroad and here in Dorking County Hospital. It is the treatment which was used in the Berlin City Orphanage by Prof. Finkelstein and L. F. Mayer.

The aim of the treatment is to prevent dehydration and make the patient afebrile. It starts with a short period of starvation, during which only weak cold tea sweetened with saccharin is given. (1) 1 dr. (3.5 ml.) is given every 5 minutes until vomiting has ceased for about 1–2 hours. (2) Tea is gradually increased (cold or warm) for no longer than another 8–12 hours. (3) Expressed breast milk is then given—12 g. 2-hourly for 24 hours, and increased daily by 10 g. until the 5th or 6th day. (4) 3-hourly feeds are then given, the amount required according to age and body weight.

As the mothers are ill also, I would advise sterilizing the expressed breast milk. If breast milk is not available buttermilk may be used. Unfortunately reliable brands of buttermilk are not always available, but it can be obtained by using the milk left over from making butter from sweet cream. This milk should be boiled with 1% flour and 3% sugar.—I am, etc.,

Dorking.

K. BRANDL.

Cerebral Malaria in Great Britain

SIR,—Drs. J. B. Ryder and R. T. Towson (Nov. 30, p. 815) state that in the literature they have only found two cases of cerebral malaria in Great Britain recorded. In the *British Medical Journal*, 1930, 1, 336, I reported the case of a gentleman aged 35 who had just returned from West Africa. He had a rigor for which he took 10 gr. (0.65 g.) of quinine. Instead of being better the next day he had a very severe head-

ache, and his temperature was still up. He called in a doctor who prescribed more quinine without effect. The headache became worse and worse, and vomiting set in. That night he was very delirious, with intense headache and frequent vomiting. Morphine gave him no relief. In the morning I was asked to see him as a case of meningitis. He was then semi-conscious, with a temperature of 103.6° F. (39.8° C.), pulse 112. His head was retracted and could not be moved forward. There was double Kernig's sign, and the toe reflexes were extensor. The abdomen was retracted, the spleen could just be felt below the ribs, and the liver was slightly enlarged. Some of the vomit during the night had been of coffee-grounds character.

I came to the conclusion that the case was probably one of cerebral malaria, and had 10 gr. of quinine hydrobromate injected into the buttock, and another 10 gr. into the other buttock in two hours, and another injection in four hours. Soon after this the patient became perfectly conscious and free from headache and vomiting. He was given an intramuscular injection of 10 gr. twice a day for the next three days, and had then quite recovered. This case illustrated the fact that quinine by the mouth is no good in cerebral malaria.

Since then I have seen post portem a child of 2 who had returned from India, where she had had malaria. She was taken ill one morning about 8.30 with headache, had a rigor with a temperature of 104° F. (40° C.), and became comatose at midday; she died at 4 in the afternoon. Malarial parasites were found in the blood after death.—I am, etc.,

Henfield.

WALTER BROADBENT.

Dental Anaesthesia after Coronary Thrombosis

SIR,—Like Dr. F. Barnett Mallinson (Dec. 14, p. 921), and I am sure many others, I could not agree with your correspondent that a person recovering from a coronary thrombosis was a normal anaesthetic risk. Dr. Mallinson has suggested treatment which should ensure the patient against any mishap or untoward occurrence, and I doubt if safer treatment could be suggested. However, I venture to point out that it is most unlikely that a hospital patient would be afforded the opportunity to have teeth extracted a few at a time in this way, and so a different régime must be laid down as a routine treatment of a not uncommon condition.

The requirements during this anaesthetic are that the patient should be well oxygenated at all times, that the anaesthetic should be smooth, and of course that the required plane of anaesthesia should be reached but not passed. In your issue of June 17, 1945, I mentioned a technique that I had used considerably on very bad risk cases with complete success. This is quite applicable to out-patient dentistry and, I consider, very suitable for the case in point. No sedative premedication is given, though atropine sulphate 1/100 gr. (0.65 mg.) is probably indicated. With the patient in the dental chair a syringe of 5% "pentothal" (thiopentone) is strapped to the arm after the needle has been introduced into a vein. Before any "pentothal" is given the nose-piece of a gas and oxygen apparatus is applied to the face while 100% oxygen is run through the machine. Only when the patient is breathing this smoothly is the "pentothal" run in. This is given slowly, speed depending on the severity of the risk, but the respiration must not be allowed to get shallow, and so the patient will remain a good colour. When unconsciousness has supervened the gaseous mixture is altered so that the oxygen percentage is reduced and replaced by nitrous oxide. With a bad risk this must not go below 50% at first, and some lose their full pink colour at this stage. Others, such as the convalescent coronary case, will rapidly tolerate 25% or 20% oxygen. Further injections of "pentothal" or alteration of the gaseous mixture are made as and when required, but it must be realized that it is better to give more "pentothal" than to cause any degree of cyanosis. With out-patients the minimum of "pentothal" will be given, and so the maximum use will be made of the nitrous oxide, consistent with the patient remaining a good colour. With in-patients this is less important, but it must be remembered that as a group they are a different type of case. In this way a few dental extractions can be made after only 3–5 ml. of "pentothal."

Speed during the preliminary stages of the anaesthetic should not be aimed at. The safety of the patient is the only thing