I hope I will be spared this method should I ever need a hypotensive anaesthetic.—I am, etc.,

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¹ McDowall, D. G., et al., *British Journal of Anaesthesia*, 1974, 46, 327.

Solitary Pulmonary Nodules

SIR,—In your leading article on this subject (26 April, p. 157) the statement is made that "with few exceptions the nature of the lesion can be established only if it is resected and submitted to pathological examination."

We have found that aspiration biopsy under television fluoroscopic control¹ has markedly increased the number of such lesions whose nature can be established without resection. Out of a total of 334 patients examined a definitive diagnosis was made in 70%. The lesion was malignant in 83% of cases and non-malignant in 29%. By integrating this technique with the usual investigations (sputum cytology, bronchoscopy with biopsy and/or bronchial washings, and mediastinoscopy) we have been able to obtain a definitive diagnosis without thoracotomy in over 90% of all carcinomas which have passed through our unit in the past few years. Specific diagnoses have also been obtained in some cases of tuberculosis, fungal infections, and sarcoidosis by the use of aspiration biopsy.

The only significant complication of this technique is pneumothorax, which has occurred in approximately 25% of patients, half of whom have required temporary intubation.—I am, etc.,

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Princess Margaret Hospital,
Christchurch, New Zealand

¹ Dahlgren, S., and Nordenström, B., *Trans-thoracic Needle Biopsy*. Chicago, Year Book Medical Publishers, 1966.

G.P. Obstetrics in the Future

SIR,—I do not share Dr. G. Lloyd's pessimism (11 January, p. 79) regarding the future of the general practitioner obstetrician and suggest that some of his evidence is erroneous or open to alternative interpretation. Firstly, the number of successful candidates for the Diploma of Obstetrics has risen steadily since the mid-60s (see figure)

and, while obviously not all will have entered general practice in this country, the trend has run nearly parallel to that for new entrants and to new admissions to obstetric lists. This tendency is clearly at variance with the small sample from eight executive councils which Dr. Lloyd quotes.

Secondly, bed occupancy rate is a poor parameter when comparing G.P. with consultant bookings since duration of hospitalization as well as number of patients is a relevant factor and this is likely to be considerably lower for G.P. cases, which usually have a negligible antenatal component.

Thirdly, to be valid, extrapolation of claims for complete services should surely be computed as a percentage of total births. When this is done the apparent decline in involvement of G.P.s in intranatal care does not reach zero until 1990. Furthermore, evidence can be adduced from the same source (Claims for Maternity Medical Services—Annual Summaries, D.H.S.S.) to show that the number of cases originally booked for G.P. care fell only from 48.6% to 41.5% during the decade reviewed.

It is agreed that the pattern of G.P. obstetric care is changing radically and home confinements are now almost a rarity. On the other hand the integration of G.P. maternity units into obstetric hospitals gathers momentum and the success of a number of these projects is already documented.¹⁻³ Such schemes have the advantage of continuity of care with specialist back-up in the event of complications and the opportunity for the G.P. obstetrician to maintain and increase his experience. There is an economic aspect too, since it can be shown that G.P. cases can result in a cost per patient of almost half of that for those booked for full consultant care. Of course geographical factors militate against the universal application of this innovation, but since the majority of the population inhabit the larger conurbations, it may be that what has in the past traditionally been the province of the country G.P. will, in the future, become that of his urban colleague. However, whether participating in intranatal care or not, G.P.s still need adequate post-graduate training in obstetrics particularly at a time when undergraduate experience in this specialty is being reduced to as little as one month in the curricula of some medical schools. It is therefore encouraging to see that obstetrics is still a mandatory appointment in many G.P. vocational training schemes, and a survey of trainees⁴ indicated that over 60% considered that it was an essential subject and another 35% felt that it was at least desirable.

In conclusion it is my contention that the G.P. still has an important role in the maternity care team, and can, if he so wishes, play an active part in both antenatal and intranatal care provided he is prepared to demonstrate by training, enthusiasm, and practice that he is competent to do so.—I am, etc.,

M. J. V. BULL

Oxford

- ¹ Barnard, M. J., et al., *Journal of the Royal College of General Practitioners*, 1970, 19, 211.
- ² Banwell, G. S., and Hamilton, I. G., *Journal of the Royal College of General Practitioners*, 1970, 19, 282.
- ³ Oldershaw, K. L., and Brudenell, J. M., *British Medical Journal*, 1975, 1, 139.
- ⁴ Drinkwater, C. K., *British Medical Journal*, 1972, 4, 96.

Malaria Vaccines

SIR,—I think it might be helpful if I stated the current position concerning erythrocytic malaria as I see it.

Freund et al.¹ and Targett and Fulton² vaccinated rhesus monkeys against *Plasmodium knowlesi* malaria using formalized *P. knowlesi* schizont-infected cells in Freund's complete adjuvant (F.C.A.) containing dead *Mycobacterium tuberculosis*; adjuvant without mycobacteria (Freund's incomplete adjuvant (F.I.A.)) was useless.

In 1965 and 1968 we demonstrated repeated antigenic variation in *P. knowlesi* infections, thus explaining their chronicity.^{3,4} We then studied the immune response described by Freund et al., in the context of antigenic variation. Our antigen was freeze-thawed schizont-infected cells, and the F.C.A. included *M. butyricum*, not *M. tuberculosis*. The immunity we obtained was less effective than that obtained by Freund, but because we were aware of antigenic variation and its implications we were able to carry the subject forward. Monkeys challenged with a variant different from that used to immunize died of the resultant parasitaemia, but the majority of monkeys challenged with the same variant survived. They developed a brief parasitaemia, with breakthrough parasites of a new variant form. Their infection was rapidly eliminated. These animals were then able to eliminate challenge infections with other variants of that strain and other strains of *P. knowlesi* and their variants.^{5,6}

Much of the evidence quoted by Professor P. H. Silverman (10 May, p. 335) has yet to be published, so it is difficult to evaluate. If his claims are substantiated, then this group has made a useful advance, particularly if the result with "adjuvant 65" plus B.C.G. holds up and the local tissue reactions produced are acceptable.

The merozoite preparation in F.C.A. used by Cohen's group⁷ appears to produce a quantitatively better immunity than that found in the Mill Hill experiments, but not a lot better than that found by Freund using formalized schizont-infected cells. The protection against other variants and strains, which we found, may develop more quickly with the merozoite vaccine, though this is an open question since Freund et al., whose results were most like those of Cohen et al., were not in a position to explore this aspect. The protocols of Freund's experiments however, suggest that they probably immunized and challenged with different variants. The Guy's group do not say which mycobacterium they used, but I believe it was *M. tuberculosis*. Since their published results include only one animal vaccinated with schizont-infected cells, a strict comparison of schizont-infected cells and merozoites has yet to be made. The *P. knowlesi* strain used to immunize in our experiments was also different from that used at Guy's. The experimental animals were wild caught rhesus.

Successful vaccination techniques against *P. knowlesi* apparently require the use of F.C.A., adjuvant 65 plus B.C.G., or F.I.A. plus B.C.G. or high doses of Poly AU.⁸ This need is consistent with the crucial role of T lymphocytes and other immunological responses in malaria^{9,10} rather than a simple requirement for a certain antiparasitodal antibody.

Let us be realistic. We are beginning to

understand immunity to erythrocytic malaria, and it is far from simple. What we just do not know is how to identify and produce in bulk the appropriate antigen(s) of experimental malarias, let alone of *P. falciparum* and other human parasites. Nor do we know how to present these antigens in a way which stimulates the immune system to best advantage without using Draconian adjuvants like F.C.A. When we have solved these formidable problems a practical vaccine incorporating blood stage antigens might become feasible.—I am, etc.,

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- 1 Freund, J., et al., *American Journal of Tropical Medicine*, 1948, 28, 1.
- 2 Targett, C. A. T., and Fulton, J. D., *Experimental Parasitology*, 1965, 17, 180.
- 3 Brown, K. N., and Brown, I. N., *Nature*, 1965, 208, 1286.
- 4 Brown, I. N., et al., *Immunology*, 1968, 14, 127.
- 5 Brown, K. N., et al., *Experimental Parasitology*, 1970, 28, 304.
- 6 Brown, K. N., and Hills, L. A., *Transactions of the Royal Society of Tropical Medicine and Hygiene*, 1972, 66, 668.
- 7 Mitchell, G. H., et al., *Nature*, 1974, 252, 311.
- 8 Brown, K. N., and Tanaka, A., *Transactions of the Royal Society of Tropical Medicine and Hygiene*. In press.
- 9 Brown, K. N., *Nature*, 1974, 230, 163.
- 10 Brown, K. N., *Ciba Symposium*. No. 25, p. 35. Edinburgh, Churchill Livingstone, 1974.

Withdrawal Symptoms in Newborn Infants of Epileptic Mothers

SIR,—It is a well-known fact that infants born to narcotic addicts may show withdrawal symptoms, including vomiting, though it is less well-publicized that withdrawal of other drugs may produce vomiting in the neonate. We have noticed that infants born to epileptic mothers often show drug withdrawal effects, including hypotonia, irritability, and vomiting. The vomiting tends to occur during the first two or three days following delivery and is usually confined to babies whose mothers have been having barbiturates (phenobarbitone) as their anticonvulsant medication. The last few cases we have seen here have usually settled down rapidly after a single intramuscular dose of amylobarbitone, though one infant, whose mother had uncontrolled epilepsy necessitating large doses of many anticonvulsants, took several days to recover.

As epilepsy is a common disorder, we find that this cause of vomiting is one of the more likely in the differential diagnosis of neonatal vomiting.—I am, etc.,

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Non-invasive Investigations of the Brain

SIR,—We read with considerable interest your leading article on this subject (10 May, p. 295). We would like to comment on some of the points made in that article since we feel they need clarification.

A comparison of non-invasive investigations of the brain is implicit in the article, which follows the current trend of emphasizing the potential of the E.M.I. scanner. However, it is misleading to say that the advent of E.M.I. scanning has reduced the number of isotope brain scans carried out. So far this is not the experience in some European centres and certainly not the ex-

perience of the American centres, where in fact the opposite has happened and more frequent isotope brain scanning has emerged as a consequence of the use of the E.M.I. scanner.

The second point which needs clarification is related to the method of comparison implicit in the article. Since one should compare only "like with like," digital scanning based on x-ray technology should be compared only with digital scanning based on radionuclide technology. Indeed, computer-processed isotope brain scans produce images of high resolution and sensitivity. Data presented at a recent postgraduate symposium at Columbia University, New York, by Kuhl comparing the E.M.I. scanner and his computer-assisted tomographic brain scanner (isotope scanner) proves this point very well. So if one wants to evaluate E.M.I. scanner results one should avoid looking at the analogue brain-scanning techniques.

In spite of these "bad days" for nuclear medicine the accuracy of analogue brain scanning is generally estimated at 85%. So far as we can foresee now, this figure will improve with computer-assisted isotope scanning. This is a considerable asset for a technology which at the moment has not only passed the test of time but also offers the advantage of not employing a single-purpose machine.—We are, etc.,

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Fluorinated Corticosteroids and Dermatophytosis

SIR,—I wish to comment on your epidemiological report on an outbreak of dermatophytosis (29 March, p. 745). It is stated that "*Epidermophyton floccosum* usually causes tinea pedis or tinea cruris" and "where there is an obvious reservoir of infection, the species is quite frequently found as a cause of small outbreaks" of these conditions. It is also stated that *E. floccosum* "rarely causes the tinea corporis described" in the report and it is suggested that the infection throughout a geriatric ward came after the admission of a simpleton who was scratching vigorously.

Over the past few months I have seen several cases of infection with *E. floccosum* in the submammary area, a site only occasionally infected by this organism. All the women were using a fluorinated corticosteroid ointment or cream and all had husbands who complained of itching feet. I have also seen a 3-year-old girl with widespread tinea corporis from *E. floccosum* who was under treatment for infantile eczema with a fluorinated corticosteroid cream and whose father suffered from tinea pedis. "Tinea incognita,"^{1,2} which results from immunosuppression caused by fluorinated corticosteroid applications, is increasing in dermatological practice in South Australia. Though there seemed to be an obvious reservoir of infection in the outbreak of dermatophytosis which you report, I wonder whether the reservoir might not have been increased by the application of a fluorinated corticosteroid cream or ointment. I wonder whether the simpleton who had been scratching was treated with one of these preparations and

whether this was the ultimate explanation for the outbreak of the infection.

Fluorinated corticosteroid creams and ointments are in constant use and readily available to nursing staff. Was the simpleton's itching treated with one of these? Could inquiries be made?—I am, etc.,

JOHN N. BURRY

St. Peters,
South Australia

- 1 Ive, A. F., and Marks, R., *British Medical Journal*, 1968, 3, 149.
- 2 Burry, J. N., *Medical Journal of Australia*, 1973, 1, 393.

*A correspondent in the Epidemiological Research Laboratory writes: "We have made further inquiries of the hospital where this outbreak occurred and find that fluorinated corticosteroid creams were indeed prescribed for the index case on several occasions during the months before the fungal infection was diagnosed. These preparations were used to alleviate his scratching but were not given to the other infected patients. Clearly the use of these creams may have been a factor in the spread of the infection, and we are grateful to Dr. Burry for bringing this to our attention."—Ed., *B.M.J.*

Improving the Service

SIR,—It is clear that, in part at least, 1975 will be remembered for the confrontation between the various branches of the profession and the Government. However justified our several disputes have been, at the end of the day it is still our responsibility (and for most of us our earnest desire) to provide the best possible service for our patients. Realistic remuneration and terms of service will make the profession more content, but much more than this will be required to counteract the erosion of medical standards and the constant deterioration in facilities for patient care in the foreseeable future as the N.H.S. purse-strings, in common with all others, get progressively tighter.

The simple fact, but one that successive levels of N.H.S. administration have failed to correct, is that the N.H.S. is grossly inefficient. There is far too much duplication of services, due largely to the haphazard nature in which the service has proliferated. The numerous cardiothoracic and renal transplant units within the London area illustrate this, as does the situation in Birmingham, where two major accident and emergency departments exist at separate hospitals within 2 miles of each other—with full duplication of manpower and equipment. In many large cities (and Liverpool is a prime example) there may be any number of hospitals within a 10-mile radius working far below true capacity (though most may appear "busy") but each professing to provide full emergency services 24 hours a day for a wide range of medical, surgical, and gynaecological conditions. If the premise of inefficiency is accepted, it is then easy to appreciate that proper use of medical manpower might well reveal that, contrary to popular belief, there is no true shortage of hospital doctors in this country. As it is, our ratio of doctors to patients is higher than virtually every other country.

Though the service at present is wasteful of money and manpower, it is readily available and convenient for the vast majority of patients and their relatives, for in most areas