we are pleased to note that in another report Moulds and Denborough,[5] using the in-vitro method introduced by us,[6] showed that the same patient's muscle exhibited one of the cardinal features of this myopathy—namely, contracture on exposure to halothane. Central-core disease, so far as is known, does not confer susceptibility to anaesthetic agents. Some years ago we examined a mother and a daughter by the lengthy procedure of motor-point muscle biopsy, and both were shown to have central-core disease. Halothane was used for general anaesthesia without incident.

In your leading article on the "Pathology of Malignant Hyperpyrexia" (3 February, p. 249) you showed that you were aware of the non-specificity of the structural changes that have been described so far, but we wish to draw attention to what appears to be a thoughtless remark, in which you say that "it would be interesting to see whether any further biopsy samples (obtained under local, not general, anaesthesia) . . . show similar histological changes." This could lead to susceptible patients or their relatives being subjected to muscle biopsy with little or no benefit. If investigation by biopsy is indicated, it should include examination at the motor-point (so that nerve terminals as well as muscle cells can be examined), a full histochemical and electron microscopical examination, and above all in-vitro examination of the susceptibility of muscle to anaesthetic agents. Patients are prepared to travel long distances for this examination, and we now have an experience of 20 cases in 10 families. We no longer use local anaesthesia, which is uncomfortable for the patient, impossible in children, and usually interferes with the identification of the motor-point. We employ general anaesthesia with nitrous oxide, oxygen, and minimal amounts of thiopentone, and the patients are carefully monitored, core and peripheral temperatures being continually measured. The in-vitro method for detecting susceptibility to anaesthetic agents, introduced by us, has proved consistently reliable in experienced hands.

Biopsy examination of patients for susceptibility to malignant hyperpyrexia should not be undertaken lightly, but if it is to be done at all it should be comprehensive.—We are, etc.,

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F. RICHARD ELLIS

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1 Ellis, F. R., *et al.*, *British Medical Journal*, 1972, 3, 559.
2 Ellis, F. R., Keaney, N. P., and Harriman, D. G. F., *Proceedings of the Royal Society of Medicine*, 1973, **66**, 66.
3 Harriman, D. G. F., Sumner, D. W., and Ellis, F. R., *Quarterly Journal of Medicine*, 1973. In press.
4 Bethlem, J., *Muscle Pathology, Introduction and Atlas*, p. 48. Amsterdam, North-Holland Publishing Co., 1970.
5 Moulds. R. F. W., and Denborough, M. A., *British Medical Journal*, 1972, **4**, 526.
6 Ellis, F. R., Harriman, D. G. F., Keaney, N. P., Kyei-Mensah, K., and Tyrrell, J. H., *British Journal of Anaesthesia*, 1971, **43**, 721.

Cost of Drugs

SIR,—Those whose duty it is to teach medical students have been urged to include some account of the cost of the drugs in their courses of instruction. This is not so simple a matter as may at first appear when one remembers that the "cost" of an illness includes the social benefits as well as the N.H.S. costs and that the "cheapest" drugs must therefore be the most effective one. The D.H.S.S. and its precursor the Ministry have for many years issued information sheets with tables or bar diagrams comparing brief lists of drugs of comparable therapeutic use by the cost to the N.H.S. of an average prescription or of an equal number of units, capsules, tablets, etc. This method of comparison ignores effectiveness and may therefore be misleading if one accepts the implication that the drug mentioned first in the list (the cheapest in terms of cost to the N.H.S.) is the drug of choice. There is a disclaimer (in small print) that it is not suggested that the drugs mentioned have the same actions or side effects. What then has been the purpose of this long-continued exercise?

A recent example, ECL 106/69 No. 14/72, which is devoted to the cost of antibacterial drugs, illustrates my point. The last page of the issue is devoted to drugs used in urinary tract infections. The cost of 25 tablets etc. of six frequently prescribed drugs is given—ampicillin cheapest at 91p, nalidixic acid (Negram) and co-trimoxazole (Bactrim or Septrin) roughly equal at £1 to £1.19p and nitrofurantoin (Furadantin) last at £1.38p. Now before I incorporated this information in my teaching I checked with my colleagues who are experienced in this field of therapy. They told me that this order would be reversed if the dosage schedules which they have found most effective or those recommended by the manufacturers were taken into account, that ampicillin should be omitted[1] on account of frequency of rashes (which need further treatment and delay the therapeutic attack on the primary condition), and that the choice of agent with which to begin is influenced above all by the sensitivity of the pathogen to the drug. Little bacterial resistance to the last three drugs has been encountered, and nitrofurantoin has the unique advantage of leaving the intestinal faecal flora unaltered so that any recurrence of urinary infection should be readily controlled by a repeat course of the same drug.

These sort of complexities make the information given in the D.H.S.S. pamphlets irrelevant. Only if and when they include a considered view on the whole matter—choice of drug, treatment schedules, and total "cost-effectiveness"—will they be useful teaching material. If this task is held to be fraught with too many difficulties the present series might well be abandoned and the practitioner left to work it out for himself.—I am, etc.,

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1 McCallister, T. A., Alexander, J. G., Dulake, C., Percival, A., Boyce, J. M. H., and Wormald, P. J., *Postgraduate Medical Journal*, 1971, **47**, Suppl. September, p. 7.

SIR,—I was shocked by the accusations of Dr. I. W. B. Grant (17 February, p. 416). He must be terribly misinformed about the facts of life in general practice. As a general practitioner, I am constantly aware of, and, reminded time and again about, the cost of each brand of drugs we prescribe. Any conscientious general practitioner always takes into account the relative efficacy and cost of any preparation. If any of us overprescribe, the Ministry of Health officers are always around to tell us to cut down the cost of our prescriptions.

Thinking back to when I was medical registrar for five years in the U.K., there was neither any check on the cost of drugs I prescribed nor any guidance on this point—these conditions still exist among hospital doctors. Hence, according to my personal experience of medicine in Britain during the past 15 years, it is the general practitioners who prescribe drugs more economically because they have to know what each particular brand costs and account for it if necessary.

Dr. Grant had better get his facts checked—there is official Government machinery to do this. He will then know who is spending N.H.S. money "carelessly."—I am, etc.,

D. K. BOSE

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Sarcoid Heart Disease

SIR,—Your leading article (16 December, p. 627) and the work of Ghosh *et al.*[1] have rightly emphasized that sarcoid heart disease is a serious condition. As a cardiac pathologist I agree that in appearance the aggregates of sarcoid follicles may easily be confused with myocardial fibrosis secondary to ischaemic heart disease. I also agree that the presence of lesions in the right atrial wall, where ischaemic scarring rarely occurs, is of help in differentiating the two conditions at necropsy. However, in my opinion, certain histological features are also helpful in diagnosing sarcoid heart disease,[2] as in the following case.

A 67-year-old woman suffered for three years from complete heart block with recurrent Adams-Stokes seizures and episodes of cardiac arrest and ventricular fibrillation. She deteriorated progressively and died, notwithstanding endocardial pacemaking by catheter. At necropsy fairly large, whitish, hard areas were seen in the myocardium of the ventricular septum and left ventricular walls. There were similar nodules in the lungs, spleen, and some mediastinal lymph nodes, and altogether the microscopic picture was that of sarcoidosis. Involvement of the right atrium also became evident on

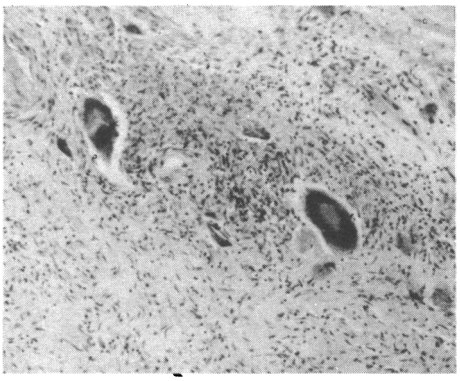

Fig. 1—Sarcoid granulomatous tissue in the right atrium (Tawara's node). (Haemotoxylin-eosin × 90.)

histological examination of the conducting system. The node of Tawara, whose outline was still recognizable, had been almost completely destroyed by sarcoid granulomatous tissue (figs. 1, 2) and other parts of

the system in the ventricular septum were also severely affected, further establishing the aetiology of the heart block.

These findings are characteristic of the lesions and the functional impairment that

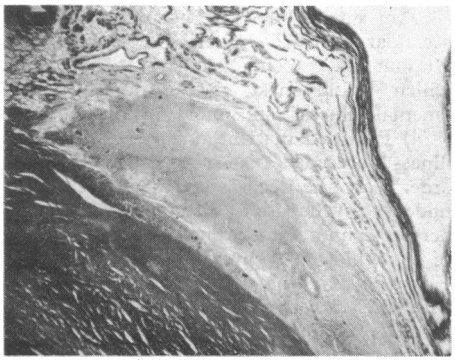

Fig 2—The node of Tawara, recognizable above the dark-stained central fibrous body, almost completely replaced by sarcoid granulomatous tissue. (Azan×18.)

seems to be peculiar to sarcoid heart disease, as stated in your leading article.—I am, etc.,

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1 Ghosh, P., Fleming, G. A., Gresham, G. A., and Stovin, P. G. I., *British Heart Journal*, 1972, **34**, 769.
2 Rossi, L., *Histopathologic Features of Cardiac Arrhythmias*, p. 143. Milan, Casa Editrice Ambrosiana, 1969.

Cutaneous Sarcoidosis in Venepuncture Sites

SIR,—Dr. B. W. Hancock (23 December, p. 706) reports six cases of sarcoidosis which first showed itself by the development of granulomas at the site of previous venepunctures for blood donation. This phenomenon must be an extremely rare one. In a personal series of 260 cases of sarcoidosis, seen over a period of 25 years, there have been 20 examples of granulomatous involvement of cutaneous scars, only one of which related to a venepuncture site.

A woman aged 59 presented in 1969 with typical erythema nodosum on the shins associated with bilateral hilar lymphadenopathy, and the Kveim test gave a positive reaction. She had not been a blood donor. Ten years previously she had been treated for anaemia with a series of iron injections, some of which had been administered intramuscularly into the buttocks and some intravenously into the left antecubital veins. During the five months preceding the appearance of the erythema nodosum she developed two painful prominent red nodules in the scars overlying the site of the previous intravenous injections, and two weeks before the erythema nodosum appeared she also developed deep tender nodules in the gluteal muscles. She was not given corticosteroid therapy. The erythema subsided in six weeks and the bilateral hilar adenopathy after six months, and during this time the left antecubital skin nodules also subsided. Biopsy was not carried out on the cutaneous nodules, but there could be little doubt that this was an example of sarcoid granulomatous involvement of scar tissue both in the gluteal muscles and in the skin over the left antecubital veins.

The granulomatous involvement of scars in the course of sarcoidosis appears to occur chiefly where the scars are relatively old and firm (and possibly containing particles of silica) and not where there has been merely some recent minimal skin trauma. Patients with sarcoidosis, during their investigation, are invariably subjected to diagnostic tests including venepuncture, yet sarcoid granulomas do not develop at the sites of these venepunctures. The explanation for the phenomenon among blood donors may well be that in this procedure a local anaesthetic is usually introduced into the skin over the vein, a large-bore needle is used and remains in the vein for a longer period, and the same site is often used for successive blood donations. Hence the greater trauma to the veins and extravasation of blood and its subsequent organization lead to more scarring than occurs after the relatively trivial trauma involved in simple diagnostic venepuncture. Moreover, the blood donor needle would in the past have been used repeatedly, and been sharpened on a grinding stone which might have left the slightest trace of silica or some other element on it. The scarring resulting from some of the iron preparation finding its way outside the vein would also explain the phenomenon in the case described above.

The speculation by Dr. G. MacGregor in his letter (10 February, p. 357) as to whether "an intracutaneous injection of saline (or of the patient's blood) [might] be as effective in diagnosing early sarcoidosis as an injection of Kveim homogenate" has already been answered by the work of Refvem[1] and also of Hurley and Shelly[2], who performed intracutaneous tests with numerous substances (including beryllium, silicon, etc) as well as with homologous blood and found no evidence of a granulomatous reaction in a large series of sarcoidosis patients and normal controls, thus disposing of the theory of the *terrain sarcoïdique* or sarcoid diathesis as an explanation of the aetiology of sarcoidosis.—I am, etc.,

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1 Refvem, O., *Acta Medica Scandinavica*, 1954, **149**, Suppl. 294.
2 Hurley, H. J., and Shelley, W. B., *American Journal of the Medical Sciences*, 1959, **237**, 685.

SIR,—We were very interested to read the description by Dr. B. W. Hancock (23 December, p. 706) of six patients who developed sarcoid granulomata at the site of previous venepunctures. We have recently studied a woman who developed sarcoid granulomata at the sites both of venepunctures and of previous intravenous infusions.

The patient was a woman aged 32 who had been well until July 1970, when she developed attacks of abdominal pain while in the Middle East. A laparotomy was carried out, at which the spleen was found to be grossly enlarged and was removed. A diagnosis of brucellosis was made (brucella antibodies being positive to a titre of 1/160). After the operation she returned to the U.K., but continued to experience attacks of abdominal pain, for which she attended hospital between April and October 1971 and was investigated with negative results, chest x-ray, barium studies, and intravenous pyelogram all being normal.

In June 1972 she noticed a lump in the right axilla and at about the same time became increasingly tired and breathless on exertion, with soreness of the eyes and recurrent abdominal pain. Physical examination showed enlarged axillary, preauricular, submaxilliary, and submental lymph nodes. The conjunctivae were inflamed and fine crepitations were heard at the lung bases. (A chest x-ray showed bilateral hilar adenopathy and parenchymal involvement.) Small skin nodules were present at sites of previous venepuncture in the left antecubital fossa and also at several other sites on the arms and feet where she had had intravenous infusions during her illness in 1970. Histological examination of one of these skin nodules and of an axillary lymph node and the site of a Kveim test all showed typical sarcoid granulomata.

After one month on corticosteroid therapy her symptoms of malaise, breathlessness, and abdominal pain have improved somewhat but there has been no change in the appearance of the skin nodules.—We are, etc.,

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SIR,— With reference to Dr. G. A. MacGregor's letter (10 February, p. 357), we should like to correct his unwarranted assumption that the histology of erythema nodosum in patients with sarcoidosis represents deposits of sarcoid granulomas. If one carries out a biopsy on a late stage of erythema nodosum, irrespective of its cause, one finds small follicular granulomas of foreign-body type, which develop in relation to the fat necrosis.—We are, etc.,

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Gastric Decompression after Abdominal Surgery

SIR,—Your leading article on gastric decompression (27 January, p. 189) deals admirably with a much-discussed problem. Probably there will never be complete agreement on the precise indications for decompression, but I believe that when decompression is necessary the case for gastrostomy rather than nasogastric aspiration is overwhelming. I have used gastrostomy routinely in preference to a Ryle's tube since 1964 in every patient (a total of 200-300) in whom at operation I have expected would need postoperative decompression.

I have never seen an infected gastrostomy wound. I use a whistle-type catheter brought through a separate stab wound. The main incision is dressed separately and is devoid of drains, stomata, or any other extraneous foreign bodies. There is no obvious reason why a clean gastrostomy should cause this to be infected, nor do I find an unduly high incidence of this complication. I have no detailed records on the incidence of postoperative chest infections, but anaesthetists have welcomed the absence of a Ryle's tube in patients needing postoperative ventilation, and physiotherapists and nurses find it easier to treat patients who have a gastrostomy.

Patients who have had both gastrostomy and nasogastric decompression invariably say that they would never again have a Ryle's tube postoperatively. It is salutary to see a patient drinking tea the day after