epidemic—as you yourself stress in your leading article.

In contrast, it now seems of nugatory advantage to attempt to control the situation by concentrating on antibiotic use. Highly communicable resistant bacterial populations have already been evolved under the hammer of selection pressure—a pressure which certainly existed long before the Swann Committee deliberated. And it is not only antibiotic use for veterinary purposes that has supplied that pressure: resistance genes existed in bacteria long before the antibiotic era began, and human use must have had an impact.¹¹ Intensive rearing, with all the environmental uniformity it implies, and the relative genetic homogeneity of many animal stocks will also have played a part. A further argument for no longer concentrating on antibiotics is the realisation that these agents do have an important role to play in the efficient rearing of animals and poultry for food.¹² Is it not time that we concentrated on the old-fashioned but nevertheless well-tried methods for controlling communicable disease—and really made them work?

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Inseminators as vectors of *Salmonella dublin*

SIR,—The spread of salmonellas via faeces or faecal contaminated instruments has been known to the Ministry of Agriculture for several decades, as has the potential risk from anyone, including inseminators, travelling from farm to farm. What D K Brooks (10 May, p 1189) has forgotten is that these same inseminators are aware of the problems of cross-infection, they are well trained, and they do take suitable precautions. Any connection between an insemination visit and an episode of salmonellosis would soon be detected by highly trained MAFF epidemiologists. Finally, to indicate that any possible danger from salmonellas transmitted by inseminators has been ignored is totally unwarranted. The Milk Marketing Board is very concerned about the spread of zoonotic disease and so too are MAFF, the inseminators, veterinary surgeons, and others whose work takes them into daily contact with farms and farm animals. I wonder whether Dr Brooks is aware of the Zoonoses Order and how outbreaks of salmonellosis are investigated. Does he know that *S dublin* is almost totally adapted to the bovine? I would suggest

a short visit to the nearest veterinary investigation centre or a telephone call to the Milk Marketing Board veterinary department.

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Careers for diabetic girls in nursing

SIR,—The letter from Eileen Bagshaw (17 May, p 1227) was most important and her survey of the attitudes of schools of nursing to the admission of young diabetics was invaluable. It was disappointing to learn that as many as 34 schools had strong reservations against the training of these young people. The British Diabetic Association wholeheartedly supports Miss Bagshaw's plea that suitably qualified diabetics should be allowed to train as nurses.

We consider that diabetic teenagers are particularly well suited to become nurses. Their own experience of having to live with a continuing disorder gives these young people an added insight to the problems of their patients and this is particularly true in counselling the chronically sick. A young diabetic nurse is likely to be especially understanding in her approach to sick children and she is peculiarly well equipped to comfort their parents in times of distress.

There is now evidence from industry to show that the sickness records of diabetics in general are superior to those of non-diabetics, probably because of the strict self-discipline that they have learnt to practise. From our own personal experiences we can state that this is particularly true for the nursing profession. Shift work and night duty present no difficulties that cannot be overcome and, as Miss Bagshaw says, should hypoglycaemia occur, they are assured of prompt medical attention.

The British Diabetic Association hopes that all schools of nursing will accept diabetics for training. By doing so they will add candidates to the nursing profession who are particularly well equipped to become nurses of the highest quality and dedication.

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SIR,—I was very interested to read the result of Eileen Bagshaw's survey (17 May, p 1227) showing as it does so well how inconsistent admission policies to nursing schools may be.

Having had many years' experience of medical screening of potential nurses in various teaching hospitals, I have come to the conclusion that there are very few medical conditions which should preclude the acceptance of the enthusiastic trainee. Diabetes is certainly not one of them. There may be a few diabetics who should not enter nurse training, but to exclude all automatically seems to be showing a lamentable ignorance both of the disease and of the potential of the sufferers. The same could equally be said of a number of other medical conditions which some schools also exclude. Such decisions should only be made on an individual basis after some type of health interview, if this is felt to be desirable. Surely the function of the

school is to assess the academic suitability of the applicant.

Thirty years ago I would have excluded a trainee with flat feet—I hope I am now wiser and less authoritarian. What is really needed is a good assessment of motivation as individuals with some disability are often much better motivated than their more "healthy" peers.

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Measles again

SIR,—The detailed criticisms of my paper on measles from two American sources require further comment.

Drs J A Frank and others (10 May, p 1185), writing from the Center for Disease Control, Atlanta, say that I have ignored the achievement of organised measles control programmes (as in the United States); on the contrary, I contrasted the scale of American success with relative British failure: "... immunisation policy there has resulted in a ten-fold decrease in measles mortality and morbidity."

The careful statistical analysis from Atlanta and similar comments from Drs J Desmyter and Saul Krugman (p 1185) merely support the view that measles is becoming a rare disease in the United States, and that there is an increasing proportion of cases in adults. These facts are not in doubt. Neither is there contention over the immunity induced by current measles vaccine, which has been most satisfactory for the period of observation. But valid as these points are they are almost irrelevant to the main question of my paper, which relates to immunisation policy in the United Kingdom and not the United States. The question to which my distinguished critics should address themselves is: in view of the overall low acceptance rates in the UK (approximately 50%, with wide regional variation), what should be our appropriate policy? In my paper I offered three choices—emulate American policy (that is, eradication), continue the present laissez-faire position, or adopt a selective policy in which vulnerable subjects would be protected. Given the present situation, a selective policy—incidentally, fully supported by Professor George Dick's letter (p 1186)—seems logical and economical.

What my critics really seem to be complaining about is the low acceptance rate for measles vaccine in the UK (the real reason for my original article) and the question must be asked, why the difference? Admittedly the reasons for these differences would be hard to substantiate but three points might be considered. Firstly, in general terms it may be true that vaccination programmes are received with greater scepticism by the general public in Britain than in America; perhaps the means and type of medical care in both countries has some influence on this attitude. Secondly, there has almost certainly been a reduction in the acceptance of vaccination procedures owing to the very wide publicity given to whooping-cough immunisation and its possible sequel. The third point is an important difference in policy in both countries in the United States. I believe that it is a requirement for schoolchildren to produce a certificate indicating that various vaccinations have been completed; there is no such compulsion at school entry in Britain.

Some may argue that even 50% acceptance rates would produce a better result than selective vaccination. The latter, it is argued, will result in an increased incidence of the disease and therefore a larger number of complications; respiratory complications are today seldom a major problem except in damaged children, but the rarer encephalitis is. Perhaps our muddled approach is really a compromise between the two British alternatives; my view is that selection would allow as good results as laissez faire at much less cost to the community.

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Open-access endoscopy

SIR,—I was interested to see the report of Mr M W L Gear and others (3 May, p 1135) on open access endoscopy but feel that their optimistic conclusions are not justified.

In our paper (17 February 1979, p 457) we concluded that the introduction of the service led to an increasing number of investigations but that the number of gastric carcinomas and ulcers remained the same (instead of decreasing as claimed in their paper). In other words, these patients were already being referred. We also showed that the majority of additional patients were young dyspeptics in whom it is well known that serious pathology is uncommon. We have since shown that the increasing number of endoscopies did not result in a more rapid diagnosis of patients with gastric cancers (paper presented to the British Society of Gastroenterology, spring 1980).

Mr Gear has shown a slightly higher pick-up rate than ourselves at 20%. Our rate fell from 25% at the start to 13% after three years, but they have so far only looked at a two-year period and they may well be showing the same dilutional effect. They have shown that the service is easy to run and popular with doctors, but this is not enough. Unless they can provide evidence that they are either diagnosing patients earlier or picking up patients who otherwise were missed, they have provided no fresh evidence of the value of such a service.

I note recent reports suggesting that we are already investigating too many patients with dyspepsia.^{1,2} GP open-access endoscopy invariably leads to an increase in the numbers being performed and we must be very sure of the benefit of such a service before its general introduction, especially in view of today's economies.

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¹ Marton KI, Sox HC, jun, Wasson J, Duisenberg CE. *Arch Intern Med* 1980;140:191-5.

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Pyogenic liver abscess

SIR,—Your leading article (10 May, p 1155) on pyogenic liver abscess advised the use of "appropriate antibiotics" at the time of drainage, but failed to name a single microbe or its antimicrobial susceptibility. Although we admire this clearly surgical approach, admitting to a certain bacteriological bias we

would suggest that careful bacteriological investigation of pus from liver abscesses is of clinical importance.

Theoretically, any of the gut commensal bacteria might be found in liver abscesses but recent experience has shown a definite preponderance of the microaerophilic *Streptococcus milleri*, usually Lancefield group F in this infection.^{1,2} This organism, which the inexperienced may readily mistake for an anaerobe, was cultured from 11 of 13 pyogenic liver abscesses seen in the past 10 years at St Thomas's and in nine of the 11 cases it was the sole pathogen. In the other two cases a single anaerobe was also isolated (*Peptococcus* sp, *Fusobacterium necrophorum*). Much of the surgical literature stresses the importance of *Escherichia coli* in liver abscess and pays little attention to either *Strep milleri* or anaerobes: as recently as 1976, a leading article in the *Lancet*³ stated that the commonest organisms were *E coli* and *Strep faecalis* but "bacteroides and anaerobic streptococci should not be forgotten." *E coli* was isolated from only one of our 13 abscesses and anaerobes (*Peptostreptococcus* sp and *F nucleatum*) were also present. *Strep faecalis* was never isolated. All the organisms that we have isolated, with the exception of the single *E coli*, have been sensitive to penicillin and this is the antibiotic of choice. It should be given with other antibiotics only when these are indicated by sensitivity tests or in the initial treatment of a very sick patient.

Adequate drainage remains the essential prerequisite for successful management of any pyogenic liver abscess but identification of the pathogen and determination of its antimicrobial susceptibility is also important. We would make a plea for more co-operation between surgeons and microbiologists so that pus, rather than a swab, is submitted to the laboratory for appropriate investigation. Within half an hour of the receipt of such a specimen it is usually possible to determine the pathogen from the smell of the specimen, the results of the Gram stain, and gas-liquid chromatography if available. The aetiology can sometimes be established by needle aspiration before definitive drainage is performed, or predicted by the isolation of the pathogen from a blood culture. Treatment with broad-spectrum antibiotic cocktails such as the one mentioned in your article need seldom be given and such blunderbuss polypharmacy should certainly not be continued for "several weeks." We would add that 12 of our 13 patients survived following drainage and chemotherapy appropriate for their pathogens. The patient who died had severe diabetes and developed a subsequent subphrenic abscess.

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¹ Bateman NT, Eykyn SJ, Phillips I. *Lancet* 1975;ii:657-9.

² Reid TMS, Davidson AI. *Lancet* 1976;ii:648-9.

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SIR,—Your leading article "Pyogenic liver abscess" (10 May, p 1155) discussed certain changing aspects of the disease. A recent case in this hospital (to be published) highlighted some features of this difficult diagnostic and therapeutic problem.

Isolation of *Streptococcus milleri* from blood culture taken from a 59-year-old male patient was

the first clue to the diagnosis of liver abscess. The association of this organism with purulent lesions in internal organs is becoming increasingly recognised.^{1,2} Subsequent computer-assisted axial tomography showed defects compatible with multiple hepatic abscesses. Antibiotic treatment, without aspiration or drainage, led to resolution of the hepatic lesions (monitored by serial computed tomography) and the patient remains symptom free 18 months after cessation of all treatment.

Maher *et al*³ recently reported successful medical treatment of pyogenic liver abscesses in six patients (although follow-up beyond four months is not reported in four cases). The prognosis for the patient with multiple abscesses remains poor despite open exploration and drainage.⁴ Computed tomography was invaluable in the diagnosis and management in our case. Percutaneous needle aspiration of abscess cavities, accurately located by computed tomography, offers a potentially important method of treatment of the solitary abscess,⁵ and a valuable method of obtaining pus for the isolation and sensitivity testing of the causal bacteria in all patients, including those with multiple abscesses. Adequate anaerobic culture methods must be employed. Intensive, specific antibiotic therapy, monitored by serial computed tomography, offers an alternative approach in the management of some cases.

In general terms, the value of blood cultures in the investigation of the undiagnosed problem patient should not be overlooked. Full identification of all isolates may yield valuable information, as in our case.

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The liver and halothane—again

SIR,—In your leading article (17 May, p 1197) "The liver and halothane—again" you suggest that for repeat anaesthetics the inhalational agent of choice is enflurane. Enflurane is excreted through the lungs, as are most inhalational anaesthetics, and less than 3% is metabolised to inorganic fluoride.¹ The rapid elimination of the drug reduces the time available for metabolism and thus the peak fluoride level is normally less than 25 $\mu\text{M/l}$,^{2,3} which is approximately half the concentration likely to cause renal damage.^{4,5} One cause of raised serum inorganic fluoride might be its increased production as a result of hepatic microsomal enzyme induction by drugs.^{2,3} Enflurane itself has been shown to induce hepatic enzymes,⁶ so that previous exposure to enflurane might lead to an increased production of inorganic fluoride.

Eichhorn *et al*⁷ report a case of renal failure following six hours of anaesthesia in a patient who had been exposed to enflurane six weeks previously, and this may have been due to enzyme induction that increased the free fluoride level. Thus it would seem advisable to avoid enflurane in patients who have impaired glomerular function or who have