in temperature and blood pressure with paracetamol is interesting and must be kept in mind when treating patients with Hodgkin's disease who might require antipyretic drugs.

My patient developed hypothermia and hypotension which seemed to be unrelated, as I mentioned, to any drug ingestion. The patient did not receive paracetamol, salicylate, or any similar drug prior to the drop of temperature and blood pressure, though 10 days earlier he had received a five-day course of ethambutol and isoniazid because a provisional diagnosis of sarcoidosis had been made. To my knowledge those two drugs have no thermoregulatory side effect, either alone or when given in combination.

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Occupational hazard of infection in the operating theatre

SIR,—Among the accidental injuries quoted by Mr J E deB Norman and Mr M Eagleton (6 June, p 1875) are lacerations of hand or finger received during attempts to remove contaminated scalpel blades from handles. To avoid just this type of hazard we designed a simple instrument which allows blades to be removed quickly and safely.¹ It is manufactured under an agreement with the Greater Glasgow Health Board by Eschmann Bros and Walsh Ltd and is retailed at under £5.

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¹ McKie J, Shaw A. *Lancet* 1975;iii:395.

Are fibre supplements really necessary in diverticular disease?

SIR,—The paper "Are fibre supplements really necessary in diverticular disease?" by Mr M H Ornstein and his colleagues (25 April, p 1353) concludes that extra fibre is unnecessary unless the patient's symptoms are those of constipation. Surely this has always been the argument in favour of giving bran?

The disease is found in populations who are constipated compared with those eating high-fibre diets. The symptoms of diverticular disease are caused by the colonic muscle struggling with stiff stools, not by the diverticula. This is obvious as bran abolishes symptoms without removing the diverticula. The same applies in the symptoms of constipation and the irritable bowel syndrome.

What evidence is there for the statement that the low-residue diet relieves symptoms as well as does a high-fibre diet? All the evidence points to the contrary. After resection or myotomy performed for symptoms, only 60% of patients remained symptom free if they continued to eat the same foods. However, if they changed to a high-fibre diet over 90% lost their symptoms. Before the introduction of bran 17 elective colonic resections were carried out annually at the Royal Berkshire Hospital, Reading. Since the introduction of the high-fibre diet only one is performed

annually. In the 50 years that the low-residue diet was fashionable no such results were reported.

The authors gave a set amount of fibre in the form of biscuits or ispaghula husk, so that their study would be "controlled." This will not give the best results. Patients and their eating habits vary. Hence they will require varying amounts of fibre supplements. As man has eaten bran for centuries, particularly in the winter months, it is logical to add fibre in the form of bran. There is no "standard" dose of bran any more than there is of insulin. Sufficient bran should be taken to open the bowels once or twice a day without straining. This amount must be found by trial and error. Only then will the best results be obtained.

It would be a pity if this trial of a bran biscuit and a plant gum were to be interpreted as having any bearing on the proved effects of miller's bran.

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* * * We sent this letter to the authors, who reply to it and to earlier correspondence below.—Ed, *BMJ*.

SIR,—We are pleased to find such an interest in our paper, but it is notable that the correspondence has been entirely from doctors who "understand" dietary fibre. It is a pity therefore that despite their prolific studies in this field they have failed to teach the large majority of us the "correct" way to give dietary fibre, nor have they been able to persuade us that patients will continue conscientiously taking diets rich in fibre after the first few months. The usual practice remains to advise patients to "take two tablespoonfuls of bran daily."

It is remarkable that our study has excited such strong criticisms while Brodribb's¹ produced not a single letter. Is this merely because our conclusions are at variance with popular clinical thinking? Attention has been focused on the "dose" of fibre administered in these two trials; in fact, they were almost identical. The apparent discrepancy has arisen because Dr D A T Southgate's analysis of the placebo biscuits (1.6 g dietary fibre daily)—which we used—differs from the figure quoted by Brodribb (0.6 g daily). If he used Southgate's figures Brodribb would find that, like us, he had a difference of only 4.8 g fibre daily between his active and control treatments—equivalent to 800 g (1 lb 2 oz) potato or 400 g (14 oz) cabbage as well as the 50 g packet of peanuts he mentions in his letter (30 May, p 1792).

Our paper has at least highlighted an important problem in relation to the correct dose and method of administration of dietary fibre. Mr Brodribb now suggests that 40 g of added dietary fibre is needed to treat this condition; why did he not test this dose in his Oxford trial¹? Perhaps he, like us, was concerned lest his patients (only nine) defaulted at such a high dose. The need to give a fixed dose applies to controlled studies of any therapeutic agent and is always open to criticism—but it is only by such studies that the optimal dose can be ascertained. We began this trial without any preconceived ideas about the outcome and have attempted to interpret our findings in the light of current scientific evidence. Like your correspondents, we were surprised by the size of the placebo response. We are just completing a trial using different doses of bran tablets, which we hope will go some way towards answering our critics; so far we have only confirmed the difficulty of persuading patients to take the high dose long enough to complete the trial.

Mr Painter has taken our point that the usefulness of fibre in treating diverticular disease is due to its benefit in relieving constipation. However,

he goes on to say that we found that a "low-residue diet relieves the symptoms as well as does a high-fibre diet." We did not say this. As we understand it, the "normal British diet" is very different from one low in residue—recently defined as containing less than 10 g dietary fibre daily.² He cites a now almost extinct operation in support of his argument in favour of bran but forgets that there are many reasons why surgical fashions change; one likely possibility is that the previously fashionable low-fibre treatment of diverticular disease³ was positively harmful and led to the frequent need for surgery. A normal diet is what is required.

We are, of course, aware of the potential pitfalls in the design of our trial. Because of the possible carry-over effect mentioned by Mr Brodribb and the problem of between-patient variation alluded to by Sir Francis Avery-Jones (30 May, p 1792), we chose treatment periods of four months and aimed at studying 60 patients. A disease with many inter-patient variables can be studied only with very large numbers (hundreds) of patients or by using a cross-over design so that each patient acts as his own control. We have carefully scrutinised our results using analysis of variance and methods described by Hills and Armitage⁴ and have confirmed the very large inter-patient variation; but we have been unable to find any differences between the six possible treatment orders.

Mr John Northover's suggestion (30 May, p 1792) of a long-term trial to study the progression to its more serious complications of uncomplicated diverticular disease would make a good sequel to our study. Perhaps the committee of the Medical Research Council which agreed the protocol of our trial would consider it. Mr Northover complains that "over-interpretation by readers" of original papers will lead to misquotation and then proceeds to do just that himself by confusing prevention of diverticular disease with treatment. We did not mention prevention because we had no facts either for or against it.

We are sorry that this trial, approved by a committee of which he was a member, did not match Sir Francis Avery-Jones's expectations. His strong condemnation of the trial was because the results do not confirm "clinical impressions over a number of years"; but 60 years ago Alvarez's clinical impression was very different: "... bran and other coarse foods upset digestion. I am sure it is preferable, unless the patient has the digestion of an ostrich, to give a mild chemical stimulus rather than a rough mechanical one."⁵ We remain of the opinion, like Roger Bacon, that "neither the voice of authority nor the weight of reason and argument are as significant as experiment, for thence comes quiet to the mind."

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¹ Brodribb AJM. *Lancet* 1977;ii:664-6.

² Bingham S. *J Hum Nutr* 1979;33:5-16.

³ Alvarez WC. *The mechanics of the digestive tract*. New York: P Hoeber, 1922:110.

⁴ Hills M, Armitage P. *Br J Clin Pharmacol* 1979;8:7-20.

⁵ Alvarez WC. *JAMA* 1919;72:8-13.

Late consequences of abortion

SIR,—I appreciated the reassessment of the long-term sequelae of induced abortion in your leading article (16 May, p 1564) and the

reassurance that early termination by vacuum aspiration does not cause high rates of miscarriage, premature delivery, or infertility. I was disappointed, however, by the conclusion of the article, which stated: "unfortunately women still present late to gynaecologists, and termination is too often followed by another unwanted pregnancy."

Since the Lane Commission's report in 1974 pointed out that delays in the system were important in many cases where the operation had been performed late, the Wessex abortion survey and Isobel Allen's study of family planning, sterilisation, and abortion facilities in two area health authorities have confirmed that it is not usually the women who present late. In the latter study "only one-third of women in both areas had their abortions within three weeks of first seeing a doctor, and as many as 16% in one and 9% in another had to wait six weeks or more between first seeing a doctor and their abortion."¹ In the Wessex survey 75% of the women had suspected pregnancy by six weeks and 41% had decided on a termination; by 10 weeks 65% had confirmed that they were pregnant but only 39% had had the abortion.^{2,3} The average wait to see an NHS gynaecologist was 17 days and from general practitioner to operation 21 days, but if turned down by the NHS the delay increased to 40 days. Lawson,⁴ McGarry,⁵ and Goldthorpe⁶ have all shown how these system delays can be reduced, but few gynaecologists have taken steps to involve general practitioners in a service which will minimise delays for the women.

As for the problem of repeat termination, the rate of repeat abortion is about 11 per 1000 abortions in England and Wales, not a high proportion when one thinks of the known failure rate of many contraceptive methods. But personal experience has convinced me that the quality of contraceptive advice and the attitude of the doctor giving this can be of crucial importance to women. Too often the advice is poor and the doctor judgmental, and let us not blame women for requesting a second abortion soon after a first unless we have given excellent advice, arranged for adequate follow-up with a properly trained person, and picked out those women who have unresolved problems or conflicts about their own sexuality which make it hard for them to use contraception properly. Lastly, let us not forget that men are also involved in conception and help to remind them of their responsibilities in this field.

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¹ Allen I. *Sterilisation and abortion services*. London: Policy Studies Institute, 1981.

² Ashton J, Denis KK, Rowe RG, Waters WE, Wheeler MJ. *Lancet* 1980;ii:82-5.

³ Ashton J. *J Biosoc Sci* 1980;12:201-7.

⁴ Lawson J, Barron SL, Yave D, Queido AME, Phillip S. *Lancet* 1976;ii:1288-91.

⁵ McGarry J. *Health Trends* 1977;9:7-9.

⁶ Goldthorpe WO. *Br Med J* 1977;iii:562-4.

Management of asthma in the child aged under 6 years

SIR,—I thought that your regular review on the management of asthma in young children by Dr R S Jones (13 June, p 1914) did not really do justice to inhalation therapy in small children.

It is well established that bronchodilators

administered by inhalation work better and faster than when taken by mouth; and selective β_2 -sympathomimetics, if properly used, do not carry the risks stressed by Dr Jones and associated with inhaled isoprenaline in the past. And, of course, inhalation of corticosteroids brings their benefits without their adverse effects.

The method of inhalation will vary with the age of the child. Few children under 8 years can achieve the exact synchronisation required for effective use of a pressurised canister, though—as Dr Jones says—the Spacer (Astra) provides a way of overcoming this problem. He did not mention the Rotahaler (Allen and Hanbury), which can deliver either salbutamol or beclomethasone and which most 4- and 5-year-olds and many 3-year-olds can be taught to use very effectively. The Spinhaler (Fisons), delivering cromoglycate, has the advantage of a whistle attachment which will entice most 3-year-olds—and even some 2-year-olds—to use it satisfactorily (Dr Jones put the lowest age at 5 years). Regular inhalation therapy for children under this age can at present be achieved only by equipping families with a compressor pump and nebuliser, which can deliver either cromoglycate or bronchodilator. At present there appears to be no liquid corticosteroid suitable for nebulisation; this might be of great benefit in the management of children with severe asthma at this notoriously difficult age.

On a different point, it must be questioned whether adrenaline, as recommended by Dr Jones, still has a place in the treatment of asthma now that selective β_2 -sympathomimetics are available.

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Oxygen in the home

SIR,—Your recent leading article (13 June, p 1909) on home oxygen and the accompanying paper on the geographical variation in the supply of domiciliary oxygen by Dr B T Williams (p 1941) make valuable contributions to the oxygen debate. Both articles, however, demonstrate the danger of considering all users of home oxygen as a single category. It is very important that the two chief uses of oxygen are considered separately since not only are the indications quite different but so is the equipment required. If the two issues become confused then one group of patients is likely to suffer. Long-term (greater than 15 hours a day) oxygen treatment prolongs life in the chronically hypoxaemic patient, and although the oxygen is at present supplied in cylinders it is inevitable that the cheaper oxygen concentrators will take over and so render cylinders unnecessary. In contrast, oxygen used for the relief of breathlessness on exercise is carried in a small cylinder which must be refilled from a larger cylinder within the home.

At present the role of oxygen as a symptomatic treatment for breathlessness is poorly defined and your somewhat dismissive article may be misleading. In our view oxygen for the relief of breathlessness is almost certainly underprescribed rather than overprescribed, partly because of uncertainty about its value and also because of the inconvenience of the equipment. Your leading article sets out the detailed physiological arguments, which con-

vincingly show that oxygen should not work, but then cites a number of studies which show that it does. In our report¹ breathlessness and exercise tolerance were improved in patients with relatively normal arterial oxygen pressure P_{aO_2} whether this fell on exercise or not. This was not predicted by the physiological findings. Similarly, a patient's claim of benefit from inhaling oxygen for a few minutes before exercise was considered physiologically absurd but the patient proved to be right. Our study is the only one which has set out to measure the symptom of breathlessness itself and showed conclusively that the patient's claims were correct and that they were using oxygen appropriately. For these reasons patients' claims of relief of breathlessness by oxygen in other situations should be rigorously tested before being dismissed and any such tests should attempt to measure the symptom rather than simply look at exercise tolerance.

Portable oxygen systems are at present cumbersome, heavy, and difficult to use. Despite this a number of patients with a wide range of lung diseases do use them with considerable benefit. If the systems could be improved it is likely that many more patients could be helped. We are concerned that this use of oxygen has been under researched and is now in danger of being discarded as a trivial issue that is peripheral to the central oxygen concentrator debate. There are very many more patients in the country whose lives are severely limited by breathlessness than there are patients likely to benefit from long-term oxygen therapy and they must not be allowed to fall by the wayside.

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¹ Woodcock AA, Gross ER, Geddes DM. *Lancet* 1981; i:907-9.

Corticosteroid resistance in chronic asthma

SIR,—We have read with interest Dr Lawford S Hill's letter (30 May, p 1791) commenting on our recent article on this topic (2 May, p 1419). He questions whether we were justified in assuming that our patients with chronic asthma were corticosteroid resistant because they did not respond to a seven-day course of prednisolone in a dose of at least 20 mg per day. In retrospect, we concede that we were remiss in not defining what we meant by "at least" more accurately. The vast majority of patients in fact received much higher doses of prednisolone (as shown in figs 1 and 2 of our article), and several were given 1 g of methylprednisolone intravenously on three consecutive days without benefit.

Although it is true that some patients with more acute forms of asthma will respond to 60-80 mg of prednisolone a day when a lower dose has been ineffective and thereafter remain well on a modest maintenance dose, this is seldom the case with chronic asthma. These patients are indeed often kept on dangerously high maintenance doses, from which they derive only spurious subjective benefit; and they are often not recognised as being "corticosteroid resistant" until after they have developed serious side effects. By that time it may be extremely difficult, as we indicated in our article, to withdraw this ineffective and potentially dangerous form of treatment.