Because doctors work with individuals and carry some of the load of patients' fears and confusions day in day out they can't escape into theoretical concepts and rationalisations about "the public." In the proposed monitoring groups, to be set up jointly one hopes, can opportunities be found for TV producers to sit in on some outpatient sessions or general practitioners' surgeries in the week following a medical TV programme? They need to hear and feel the response of patients, not just intellectualise about it. (No time? Call it in-service training.)

Every one of us is at some time a patient or a patient's relative or friend. And most of us, including producers, have the many negative idiosyncrasies listed by Mr K Sabbagh (18 March, p 713). To be fair we could add some more positive ones, such as patience, good will, reliability, courage, and adaptability for a start. We are, as viewers or "consumers," human beings, often vulnerable, with needs and rights which require recognition from the powerful "producers"/providers of both camps.

JANET BODMAN

Cleeve,
Bristol

SIR,—If other aspects of your journal bear as little relationship to factual truth as certain phrases in your leading article (18 March, p 667), then we are all of us in the gravest danger.

In that issue you say that "recent news bulletins announced that doctors in Russia have 'cured' a girl with retinitis pigmentosa." You add, "Perhaps the BBC believes the news value outweighs any risk of raising false hopes in hundreds of families. . . ."

This false statement—let me not mince words: this lie—is quite intolerable to those of us who work in BBC Television News. Nowhere did we say that anyone had been "cured": indeed, the truth is entirely the opposite—the words "no cure" were used.

You point out that in June 1976 you made a comment on the subject. In June 1976 we carried an interview with the appropriate ophthalmologist expressing all his doubts about the Russian treatment. The interview arose from an invitation to a conference called by the appropriate professional body to publicise their scepticism.

You write, "Nothing that has been said so far, however, has answered the case for more responsible treatment of medicine on television." Your deliberate and fanciful distortion of the care with which BBC Television News approaches medical matters indicates quite clearly that you are not prepared to give responsible treatment to television by the medical profession.

ALAN PROTHOROE
Editor,
BBC Television News

London W12

SIR,—Your leading articles (11 February, p 323; 18 March, p 667) and correspondence columns echo the worry felt about the behaviour of the television "experts" who have power beyond their dreams without any responsibility, and this is in medicine, where the effects can be assessed by professionals used to skilful, time-wasting obstacles in their path (like Mr Karl Sabbagh (18 March, p 713) in three columns trying to obscure political activity and scapegoating by saying there is such

pressure on producers that consultation cannot be promised). I feel your suggestion of real political enforcement of balance as in Norway is a solution that should be tried, as the present bias is affecting patients and causing unnecessary suffering.

I have a patient whose family took over nine months to accept electroplexy, and the dramatic change for the better after treatment surprised them. I wonder how many more cases there are in the country, and the ECT programme that had the negative effect was the last of three different attempts (one probably made ECT seem helpful by including a patient in the hypomanic state well able to overwhelm the doubts of two or three depressed clients and ivory-tower types).

More important than the specialised interest in medicine is the question "Quis custodiet ipsos custodes?" If the producers make such a mess of an area that doctors understand, what can they be doing everywhere else? The distinguished man of science is less likely to have his field of science "critically televised" and may not realise how to tilt the balance, for example, on road accidents, so studies on road marking are ignored even though they could reduce accidents comparatively cheaply—at political cost, however, as these are areas where economies are made first by the unscientific.

D G MAYNE

Armagh, NI

Vacuum pipelines for anaesthetic pollution control

SIR,—Dr M Rosen (21 January, p 176) in his capacity as chairman of the British Standards Institution (BSI) committee on central piped vacuum (CPV) deprecates its use for the removal of anaesthetic pollution. I would like to suggest that, on the contrary, its use for this purpose should be encouraged unless there are stronger reasons to the contrary than he puts forward.

His first objection, that it is designed for clinical use and should not be used for the benefit of the staff, seems rather unreal. Surely, in the limit, their interests are the same?

The technical objections he adduces also seem very unsubstantial. If the CPV is inadequate it cannot of course be used, but the fact that it is below British Standard (BS) specification does not necessarily mean that it has no spare capacity. The BS specification¹ calls for a quite unrealistically high flow rate, the equivalent of about half the suction orifices being wide open simultaneously. In fact, of course, when sucking, the flow is only, at most, a few hundred millilitres a minute instead of the 40 l/min specified, and suction outlets are seldom left open because of the noise they make. This hospital, being new, is generously supplied with suction outlets so that, on paper, its pumps are insufficient. In fact, observation shows that only one out of the four pumps ever runs and then only about half the time, even since we started using the pumps for scavenging.² It therefore seems unlikely that in most hospitals there is really no spare CPV capacity.

Dr Rosen says that there is an "unquantifiable" ignition hazard, but in fact it can be shown by simple calculation to be negligible. Apart from the fact that ether is now very little used, the expired air concentration in a 30/60 %

mixture of oxygen and nitrous oxide is at the lower limit of flammability.³ Our system dilutes it 5:1 at the point of emission and it is further diluted by air from other outlets before it reaches the pumps. In any case undiluted expired air has always been liable to enter the CPV whenever a sucker is used in the mouth or trachea, and no explosions appear to have resulted so far.

Another alleged hazard, not mentioned by Dr Rosen but cited in DHSS HC(76)38, is the effect of halothane on pump oils. Our pumps have been carefully examined at intervals in the last two years and have shown no signs of undue wear, but in any case I believe the hazard to be non-existent. The only published source⁴ refers to an observation by a manufacturer of vaporisers who used a high-vacuum pump for extraction of air from the working area. The pump broke down after four months and its oil smelt strongly of anaesthetic agents so the firm concluded that the agents were the cause of the breakdown. In fact, however, a high-vacuum pump used against a low vacuum will break down because its oil does not circulate, and will accumulate vapours because its oil is seldom replaced. In reciprocating pumps the only oil to make contact with vapours is immediately blown out with the exhaust. Even an oil-sealed rotary pump has its oil refilled weekly and completely changed about every two months.

CPV is a very expensive capital investment and if, as I have suggested, it is usually underused its employment for scavenging would make good use of an otherwise wasted asset. There is a great temptation at present for hospital or district engineers to say "no" to avoid controversy and thus commit the NHS to a great deal of unnecessary expenditure. It would therefore seem desirable for the BSI and the Department of Health and Social Security to change their negative attitude towards its use to a positive one.

B M WRIGHT

Clinical Research Centre and
Northwick Park Hospital,
Harrow, Middx

¹ BS 4957:1973. London, British Standards Institution.

² Davenport, H T, *et al*, *British Medical Journal*, 1976, **2**, 1219.

³ Macintosh, R, Mushin, W W, and Epstein, H G, *Physics for the Anaesthetist*. Philadelphia, Davis, 1963.

⁴ McInnes, I E, and Goldwater, H L, *Anaesthesia*, 1972, **27**, 340.

Is cholestyramine helpful in uraemic pruritus?

SIR,—Pruritus can be a most distressing symptom in chronic haemodialysis patients for which no effective treatment exists. Last year Dr D S Silverberg and others (19 March 1977, p 752) presented the results of a double-blind controlled study in 10 chronic haemodialysis patients using two doses of 5 g cholestyramine daily. These patients were randomly assigned to two treatment groups: five took cholestyramine in juice and five took a methylcellulose placebo in the same dose. Pruritus was graded 0=none, 1=slight, 2=moderate, and 3=great. A daily pruritus score was calculated for each patient before and during treatment and the means of the scores of 21 days before and 28 days during treatment were compared. In four of the five patients taking cholestyramine pruritus decreased considerably within four days, while some improvement occurred in only one of the five patients taking the placebo. This result seemed to be encouraging

and invited confirmation, though the mechanism of action was unknown.

We gave 5 g of cholestyramine or methylcellulose twice daily in a double-blind crossover trial to five patients receiving chronic haemodialysis, using the same grading of pruritus. The daily pruritus score was calculated and the mean scores before, during four weeks of cholestyramine, and during four weeks of placebo treatment were compared. The results are shown in the accompanying table.

Mean pruritus scores before and during treatment with placebo and cholestyramine

Patient No	Before	Placebo	Cholestyramine
1	2.7	2.7	2.5
2	1.2	0.5	0
3	2.0	1.0*	1.6
4	1.7	0	1.3
5	2.7	2.5	2.5

*Placebo intake irregular because of nausea and vomiting.

Pruritus is a very difficult complaint to evaluate and we believe that only a double-blind crossover trial in a large series of patients can provide definite proof of the effectiveness of cholestyramine. We could not find any influence on pruritus at all in our five patients. A higher dose might be more effective but would often be accompanied by gastric complaints so that we are not optimistic about long-term "patient compliance."

Relief of pruritus in cholestatic jaundice by cholestyramine may be explained by binding of bile acids in the gastrointestinal tract, but in such cases cholic acid levels in serum are raised. We have estimated the plasma bile acid levels in chronic haemodialysis patients and found them to be similar to those in normal controls.¹ Mostly the plasma levels are too low for any effect of cholestyramine to be detected.

Of course cholestyramine may bind other, unknown, molecules which may play a part in the pathogenesis of pruritus in uraemia. It seems quite unlikely to us that removal of bile acids has any role in this respect.

R VAN LEUSEN
J C KUTSCH LOJENGA
A TH RUBEN

Municipal Hospital,
Arnhem, Netherlands

¹ van Berge Henegouwen, G P, Ruben, A Th, and Brandt, K-H, *Clinica Chimica Acta*, 1974, **54**, 249.

Hard water, food fibre, and silicon

SIR,—Your leading article "Progress in the water story" (4 February, p 264) calls attention to the studies which show an association between water hardness and a lower mortality from cardiovascular and other diseases. You note the "lack of any cogent theoretical explanation" for this protection.

Schwarz *et al*¹ have reported higher levels of silicon in the hard water of west Finland. They studied private wells in areas of high and low incidence of heart disease. Hard water had twice the silicon content of soft water. They suggested that "the silicon in drinking water may have a determining effect on atherosclerosis." This would support the "Schwarz hypothesis."² He cited human necropsy studies which showed an inverse relation between tissue levels of silicon and the

degree of atherosclerosis and arthritis. Silicon plays a role in connective-tissue aging by forming -O-Si-O- bridges and adding to the stability of collagen. Dietary sources of silicon, as reported by Schwarz, include hard water and fibre (cereal bran, alfalfa, and pectins).

Our interest in the "Schwarz hypothesis" was stimulated by his analysis of hair samples from cardiac patients (unpublished observations). We submitted samples from cardiac patients, marathon runners, and patients who were in exercise rehabilitation programmes. Some cardiac patients who were disabled by musculoskeletal injuries during training had "very low" levels of hair silicon (under 4 ppm). Normal levels were found in champion marathon runners (over 20 ppm). Patients who were supplementing their diets with bran and alfalfa had elevated levels (up to 100 ppm).

These results suggest that silicon is the "hard water factor" and the "food fibre factor." We now advise cardiac patients to increase their fibre intake until their stools float. To date 102 cardiac patients have "graduated" from rehabilitation programmes by running 42 km. If Schwarz is correct, the high intake of silicon will "protect" against both arthritis and atherosclerosis.

T J BASSLER

Inglewood, California

¹ Schwarz, K, *et al*, *Lancet*, 1977, **1**, 538.
² Schwarz, S, *Lancet*, 1977, **1**, 454.

"Innovation in the Pharmaceutical Industry"

SIR,—In his review (22 October, 1977, p 1076) of my *Innovation in the Pharmaceutical Industry* Professor M D Rawlins doubts my conclusion that the return from investment in pharmaceutical research has been low for two reasons: (1) he has discovered an error in my computations; (2) continued investment in pharmaceutical research. Dr Rawlins is right to examine this estimate, for it is central to the conclusion that the regulation of drug marketing has made research unprofitable.

Concerning the alleged error, Dr Rawlins accepts my statement that a US-based company can earn over 10% after taxes on its investment in research and development for a new drug only if the world sales of the drug exceed \$23.5m annually. Since 68% of their total sales are in the United States, the required US sales are \$16m. Dr Rawlins refuses to accept this estimate because US drug companies are subsidiaries of multinationals and the US market represents only 18% of the world market. Accordingly, he estimates that US sales need to be only 18% of \$23.5m, or \$4.2m, in order to yield an acceptable rate of return. The fact that the US market is only 18% of the world is irrelevant to my estimate. US companies cannot expect to capture a much larger part of the world market than they already have. There is no need to change my estimate of the expected rate of return of 3.3% from investment in pharmaceutical research by US companies.

Companies based in other countries cannot expect to do much better. Though they may face a less arduous process of winning the approval of regulators before marketing in other countries, the demands of these regulators have been increasing. What is more, companies which depend on the European market also have to put up with the regulation of prices, and drug price regulators have not been known for generosity.

On the second point concerning the continued investment by drug companies I do not fundamentally disagree with Dr Rawlins. He argues

that if I am right, then the drug companies would have stopped investing in this research. I am saying that if the expected rate of return continues at a low level the drug companies eventually will stop investing in research. It takes time for companies to adjust to changes in economic prospects, particularly when fundamental views about the nature of the industry must be altered.

Dr Rawlins considers my argument that the industry's promotional expenditure has been inadequate rather than excessive to be absurd. I do not claim that drug companies' representatives give unbiased assessments of drugs. But I do say that when experts disagree, as is often the case, then doctors must use their own judgment and they must rely on different sources of information, including the rival claims of different companies.

A major objection to promotional expenditure has been that it is excessive. Usually, however, the critics fail to consider the consequences of doctors not being informed about the availability of drugs and particularly of new ones. Nor do they realise that total expenditure is high because there are large numbers of companies, drugs, and doctors. Many companies send information about many drugs to many individual doctors. The usual emphasis on total industry expenditure per doctor is misleading. When we hear that the US industry spends an average of \$3600 per doctor promoting drugs we are likely to take this to mean that individual large companies' representatives call frequently on each doctor and each company inundates him with mail. But each of the eight leading companies sends representatives to each doctor only 3.2 times per year on the average. Each company sends only 1.1 pieces of mail weekly to each doctor. Yet Dr Rawlins and others have successfully urged governments to put pressure on pharmaceutical manufacturers to reduce their total promotional expenditure. The companies may be able to find better and cheaper ways of informing doctors about the many dimensions of their numerous products, but it is naive simply to condemn promotional expenditure as excessive. To force them to reduce their promotional activities may result in a loss of information by doctors.

DAVID SCHWARTZMAN

Department of Economics,
Graduate Faculty of Political
and Social Science
New School for Social Research
New York

Group B streptococci in pooled human milk

SIR,—In view of the recent emergence of group B streptococcal infection as an important neonatal disease we wish to report on the presence of group B streptococci in a pool of untreated human milk and its eradication by pasteurisation.

As part of a larger survey on human milk bacteriology we have so far studied six pools of milk donated to the Oxford bank. The donors in this study contributed the milk, which in some lactating mothers drips from the opposite breast during breast-feeding.¹ All the milk samples were collected in the mothers' homes into sterile shells and containers. The milk was then stored in the donor's refrigerator for up to four days before being collected and brought to the neonatal unit to be pooled. Each milk pool consisted of 75-100 24-h samples from 25 donors collected over a 3- or 4-day period. In one of the six pools studied there was a heavy growth of β-