that paracetamol contributed to the death. In the remaining 12 cases information was inconclusive or incomplete.

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[1] Office of Population Censuses and Surveys, *Mortality Statistics: Accidents and Violence.* London, HMSO, 1977.
[2] Clark, R, *et al*, *Lancet*, 1973, **1**, 66.

Radiology work load

SIR,—I read Dr M J Brindle's article (12 August, p 514) with much interest. I feel sure that his method of implementing the chosen solution of a static work load is as fair as is possible to all parties and that he clearly understands the points raised by Dr J D Wigdahl (2 September, p 707), but it is essential for all referring doctors to make representations about the situation rather than the radiologists alone.

Dr Brindle's department is to be more than doubled to accommodate the increased number of requests, but no additional radiologists are to be appointed to allow the rooms to be used effectively. The apparent deterioration in the service is an arrest of expansion. The reason that Dr Brindle is not to get even one additional colleague (when he needs two) is that there is a shortage of radiologists. This is not, I think, due to poor recruitment nor to lack of good training facilities but in large part to the emigration of well-trained capable radiologists. Of my contemporaries in training (all British graduates), 10 personally known to me have emigrated.

The portrait of radiology given by Dr M Lea Thomas (2 September, p 706) is depressing and his solution is, I hope, not intended to be taken seriously. There are many parts of Britain and many more places abroad where radiologists do not have the low status and dull professional life he refers to. However, radiologists are far better paid in other countries and work loads and conditions are better. Diagnostic radiology incorporating isotope and ultrasound imaging techniques is not an artificial specialty, although a specious dialectic can present it as such. It is an imaging service that provides precise anatomical and sometimes physiological information about disease processes. Sometimes it is important to know that the structures concerned are normal and an experience of radiology much wider than that attainable by a single clinician in a narrow field is necessary for this. The three imaging techniques are best provided from one department so that the shortest diagnostic path can be followed, the investigation being tailored for the individual patient. "Letting out" the subspecialties of radiology fragments this approach and many problems take longer to solve. I have no confidence in clinicians being able to take over the role of radiologists and direct radiological technicians effectively. This proposal would ensure that control of another aspect of patient management would be lost to non-medical personnel. The collapse of radiology as a specialty in the NHS would be a disaster for the patients and our clinical colleagues in both specialist and general practice.

Diagnostic radiology is an important and fascinating branch of modern medicine, well worth study in its own right, and it must be presented as such, every effort being made to stimulate recruitment and retain all our best radiologists in Britain.

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SIR,—I was astonished to read the letter from Dr M Lea Thomas (2 September, p 706) in which he advocates the dissolution of radiology as a diagnostic specialty. Assuming that he intends this to be regarded seriously, I take issue with him on several points.

Firstly, he proposes that specialised investigations should be performed by the clinicians of the relevant specialty—cystograms by urologists, angiograms by vascular surgeons, etc. Nobody doubts the desirability of close clinical involvement in certain radiological procedures such as cardiac angiography, hysterosalpingography, and endoscopic retrograde cholangiopancreatography, and for various good reasons such tests are performed in many centres by the clinical staff without the direct assistance of a radiologist. It is, however, preposterous to argue from this that all the specialised procedures now done in *x*-ray departments by radiologists could be performed as safely or as competently by clinicians. A high proportion of such investigations would inevitably be performed by junior clinical staff who would have neither the time nor the inclination to achieve the degree of expertise which a full-time specialist in a subject accumulates. The skill a radiologist acquires in the manipulation of machine and patient during his training is applicable to all the investigations he undertakes and serves both to improve the quality of the images he obtains and to reduce the radiation to the patient and himself to a minimum. If all investigations were performed by clinicians acting as "part-time" radiologists the procedures would take longer, involve more radiation, and increase expenditure on *x*-ray film and equipment repair and replacement. It takes no great feat of imagination to contemplate the effects on expensive and delicate equipment of manipulation by dozens of different (untrained) hands every week, and the prospect of an unarbitrated scramble for precious *x*-ray time by the various clinical factions in a large hospital is positively mind-bending for anyone who has ever organised the work load of a busy department.

Secondly, I am sure that our clinical colleagues do genuinely appreciate the opportunity to discuss *x*-ray films with a radiologist and value his or her advice. This is particularly true concerning radiographs of systems other than those in which the clinician concerned specialises and even more so for junior clinical staff, many of whom take the brunt of day-today management decisions concerning patients.

Thirdly, how does Dr Lea Thomas imagine that any progress can be made in the science of radiology without radiologists and their established institutions continually promoting teaching and research in the subject? His world would be one of "users" only, without any contributors. Does he think that the clinicians would arrange radiological meetings and symposia and fill the radiological journals with original articles? Of course they would not, because, quite properly, they are principally interested in their own clinical specialty; radiologists on the other hand are interested in radiology as a subject in its own right, and it is from this interest that the advances in radiology stem which provide our clinical colleagues with an ever-increasing range of diagnostic facilities.

Finally, Dr Lea Thomas says the diagnostic radiologist is overworked, underpaid, and low in status and has a dull professional life. I find it difficult to follow the logic that asserts that a specialty can at one and the same time be overworked and redundant; with regard to pay I believe radiologists earn the same salary as their clinical colleagues in the Health Service. If they don't like the NHS I am given to understand that they can obtain salaries abroad that are equal to those of practically any other specialty.

A dull life and a low status? I respectfully suggest that Dr Lea Thomas should speak for himself. It seems to me that radiology has never been more exciting, particularly with the new interventional techniques that are being introduced. As for status, every man creates his own, high or low.

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Muscle cramp and oral salbutamol

SIR,—Salbutamol is often given by mouth for the relief of chronic airflow obstruction. To discover the nature and incidence of side effects when the drug is given by this route a study was undertaken, with Dr Gillian Buchanan, of 50 patients with chronic airflow obstruction who had been taking 4 mg of the drug by mouth three times daily for a year.

The incidence of side effects was: finger tremor 42%; palpitation 20%; muscle cramp 46%; and other symptoms 6%. All were dose- but not age-related and disappeared or became less when the drug was stopped or the dose reduced. Finger tremor and palpitation are well recognised,[1] but muscle cramp is not. Patients should be warned of this possibility and doctors should know that this symptom may be due to oral salbutamol.

This rather high incidence of side effects and the fact that when taken by mouth the drug may cause metabolic effects[2] strengthens my view that whenever possible the drug should be given by aerosol. Then the incidence of side effects is nil, there are no metabolic effects,[3] and the bronchodilator effect is equivalent to that obtained by the oral route.[4 5]

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[1] Association of the British Pharmaceutical Industry, *Data Sheet Compendium*, p 51. London, ABPI, 1978.
[2] Taylor, M W, *et al*, *British Medical Journal*, 1976, **1**, 22.
[3] Neville, A, *et al*, *British Medical Journal*, 1977, **1**, 413.
[4] Gaddie, J, *et al*, *British Journal of Diseases of the Chest*, 1973, **67**, 215.
[5] Legge, J S, Gaddie, J, and Palmer, K N V, *British Medical Journal*, 1971, **1**, 637.

Throwing off warts

SIR,—I read with interest your leading article entitled "Throwing off warts" (19 August, p 521), which related the difficulty most doctors have in successfully treating them. One method of treatment not mentioned is to use liquid nitrogen to "freeze" the warts and a small segment of surrounding normal skin. From my relatively small experience in this field I have concluded that the best and most