points now being made by Dr Adam and Professor Allison and Professor Hemingway. Now that we have had nearly two years' experience in manipulating digital radiographs and interpreting them on television screens our naive enthusiasm has become well tempered by experience.

The advent of the reusable recording medium used in conjunction with conventional *x* ray equipment has transformed the scene, compared with the forms of apparatus for digital image acquisition that were being mooted six to eight years ago. As yet, technology for image storage, transmission, and recall has not reached the stage at which it can be used for everyday practice in a busy department. Implementation will for technical reasons need to be phased; this is now generally agreed by all experienced workers in this field in both the United States and Europe.

We would dispute that we are overcautious, and we remain determined enthusiasts for Picture Archiving and Communications Systems and all that it implies, but we recognise that if for no other reason than our responsibility to the rest of our hospital prudence must not be overwhelmed by naive enthusiasm or other considerations.

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1 Hemingway AP. Radiology about to go digital. *Br Med J* 1989;**299**:679. (9 September.)
2 Adam A, Allison DJ. Radiology about to go digital. *Br Med J* 1989;**299**:679. (9 September.)
3 Dawood RM. Radiology about to go digital. *Br Med J* 1989;**299**: 340-1. (5 August.)

Desktop laboratory technology in general practice

SIR,—Professor N C H Stott is right to cast a somewhat sceptical eye over the invasion of primary health care by "gee whizz" technology.[1] The issues he raises with regard to quality control and analytical validity are pertinent and timely. We have already received several referrals to our lipid clinic on the basis of off site measurements that come into the class of spurious hyperlipidaemia and hypolipidaemia, and we can confirm the results of the survey of quality control performance he cites.

The same technology can, however, be used to safeguard analytical performance. The quality control recommendations by Westgard and coworkers are formulated as a set of rules that can be incorporated as quality control software.[2] Indeed, such programs are available for laboratory use either as stand alone packages or, more appropriately, fully integrated as part of the software for monitoring analytical performance in some major biochemical analysers.

A similar approach can be used with the desktop analyser. It may be desirable to maintain quality control charts, but in practice it is unreasonable to expect that they will be completed or, more importantly, interpreted. It is straightforward to devise quality control software for a microcomputer to inspect the results being produced by the analyser, draw graphs, and even comment on the results. If this can be achieved by direct linkage to the analyser or even incorporated in it then the problem is further reduced. Such software can alert the user to faults, make suggestions, and when appropriate advise contact with the technical collaborator, ideally the local biochemistry laboratory.

In addition, such software can include an interpretative element. We have already developed such an integrated package for use with a desktop analyser on the coronary care unit. This monitors the analytical performance of the internal quality control measurements and then interprets a set of creatine kinase measurements for rapid confirmation or exclusion of myocardial infarction.[3] This has been evaluated on real data[4] and is now undergoing a prospective study of open access use. Such an approach can be applied to serum cholesterol measurements both as an analytical monitor and as an advice giving system. Such systems lend themselves to incorporating clinical data for producing risk scores, and we have already devised such a prototype. Technology can be harnessed to be the servant of man, even doctor and nurse.

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1 Stott NCH. Desktop laboratory technology in general practice. *Br Med J* 1989;**299**:579-80. (2 September.)
2 Westgard JO, Barry PL, Hunt MR, *et al*. A multirule Shewhart chart for quality control in clinical chemistry. *Clin Chem* 1981;**27**:493-501.
3 Collinson PO, Rosalki SB, Flather M, Wolman R, Evans T. Early diagnosis of myocardial infarction by timed sequential enzyme measurements. *Ann Clin Biochem* 1988;**25**:376-82.
4 Collinson PO, Ramhamadamy E, Brooks GR. An automated system for rapid biochemical diagnosis of myocardial infarction. In: *Proceedings of the second IFAC workshop*. London: British Medical Informatics Society, 1989:294-300.

Surgical footwear

SIR,—Messrs M Lord and J Foulston highlighted the dire state of the supply of surgical footwear from the prescriber's point of view.[1] In their survey over 20% of the consultants were dissatisfied with the suitability of the footwear. This matches closely a survey published recently on patient satisfaction with lower limb orthoses, which found that 24% of patients were dissatisfied with their made to measure footwear.[2] It is rather disheartening, however, to see a poor return of questionnaires (48·4%) from consultants. Does it reflect the importance given by the clinicians to this subject?

With the planned integration of disablement services with the NHS in March 1991 most district health authorities are looking into reorganising their rehabilitation services. This is an opportune time to improve the orthotic practice and link it to other closely related services like prosthetics and chiropody under the rehabilitation services. Surgical footwear constitutes the lion's share of the orthotics budget of £38m yearly. The unacceptably high level of patient and prescriber dissatisfaction with footwear represents a great waste of resources.

The problems of the surgical appliance services are multifactorial. Firstly, most prescribing clinicians lack sufficient knowledge of orthotic practice and the hardware ranges available and have a poor working relationship with the shoe fitters visiting the hospital from the commercial sector. Sometimes custom made shoes are prescribed for foot disorders that could be better managed with ready made, off the shelf shoes, which are more acceptable to patients and economical and quicker to supply as well. Continuity of care and supervision is vital from prescription through fitting, delivery, and further monitoring.

Secondly, the patients should be given a choice of styles, colours, and materials of footwear as for some patients cosmesis is superior to comfort. This would minimise the number of patients rejecting the footwear on grounds of appearance, weight, etc. A pair of made to measure shoes costs on average £250-£350. The patient should be made aware of the cost, and perhaps charging a nominal sum would encourage active participation in the process.

Thirdly, the orthotist should be able to select the best buy for the patient without commercial bias. This could be achieved only by changing the present system so that hospitals would employ their own orthotists.[3] It would improve the orthotic service and become more cost effective.

Lastly, it is time to recognise foot disorders and their management (podiatry) as a specialised entity. Foot pathologies due to neuropathies, ischaemia, arthropathies, or traumatic problems can be very disabling, resulting in pain, ulcerations, and infection needing surgery ranging from minor (drainage procedures and ray amputations) to major amputations. Established diabetic foot clinics that use a multidisciplinary team composed of a doctor, nurse, chiropodist, and shoe fitter have had improved results in treating patients with neuropathic and ischaemic ulcers and a reduced need for major surgical procedures.[4] There is a need to establish these specialised foot clinics with facilities for nerve conduction studies (biothesiometry), vascular investigations (sonography and arteriography), and pedobarography to find the place of special insoles, etc. It should have access to modern advances such as shape sensing and computer assisted design and modelling (CAD CAM) techniques.

The patients' and the prescribers' views having been analysed, a survey of the views of those in the commercial sector who make both custom made and off the shelf foot orthoses would be helpful before reorganisation of the orthotic service.

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1 Lord M, Foulston J. Surgical footwear: a survey of prescribing consultants. *Br Med J* 1989;**299**:657. (9 September.)
2 Fisher LR, McLellan DL. Questionnaire assessment of patient satisfaction with lower limb orthoses from a district hospital. *Prosthet Orthot Int* 1989;**13**:29-35.
3 Platts RGS. Orthotic services: a need for change. *Br Med J* 1986;**297**:1145-6.
4 Edmonds ME, Watkins PJ. Intensive care of the diabetic foot. In: Nathrass M, ed. *Recent advances in diabetes*. Edinburgh: Churchill Livingstone, 1986:163-7.

Epilepsy in women of childbearing age

SIR,—Dr Michael Saunders presents a timely review of the recurring problem of how best to advise epileptic women who wish to become pregnant because, as stated, no anticonvulsant drug is free of risk.[1] He concludes that if anticonvulsants cannot be avoided carbamazepine should be the first choice.

A recent study by Jones *et al* showed a pattern of malformation (minor craniofacial defects, fingernail hypoplasia, and developmental delay) in children exposed to carbamazepine in utero, suggesting that carbamazepine is a considerable human teratogen.[2] Although the survey was small, five of 25 liveborn children examined had developmental delay on formal neurobehavioural assessment. One of these, a 6 year old, had a full scale IQ of 65; the remaining four scored poorly on the Bayley scales of infant development.

As no anticonvulsant is free from risk, there may be an argument that it is better to take an anticonvulsant such as sodium valproate and accept an increased risk of a neural tube defect, which can be accurately diagnosed in early pregnancy by