relatively uncommon and so we chose to study centroblastic/centricytic follicular lymphoma. We accept Dr Crocker's opinion that AgNOR counts may be useful in separating pure centroblastic lymphomas from reactive hyperplasia. We also agree that AgNOR counts reflect proliferative activity.¹

- 1 Dervan PA, Gilmartin LG, Loftus BM, Carney DN. Breast carcinoma kinetics: Argyrophilic nucleolar organizer region counts correlate with Ki 67 scores. *Am J Clin Pathol* 1989;92:401-7.

Pathologists' ability to estimate percentage of luminal occlusion in coronary artery disease

I was most interested to read the letter from Drs Champ and Coghill.¹

In a small study, presented at the Pathological Society in London in January 1985,² we wished to answer three questions:

- (1) How accurate are pathologists in estimating the percentage of luminal occlusion in a coronary vessel?
- (2) What is the extent of variation among different pathologists estimating the same vessel?
- (3) Does the use of a diagram proforma help in the naked eye assessment of coronary artery disease?

Twenty five segments of coronary artery taken at necropsy were selected to provide a range of concentric and eccentric stenoses. These were shown to 15 trainee and consultant pathologists whose experience ranged from two months to over 30 years. No prior warning was given to the participants and each in turn was asked to estimate the percentage area of the lumen which was completely occluded by intimal proliferation (percentage estimate) and to grade this subjectively into mild/moderate/severe stenosis (subjective estimate). Having done this, diagram proformas (figure) were then produced and the pathologist was asked to repeat the exercise. When all the results had been recorded, luminal occlusion was determined by planimetric methods on elastic van Gieson stained sections using a Kontron Videoplan computer (objective measurement). Each of the 25 coronary segments was then assigned to one of the following groups: mild (0 to 30% occlusion), moderate (31 to 69% occlusion), or severe (70 to 100% occlusion) stenosis on the basis of the objective measurements.

We then compared the percentage estimates and the subjective (mild/moderate/severe stenosis) estimates that had been made without the diagrams and with the diagrams to the objective measurements.

Not surprisingly, we found that the path-

ologists were most accurate in their estimations of coronary stenosis of less than 30% and greater than 70%.

The use of a diagram proforma improved the estimation of percentage of arterial occlusion, but the subjective estimate of arterial occlusion was not reproducible within this group of pathologists and was not improved by the use of the diagrams. This was because there was a wide range of values for luminal occlusion which different pathologists considered significant. Comparison of the percentage with the subjective estimates for each pathologist showed a range of 25% to 60% (mean 32%) occlusion for the lowest value in the moderate stenosis category. For the severe stenosis category the lowest values ranged from 40% to 90% with mean of 67% which compares with the degree of stenosis that is generally considered to be of clinical importance.³

We suggested that to improve accuracy and reproducibility among pathologists in the naked eye assessment of coronary artery stenosis:

- 1 Diagram proformas should be used as an aid to assessment.
- 2 One should always try to quote a percentage of luminal occlusion.
- 3 If subjective estimates are used, one should agree on the cut off points for mild/moderate/severe stenosis.

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- 1 Champ CS, Coghill SB. Visual aid for quick assessment of coronary artery stenosis at necropsy. *J Clin Pathol* 1989;40:887-8.
- 2 Womack C, Lowe JS. Naked eye assessment of coronary arterial stenosis. *J Pathol* 1985; 145:17A.
- 3 Thomas AC, Davies MJ. Post mortem investigation and quantification of coronary artery disease. *Histopathology* 1985;9:959-76.

Consequences of the provision of laboratory services of the National Health Service by commercial firms

I read this article by Shanks with great interest, and I would like to make some comments about it and about the general state of private pathology laboratories.

Many people may not know that J S Pathology is a public company quoted on the stock exchange and that Dr Shanks is the executive director. The laboratory is the largest in the United Kingdom and not attached to any hospital or university department, and is about to move into purpose built premises in North London. The laboratory work is tailored to private medicine and has a low proportion of medical to non-medical staff, and the bulk of the work is biochemistry and haematology with some microbiology, rather a lot of cytology, and little histopathology.

Laboratories of this kind are almost invariably "demand led" whereby the tests are undertaken and interpreted by the clinicians that request them. With few pathologists available for advice, the consequences are that there is no control of the number and nature of the tests that are performed, in contrast to the NHS where pathologists are available for consultation concerning difficult

clinical problems and will give advice on how the laboratory can help. Another result of the "tests on demand" approach is that aggressive drug companies will use these laboratories for promoting their products. The marketing of serum tumour markers is a good example of this.

With the advent of efficient cervical and breast screening programmes and the expansion of private medicine, the private sector must become responsible to those organisations concerned with quality assurance and conform to responsible reporting of tests undertaken so that meaningful national statistics can be compiled. Many people concerned with these projects consider the private sector the "18th Region" from which the feed back at the present time is almost non-existent. Private pathology laboratories through the Independent Health Care Association should be far more aware of these responsibilities and be prepared to cooperate with national data collecting bodies, resisting the temptation to promote indiscriminate cervical screening.

Clinical pathology departments in the NHS have a proud record of providing a service and responsible advice to clinicians concerning the management of their patients. There is a danger that with the commercial factor ruling, laboratories will be established that will indulge only in remunerative pathology practice. There is no doubt that health service laboratories need to increase their efficiency, as we are continually being told in advance of April 1991. I would reverse the concerns Dr Shanks expresses in her final sentence, however, and say that it would be a sad day if the lessons learnt in the NHS were ignored by the private sector rather than the other way around.

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Provision of laboratory services

Both Whitby *et al*¹ and Shanks² seem to conclude that it is no longer feasible for small to medium sized pathology laboratories to function autonomously. I would agree with this point of view as it seems to be inappropriate for each district general hospital to attempt to provide a comprehensive on-site pathology service. Two questions then arise. First, which tests should be retained locally, and secondly, which laboratory should deal with those tests which are referred out.

In their conclusion Whitby *et al* seem to point the way forward.¹ They propose a plan of action which is similar to the approach we have adopted.³ As part of our business planning we have completed a detailed review of our present working practices. We have now defined our core pathology services which will be retained locally. The aim now is to refine the definition of these services by having detailed discussions with our hospital consultants and general practitioners.

The next step is then to determine how non-core pathology services should be provided. One option is to proceed with a process of competitive tendering for these services. Clearly, the result of this may be that tests are either referred to another distant NHS laboratory or to a laboratory within the private sector. I favour the alternative option