samples. If the latter technique is used and calcium is to be estimated spectrophotometrically on a separate acid extract, it would be advisable to add $(\text{NH}_4)_2\text{SO}_4$ to the acid extract before filtration (final concentration of 0.5% is suitable) in order to precipitate any BaSO_4 solubilized by reduction during the ashing stage. With warm acid and the normal washings, calcium precipitation as sulphate does not present any problem.

Reduction during ashing is found especially where higher than normal concentrations of carbon and phosphorus are encountered. This was first noted in stools containing cellulose phosphate and we had poor recoveries of barium sulphate in these cases until it was counteracted by addition of ammonium sulphate.

Professor C. E. Dent suggested the use of barium sulphate and supervised the method. Thanks are due to Miss Christine Harper, Mrs. Helen Marshall, and Mrs. Mary Forbes who participated in the early stages of the method. The author is grateful to Dr. Lyal Watson for critical discussion and help in preparing this paper, and to Sister Norman and the nursing and dietetic staff of the Metabolic Unit.

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Letters to the Editor

CERVICAL CYTOLOGY AND POPULATION SCREENING

Sir,

'A cytohistopathologist's viewpoint' on related matters was the subject of a recent paper (McInroy, 1966) and the viewpoint was reiterated at the Annual General Meeting of the Association of Clinical Pathologists on 29 September 1966.

In October 1966, official guidance for planning population screening services was issued by the Ministry of Health (Memorandum H/C1/01) but this does not seem to me to provide all the answers.

This memorandum correctly states 'The basis for any screening service is the provision of cytological facilities for examining and reporting on cervical smears in hospital pathology laboratories'. In the very next sentence responsibility for this is transferred to hospital boards: 'Hospital boards are responsible for providing sufficient trained staff and accommodation...'. In turn hospital management committees become involved because it is through them that requests for additional technical staff are normally made by hospital laboratories. It will be the experience of the majority of us that nobody at any level of administrative control seems to have the money to finance what we consider to be minimal additional technical and clerical staff requirements. Accordingly, although we agree with the Ministry's wisdom, 'The basis... is the provision of cytological facilities... in hospital laboratories', this is of little help if it cannot be financed and implemented.

My claim, which many may challenge, is that expansion of this service must be planned and administered on a subregional basis, each cytology unit being staffed by a consultant cytohistologist, a chief II technician (in technical charge), chief I technicians (three or more), and adequate clerical assistance. Where will the chief I technicians come from? The cytology technicians of the future will be recruited from the senior technicians of the present and the intake of additional laboratory staff will be at student level. This process must inevitably extend over a period of years. My reasons for this 'top-heavy' establishment have been given in the publication referred to above but until units of a type such as this come into existence I see little hope of a stable, efficient, full-scale, nation-wide service ever evolving.

In the Ministry's 'guiding' memorandum there is no reference to the *staffing structure* of cytology laboratories. It merely states 'normally only fully qualified medical laboratory technicians (*or student or junior technicians*) [*my italics*] specially trained in cytology should undertake the examination of cervical smears'. This to me suggests a complete lack of appreciation of the difficulties and problems which face pathologists.

The time is long overdue when pathologists, as a body, should make their voices heard and offer guidance for planning expansion and organization of this service.

Moreover, they should do so quickly before they and their laboratories find themselves, willy-nilly, at the receiving end of chaos and countless 'routine' smears (from hospital gynaecology and obstetric clinics, V.D. clinics, general practitioners, family planning clinics, local authority well-women clinics, and maternity clinics).

It is this concern which prompted me, at the Annual General Meeting, to move a motion, which was carried, to the effect that the Council of the Association should consider the formation of a committee to review the position on our behalf and make recommendations. The result of the Council's deliberations is awaited with great interest.

R. A. MCINROY

REFERENCE

McInroy, R. A. (1966). *Brit. med. J.*, 1, 1472-1475.

CAPREOMYCIN

Sir,

In May this year a new anti-mycobacterial drug, capreomycin, was put on the market in Britain. There are one or two points about this antibiotic and its use which have prompted queries from some clinical pathologists and which might be of interest to others.

Although its antimycobacterial activity is, *in vitro*, only slightly less than that of streptomycin, capreomycin is for all practical purposes devoid of activity against other organisms. Its *raison d'être* is that in tuberculosis cross resistance does not develop between it and streptomycin, nor between it and I.N.H., P.A.S., cycloserine, and ethionamide. It does, however, in varying degree show cross resistance with viomycin, kanamycin, and neomycin so that patients previously treated by these drugs should not be given capreomycin until sensitivity testing has been carried out. In this connexion it may be stated that choice of medium has a very great effect on the minimum inhibitory concentrations obtained. Capreomycin should of course only be used in conjunction with at least one other active agent. Middlebrook no. 7H10 appears to be the best. Egg protein binds capreomycin and media containing it should not be used.

The toxicity of the drug, again, is somewhat similar to that of streptomycin. In the usual dose of 1 gram daily (one million units) eighth nerve involvement is less frequent and overt signs of allergy are less often encountered than with streptomycin, though eosinophilia occurs quite often. The principal toxic effect is on the kidney so that urine analysis and blood urea estimations should be performed at intervals. In the presence of renal disease, capreomycin accumulates rapidly and it is clearly inadvisable to use the drug in such circumstances. Otherwise the drug is less toxic and less prone to give rise to disagreeable side actions than most of the currently available reserve drugs (*Tubercle*, 1966).

W. H. LYLE

REFERENCE

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Book reviews

PATHOLOGY OF BONE By the late H. Collins, O.B.E., M.D., F.R.C.P., F.C.PATH., (Pp. xii + 254; 116 figs.; 72s. 6d.) London: Butterworths.

The present volume will be welcomed for two reasons. The first is the affection and esteem in which Douglas Collins was held by all pathologists: the second is the fact that it fills a much-felt need for a brief introductory textbook on bone diseases. It is not a comprehensive reference book, and it does not, because of Collins' sudden and unexpected death, include a section on bone tumours and dysplasias, but it very usefully presents information on the structure and function of bone and on the morphological and biochemical changes in a variety of bone diseases, including osteoporosis, osteomalacia, endocrine and metabolic conditions, renal osteodystrophy, infections, chemical and radiation-induced diseases, and Paget's disease. The sections on osteoporosis and Paget's disease will be widely read because of the important work carried out by Collins on these topics.

H. A. SISSONS

TUMOURS OF BONE AND SOFT TISSUE 8th Annual Clinical Conference on Cancer 1963. University of Texas M.D. Anderson Hospital, Houston, Texas, (Pp. 448; illustrated. 98s.). Lloyd-Luke (Medical Books) Ltd., 1965.

This little book takes the form of a series of papers presented to the 8th Annual Conference on Cancer at the University of Texas M.D. Anderson Hospital and Tumor Institute, Houston, Texas.

The section on bone tumours reviews information on the histogenesis of bone tumours by means of a panel discussion in which the participants are Murray M. Copeland, Mary Sherman, David C. Dahlin, Charles F. Geschickter, and Henry L. Jaffe, and includes several papers describing the effects of surgery and radiotherapy for bone tumours. Quite apart from the present volume, 'histogenesis' is a much misused term; it properly relates to the tissue, or the cell, of origin of a tumour, but, as noted by Dahlin: 'Proving the cell of origin of any given neoplasm of bone is usually impossible, and current assumptions on histogenesis are based on cytological characteristics of the neoplastic cells, or the products of these cells, or on both factors'. In fact, the discussion on histogenesis in the present volume serves largely to air current ideas on the nomenclature and classification of bone tumours, and shows a reasonable, although not utterly complete, degree of agreement on the meaning of the diagnostic terms in current use following the work of Jaffe and Lichtenstein.

The comparison of the effects of surgical and radiotherapeutic treatment for malignant tumours of bone and soft tissues is still a subject for lively discussion: more information is clearly required. An interesting