Table 1 *Specimens positive by one method only, according to age of patient*

Method	Age (years)					
	Total	< 1	1	2	⩾ 3	NS
IF only	23	17	3	1	0	2
EM only	13	1	3	1	5	3

NS = not stated

Table 2 *Specimens positive by one method only, according to number of days post-onset of symptoms when collected*

Method	Days post-onset			
	Total	< 7	⩾ 7	NS
IF only	23	12	1	10
EM only	13	4	6	3

NS = not stated

published). Of 28 specimens IF positive, only 17 (61%) were positive by EM, and during the study there was no case of a specimen being EM positive but IF negative. In those very young babies, all less than 1 month old, there is no doubt that IF was the more sensitive test.

Birch and his co-workers rightly suggest that strain variation and cell mutation could affect the sensitivity of the IF test. During the winter of 1978/79, which was probably the poorest for rotaviruses since their discovery, the titres of virus present in the faeces of infected children as measured by IF were certainly much lower than in previous years, a point of view held by workers in other parts of the UK (personal communications). By EM, however, the concentration of virus was also apparently much lower hence any strain variation may be a question of reduced pathogenicity in susceptible infants and not of ability to infect LLC-MK2 cells. While I agree that cell variation with passage is highly probable I doubt if there has been any significant alteration in the cells used in this laboratory as stocks of rotaviruses—from other species as well as human strains collected in previous years—show no decrease in their ability to infect cultures.

Finally, the type of serum used for the growth and maintenance of the cells is important as this may affect their susceptibility to virus. In their study, Birch and his colleagues have deviated from the original method[2] by substituting newborn calf serum for fetal calf serum in the growth medium. In a series of tests, as yet unpublished, I have shown that different batches of fetal calf serum, used at 2% in the maintenance medium, may reduce rotavirus titres by anything up to 1 log, although the incorporation of such serum is to be recommended as it helps to reduce toxicity. Newborn and older calf sera are certainly no better, and one batch of older calf serum was almost totally inhibitory to rotavirus growth. No antibody could be demonstrated in this serum by IF, and the inhibition may have been caused by non-specific factors. I feel, therefore, that this change of serum in the growth medium by Birch and his collaborators could reduce the sensitivity of the IF technique, resulting in an unfair comparison with EM.

A reappraisal of both techniques at their optimum sensitivity is required, giving due attention to the points discussed above regarding age of patient and time elapsing between onset of symptoms and collection of specimen.

I thank Dr B A Wharton for allowing a study of infants in special care at Sorrento Maternity Hospital, Birmingham, to be undertaken.

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[2] Bryden AS, Davies HA, Thouless ME, Flewett TH. Diagnosis of rotavirus infection by cell culture. *J Med Microbiol* 1977;**10**:121-5.
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The authors comment as follows:

Our comments on the relative sensitivity of electron microscopy (EM) and immunofluorescence (IF) for the detection of human rotavirus (HRV) were based on the results obtained in this laboratory and those previously reported by Bryden *et al.* (*J Med Microbiol* 1977;**10**:121-125). At that time, they reported that, of 25 specimens examined by both methods, 12 were positive by EM and 11 by IF and that no EM negative/IF positive specimens were detected.

The previously unpublished results reported above by Mr Bryden, showing that IF is more sensitive than EM (and the occurrence of EM negative/IF positive specimens), suggests that the sensitivity of his test has altered or perhaps that the groups he tested differed in some way. There are numerous reasons for differences in the sensitivity of the IF test performed by different laboratories, and in our paper we suggested several technical reasons for this, including differences in the 'g' forces obtained during centrifugation, varying sensitivities of the cell line used, and virus strain differences. (It would certainly be of interest to analyse HRV strains circulating in Britain and Australia during the period in question.)

We have been unable to demonstrate differences in the sensitivity of the two techniques among differing age groups (Table) and, as practically all our speci-

	Months						Total
	0-6	7-12	13-24	25-36	37-48	48	
EM positive	5	8	18	17	5	19	72
IF positive	3	7	10	11	3	12	46

mens were collected within seven days of the onset of symptoms, are unable to comment on the claim that IF is the superior test when the specimen is collected before day 7.

The main aim of our paper was to demonstrate that RIA and ELISA are considerably more sensitive than either EM or IF and that the competition between EM and IF is really for third and fourth places.

Because ELISA (with RIA) is the most sensitive test currently available for detecting HRV, and EM is indispensable for the identification of other agents, we now routinely combine these two methods for the diagnosis of virus-associated gastroenteritis.

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Book reviews

Annals of the Rheumatic Diseases. Vol 38. Suppl No. 1. Symposium on Reiter's Syndrome. (Pp v + 162; illustrated; £5·00.) London: British Medical Association. 1979.

Not only is chronic arthritis one of medicine's most puzzling enigmas but, like poor quality pitchblende, there never was a subject where the amount written has revealed so few clues of lasting value. The community of rheumatological investigators, therefore, can be forgiven for having seized so avidly on the link between HKA B27 on the one hand, and ankylosing spondylytis, anterior uveitis, and so-called reactive polyarthritis on the other. This discovery has raised the flagging spirits of clinicians who have felt instinctively that infection has something to do with these varieties of arthritis, and of laboratory investigators who have felt with equal conviction that immune response genes determine individual susceptibility. Reiter's syndrome, therefore, was a felicitous choice for a conference theme because here was a subject into which clinicians, epidemiologists, immunologists, and pathologists could set their teeth with equal gusto. The result is a fascinating medley of observations from all these specialists, grouped round the essential clinical observations concerning HLA B27. Not all the detailed observations of such matters as the radiological appearances of the spine in reactive spondyloarthritis or the indications for various anti-inflammatory drugs will interest clinical pathologists. However, they will find a detailed discussion of the genetic, immunological, and bacteriological concepts surrounding this group of disorders, and thus this book is recommended to clinical pathologists for selective reading.

AM DENMAN

Bone Tumors: Diagnosis, Treatment and Prognosis. AG Huvos. (Pp vii + 478; illustrated; £23·50.) Eastbourne: WB Saunders Ltd. 1979.

Several excellent monographs devoted to bone tumours are in print, and it may be questioned whether or not a further treatise on the same subject is required or is likely to prove a serious competitor for the extant texts. Nevertheless, Dr Huvos' book passes the test. Well-written, beautifully illustrated, and a mine of information, it is a pleasure to read. All the common and less common types of benign and malignant primary bone tumours are discussed in detail, the terminology adopted being that currently accepted and used by other workers.

For each tumour type, the author considers the clinical features, radiological appearances, gross and microscopic pathology, treatment, and prognosis. In many instances, presentation of the historical background to the evolution of modern concepts and nomenclature adds interest and perspective. There are many excellent radiographic illustrations, photographs of gross specimens, and photomicrographs. The age, sex and anatomical distribution of the tumours is emphasised by the use of numerous diagrams. The histopathological diagnoses and differential diagnoses are discussed in detail, the most important points often being summarised in tabular form. This monograph should prove of great help and interest to radiologists, radiotherapists, surgeons, and medical oncologists, as well as to pathologists. To the histopathologist it can be recommended as a most useful practical guide and a store of valuable information.

NFC GOWING

Nephrology. Ed J Hamburger, J Crosnier and J-P Grünfeld. (Pp xvi + 1393; illustrated; £42·50.) Chichester, New York: John Wiley & Sons. 1979.

The list of more than 100 contributors to this book, gathered from all parts of the world, reads like a nephrology 'Who's Who'! This is a reference book which covers clinical, immunological, and histopathological (including ultrastructural) aspects of renal disease. The sections on exploration of the kidney and treatments will be of limited interest to pathologists but the remaining two-thirds of the book are a mine of information. The text is succinct but, as would be expected from the authority of the contributors, the essential points are brought out. It is just as well that at the end of each chapter there is an impressive list of references, which is commendably up to date, because many readers will wish to refer to original articles to supplement some of the statements which are all too brief. This is inevitable if a book, as wide ranging as this, is to remain of manageable size. The