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ILLUSTRATIONS Diagrams should be drawn in Indian ink on white paper, Bristol board, or blue-squared paper. The legends for illustrations should be typed on a separate sheet. Photographs and photomicrographs should be on glossy paper, unmounted.

CHEMICAL FORMULAE should as far as possible be written in a single horizontal line.

ABBREVIATIONS In general, symbols and abbreviations should be those used by the *Biochemical Journal*.

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ETHICS The critical assessment of papers submitted will include ethical considerations. Authors are referred to publications on ethics of human experimentation by the Medical Research Council in Britain and to the code of ethics of the World Medical Association known as the Declaration of Helsinki (see *Brit. med. J.*, 1964, 2, 177).

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$$\text{or } \frac{1}{BF} = \frac{G_0}{K \cdot B_0} \times \frac{1}{F} + \frac{1}{B_0}$$

Plotting $1/BF$ (reciprocal of bound Fc^*) against $1/F$ (reciprocal of free Fc^*) should therefore give a straight line of slope $G_0/K \cdot B_0$, intercept on the abscissa (condition $1/BF = 0$) of $-K/G_0$ and intercept on the ordinate (condition $1/F = 0$) of $1/B_0$, ie, the reciprocal of the molar concentration of

antiglobulin binding sites in the test system.

Evaluation of K requires knowledge of G_0 , which is (very nearly) the total IgG as determined by radial immunodiffusion.

Requests for reprints to: Dr G. E. Francis, Department of Biochemistry and Chemistry, The Medical College of St. Bartholomew's Hospital, Charterhouse Square, London, EC1M 6BQ.

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Table Numbers of report forms from which various types of organisms were isolated

	Microbiology (129)		Haematology (50) and chemistry (50)	
	Direct	Enriched	Direct	Enriched
<i>Staphylococcus albus</i> only	8	16	13	48
<i>Escherichia coli</i> only	5	3	1	2
<i>Staphylococcus aureus</i> only	1	Nil	Nil	1
<i>Bacillus</i> species only	Nil	2	Nil	20
Mixture of two or more organisms	3	18	Nil	25
Enteric pathogens	Nil	Nil	Nil	Nil
<i>Mycobacteria</i> species	Not attempted	Nil	Not attempted	Not attempted
Total	17	39	14	96

medium was again centrifuged for 15 minutes at 5000 rpm and the deposit was inoculated into two Löwenstein Jensen slopes (Colindale).

The haematology and chemical pathology forms were divided into two equal groups and treated like wound and faeces forms.

After photocopying of reports the top of the photocopier machine where the forms are placed was swabbed liberally, and the swab was examined in the same way as the wound swab.

The results have been summarised in the accompanying table. It is clear that only a few request forms grew organisms on direct culture. Very scanty coagulase-negative staphylococci were grown from the photocopier.

Previous reports have shown that medical laboratory workers, because of the nature of their work, are more vulnerable to infection while handling contaminated specimens (Harrington and Shannon, 1976, 1977). It has been suggested that since in the microbiology department the request forms are always handled by the technician simultaneously with virulent positive cultures, for example, multiresistant organisms, *Salmonella typhi*, pseudomonads, food-poisoning organisms, etc, at the same working bench stacking culture plates and request cards, these forms could well be highly contaminated. Assuming that they were, then cross-contamination may occur not only within the laboratory staff but also outside in the wards among clinical and nursing staff handling or sorting out patients' laboratory reports. However, even after employing enrichment technique we have failed to confirm that this happens. In fact very few organisms were grown—mostly coagulase-negative staphylococci and an occasional pseudomonas or klebsiella. The very low recovery

rate of the last two named organisms may well be explained by the fact that the forms were dry and showed no detectable moisture. We were also surprised to notice that the level of contamination was so low as not to be of any significance. The fact that bacteria were more often isolated in haematology and chemical pathology departments may be explained by the fact that the liberal use of disinfectants for cleaning the working surface is perhaps more frequent in the microbiology department because of the risk of cross-infection. TB forms are, nevertheless, always handled at the same time as the stained smear. We did not expect to grow *Mycobacterium tuberculosis*, but the absence of even environmental non-pathogenic mycobacteria is rather surprising.

Nevertheless from the findings of this study no one working in the laboratory should develop a sense of complacency. Neither are we suggesting that for the office staff, in particular, hand washing will not be necessary after handling laboratory request forms. After handling forms hands must be washed, as has already been suggested (Department of Health and Social Security, 1972; Public Health Laboratory Service, 1976, unpublished). But we believe that recommendations or guidelines for a code of practice should be based on sound and realistic microbiological evidence rather than on assumption.

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References

- Department of Health and Social Security (1972). *Safety in Pathology Laboratories*. DHSS, London.
- Harrington, J. M., and Shannon, H. S. (1976). Incidence of tuberculosis, hepatitis, brucellosis and shigellosis in British medical laboratory workers. *British Medical Journal*, 1, 759-762.
- Harrington, J. M., and Shannon, H. S. (1977). Survey of safety and health care in British medical laboratories. *British Medical Journal*, 1, 626-628.
- Public Health Laboratory Service (1976). *Safety Precautions—Notes for Guidance*, November, 1976 (Unpublished).

Broadsheet 88

With reference to Broadsheet 88 'Examination of cerebrospinal fluid protein', the author mentions the difficulties when a small volume of CSF has to be shared among a number of departments. If the specimen is sent first to the bacteriology laboratory it can be centrifuged, providing the deposit for film and culture and the supernatant passed on for the biochemical analysis. This is particularly important if tuberculous meningitis is a possibility, and the best available deposit is thus obtained for the Ziehl Neelsen film.

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fully covering the academic topics which interest her, such as the nature of factor VIII and antibody, and its assay. There are stimulating discussions of the organisation of haemophilia treatment, and a condemnation of the present NHS attitude to patient care. Anyone already competent at managing haemophilic patients will derive pleasure and profit from reading this book.

D. I. K. EVANS

Problem Solving in Immuno-Hematology. Case Reports for Pathologists and Medical Technologists. By Arthur Simmons. (Pp. ix + 204; £11.50.) Chicago and London: Year Book Medical Publishers. 1977.

This is an interesting and novel approach to blood group serology, in which the author takes the reader through a limited number of problems step by step. Case reports are followed by preliminary investigations and comments. The trainee is then set a few questions covering further investigations before turning the page to see how the master has proceeded.

There are six sections dealing with special areas of serology, such as blood typing problems, the direct antiglobulin test, etc, plus an appendix with flow diagrams for laboratory procedures.

Although the binding is of a 'lay flat' design and the preface suggests that this is a bench manual, it is certainly not comprehensive enough for reference purposes. Some examination candidates will enjoy the style and, hopefully, use the book as an adjunct to and not as a substitute for bench experience; its greatest attribute is to encourage a logical approach.

The reviewer was completely confounded by the first case of an ABO anomaly, which turned out to be due to the presence of acriflavine antibody in the patient. This seemed a little unfair when the preface states that the idea is to 'give a realistic feel for everyday problems in blood banking'. Maybe this is an everyday problem in New Jersey where they like to put acriflavine dye in their anti-B.

W. J. JENKINS

Notices

1st South East Asian and Pacific Congress of Clinical Biochemistry

This congress will be held at the Shangri-La Hotel, Singapore from 14 to 19 October 1979 inclusive. It is the first major international meeting of clinical biochemists in South East Asia and is being sponsored by the IFCC and jointly organised by the Singapore and the Australian Associations of Clinical Biochemists (SACB and AACB).

Enquiries for further information may be obtained from the Congress Chairman, Dr Tan It-Koon, C/- Singapore Professional Centre, 129B Block 23, Outram Park, Singapore 3, Republic of Singapore.

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Environmental Aspects of N-Nitroso Compounds. Edited by E. A. Walker, M. Castegnaro, L. Gričiute and R. E. Lyle. (Sw.fr. 100; US\$ 50.) (Proceedings of a Working Conference held at the New England Center for Continuing Education, New Hampshire, USA, 22-24 August 1977.)

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