are available on even a patchy basis. And the sickle cell information and screening centres which have been advocated for several years for areas where there are concentrations of the populations at risk only exist in seven such areas and each of them is operating on temporary and almost certainly grossly inadequate funding.

The number of people with sickle cell disease in England and Wales is unknown but according to the present authors it is likely to be about 2000 in London alone with an incidence roughly 1 in 150 for Afro-Caribbean populations (these estimates are for the combined incidence of sickle cell anaemia, sickle cell haemoglobin *c* disease and sickle thalassaemia). They argue for a comprehensive programme of antenatal and postnatal screening with intensive paediatric follow-up and parental support and counselling.

Given the inadequacy of the present provision of services, the only justifiable response is to lend what weight we can to the authors' arguments and so help alleviate some of the burden these diseases produce. A burden, we should note, that generally falls on a population already under severe stress and living in our most deprived inner-city areas.

However, as the services develop we need to ask some more subtle questions about the best approaches—what, for instance, should the balance of effort be between pre- and post-natal services? Is it realistic to provide preconception education and counselling, if so, how? For babies identified at birth what is the best form of treatment, both physical and psychological? One great advantage of the centres advocated in this booklet is that, if they were properly supported, they would be ideal places to carry out research that might begin to answer these questions. But first we need the basic services.

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Sister chromatid exchanges. Parts A & B. R. R. Tice and A. Hollaender (eds). Academic Press, Orlando, Florida. 1985. Pp. Pt A xviii+492: Pt. B xvii+540. Price Pt A $75: Pt B $75.

As an undergraduate I was lectured extensively on the biology of DNA, yet received but one snippet of information regarding Sister Chromatid Exchanges (SCEs); and that I have since found to have been erroneous. This exemplifies the status of research into SCEs; it remains a specialist field which has failed to capture general interest. Alas, this book will not help to alleviate what those of us in the field might regard as a sad case of neglect. It represents the published proceedings of a symposium held at Brookhaven National Laboratory in December 1983 and as such it suffers "from the common disadvantages of conference publications"—that is to say a considerable degree of repetition of material in both the introductory passages and the reference list to each paper, a lack of cohesion in the overall product and a frequent supposition of substantial background knowledge. Hence this is not a book for the novice; however the list of participants is very impressive and the general quality of the papers is such that, whilst the claim that this volume represents an "authoritative assessment of the current status of research in Sister Chromatid Exchange" is not substantiated by the contents, there is still much of interest to the worker in the field. The symposium itself was divided into three areas of research; "The Nature of SCEs", "SCEs and Genetic Toxicology" and "SCEs in Human Studies". Part A covers the first of these topics, the other two being combined in Part B.

Part A is divided into five sections, all but the last dealing with the theoretical aspects of SCE induction. The first deals with the role in the generation of SCEs of the thymidine analogues whose incorporation into DNA is a prerequisite for visualization of SCEs and is largely concerned with the demonstration that spontaneous SCEs do occur in the absence of the analogues.

The second section, entitled "Induction and Characterization of SCEs" is a heterogeneous collection of papers relating to the possible mechanism(s) of SCE generation and is somewhat disappointing in that there is actually very little new material presented. Furthermore, the discussions of existing models in the light of the new evidence are given in the absence of summaries of these models so that reference to the original papers is often necessary. The honourable exception is the paper of Shafer who is as keen as ever to advance a new model for SCE formation.

Certain factors affecting the frequency of SCE induction are discussed in the next section. A thoughtful paper by Ockey *et al.* deals with the effects of DNA precursor pools upon SCE induction whilst other papers are concerned with the effects of DNA repair and its inhibition. It is, however, the fourth section which for me is the highlight of the book. This group of papers demonstrates clear relationships between the induction of SCEs and other chemically induced endpoints such as mutation, cell death and cellular transformation both *in vivo* and *in vitro*. Thus the use of SCE studies both in theoretical studies relating to DNA damage and repair, and the use of SCE assays as quick, convenient tests for environmental mutagens are vindicated and some former doubts as to the validity of SCE studies are removed.

Part A concludes with four heavy-going papers on the statistical analysis of SCE induction; these would have been more fittingly located in Part B, dealing as it does with the use of the SCE test as a screen for potentially hazardous agents. As its title suggests much of Part B is of interest only to the toxicologist, there being four sections devoted to the description of *in vivo* and *in vitro* systems designed to detect possible carcinogens, given the basic premise that a chemical which is found to induce SCEs is likely to have other deleterious effects, whereas a non-inducer is much more likely to be harmless. Unfortunately, although the SCE test is the quickest

test available it is not foolproof and a further two sections deal with the monitoring of SCE levels in human populations as a possible indicator of exposure to hazardous chemicals.

However, the remaining two sections are of wider interest. One deals with the studies of SCE levels in certain human genetic diseases, Bloom Syndrome figuring prominently as would be expected, whilst the other section details changes in SCE responses in patients suffering from various neoplasias. These sections demonstrate that SCE studies can be of considerable value in the diagnosis and treatment of numerous human diseases, both inherited and acquired.

As with other conference proceedings this book would have benefited from an attempt by the editors to produce both an introduction and a synthetic overview of the symposium. Alas, their omission renders the book even less suitable for anyone unfamiliar with the field of SCE research. To the initiated however this volume represents a valuable source of material which could save them many an hour of hunting through the journals—and that surely is a prime function of publishing a symposium proceedings.

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Methods in virology, Volumes VII and VIII, K. Maramorosch and H. Koprowski (eds). Academic Press, Orlando, Florida. 1984. Pp. xvi+332 (Vol. VII): xvi + 396 (Vol. VIII). Price, Vol. VII, £38.50, $55.00 US; Vol. VIII, £41.50, $55.00 US.

The preface indicates that the early volumes of this series were published at the "dawn" of molecular virology some 17 years ago and these volumes represent "new fabric". This reviewer has had some difficulty in assessing such a wide range of techniques; in the 18 chapters the coverage varies from superficial to over-detailed. Highlights include competition radioimmunoassays for characterisation of antibody reaction to viral antigens, the use of mosquitos to detect and propagate viruses, and methods for assay, purification and characterisation of the controversial prions. I also enjoyed exploring gene organisation of baculoviruses. There are several comprehensive chapters on plant viruses which include enzyme immunosorbent assays, detection and characterisation of subgenomic RNAs and spot hybridisation tests for viroids and viruses. I was surprised that the detailed chapter on electron microscopy for the identification of plant viruses from *in vitro* preparations included no electron micrographs. Other chapters include hybridisation methods for viral nucleic acids, applications of oligonucleotide fingerprinting to virus identification as well as monoclonal antibody techniques. These days, the methods employed by many virologists tend to be used throughout wide areas of biology; this is the era of the soft cover laboratory manual containing diverse recipes. I looked in vain for chapters on the synthesis and uses of oligopeptides and oligonucleotides and on immunogold. One wonders about the continued usefulness of this series. For me, there is something reassuring about these familiar blue volumes, but are they approached for the acquisition of new techniques?

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