Treatment of Radiation Injuries

Edited by D. Browne, J.F. Weiss, T.J. MacVittie and M.V. Pillai, New York: Plenum, 1990, 249 pp. \$75.00.

This reviewer has a bias against conference proceedings, particularly those published over 18 months after the actual conference they report, but this turned out to be a very useful volume which one can highly recommend. American conference organisers have a penchant for 'consensus'. This meeting in May 1989 brought together some 95 participants – many from the US military and nuclear establishment; but with contributions from the UK, Canada, Brazil, Germany, Italy, Japan, the Netherlands and Spain. The discussion was organised in three major sections: Haemopoietic Injury Complications, Infectious Complications, and Combined Injury Complications each of which concludes with a consensus panel. The final section is devoted to recording and exploring this consensus. It begins with two useful review papers: A historical perspective on the therapy of total body radiation injury, by the much respected Eugene Cronkite of Brookhaven National Laboratories, the other a 'warts and all' presentation, on the acute effects of radiation exposure following the Chernobyl accident by Professor Angelina Guskova and her colleagues. A further review paper explores the

most exciting of the new prospects for treatment of radiation injury by human colony-stimulating factors, by Dr William Peters of Duke University.

Most doctors, even radiologists who are daily users of ionising radiation, and occupational and public health doctors are by and large badly informed on radiation casualty management. A general acquaintance with the problems – and the true magnitude of the hazards – which allows doctors to be well enough informed to reassure those who are *not* at significant risk, is available from slim and easy to read volumes such as the National Radiological Protection Board's 'Living with Radiation'. Treatment of Radiation Injuries fulfils a different function; it is a worthwhile 'state of the art' review, albeit at May 1989, well-presented and sufficiently comprehensive to be of real value. Not least, it has inside the back cover (as well as in the text) a simplified 'flow chart' which could be of use to any physician confronted with the problem of management of radiation casualties. It is unemotional, it is practical, it contains some very sound science sanely presented, and I can certainly recommend it to occupational and public health physicians as a sufficiently inexpensive part of their personal library.

R.J. Berry

Chemotherapy of Gynecologic Cancer

2nd Edition, 1990. Gunter Deppe. New York: Wiley-Liss. 518 pp. \$165.00

This book aims to provide up-to-date guidance about adjuvant, curative and palliative chemotherapy treatment of all malignancies of the female reproductive tract, and breast cancer as well. The first quarter of the book details basic principles of cancer chemotherapy, adverse effects of treatment and interpretation of clinical trials. Chemotherapeutic management of the various gynaecologic tumours is reviewed in turn, and the final quarter of the book comprises a *pot pourri* of 'special interest' chapters including immunotherapy, monoclonal antibody therapy and intraperitoneal therapy.

Unfortunately the merit of this book is severely compromised by the artificial separation of chemotherapy from the other modalities of treatment of gynaecologic malignancy, and by the often superficial manner in which this difficult subject is addressed.

Firstly, gynaecologic oncology is a specialty which is critically dependant upon the integrated use of surgery

radiotherapy and chemotherapy. To present a 'comprehensive' study of one of these modalities in isolation is a contradiction in terms.

Secondly, the manner in which chemotherapy treatment is reviewed in this book is unhelpful. It is a fact that with very rare exceptions, ideal chemotherapy does not exist, and thus firm guidelines cannot be generally issued. Nevertheless, simply to summarise briefly selected reports of chemotherapy trials and provide little or no interpretation or criticism is to err too far in the opposite direction. For example, the treatment strategy for epithelial ovarian cancer is summed up as follows: 'Stage III and IV disease patients require optimal debulking followed by chemotherapy, cisplatin-based combination chemotherapy is currently used'.

Although it is a useful source for a large number of pre-1988 references relating to the chemotherapy of gynaecologic cancer, this book has little else to recommend it.

R. Osborne

The Cytotoxics Handbook

Edited by M. Allwood and P. Wright, Oxford: Radcliffe Medical Press, 1990, 239 pp. £29.50.

This extremely useful and clearly written book has been produced by The Cytotoxic Services Working Group, which is made up of 27 pharmacists, pharmacy technicians and representatives of the pharmaceutical industry. The stated aims of the group were to produce a manual on how to set up and operate pharmacy-based cytotoxic services with specific detail on equipment, facilities, Health and Safety, documentation and training; and a compendium of cytotoxic drugs detailing their pharmaceutical properties, reconstitution details and stability in secondary packaging systems based upon an informed review of the literature. The book is primarily written for pharmacists involved in establishing or updating centralised cytotoxic services.

The first section of the book deals with cytotoxic services. It starts by considering the sort of information that should be collected and considered before beginning to set up a cytotoxic reconstitution service and goes on to detail the type and level of service that it is possible to provide. These services range from pharmacy-controlled centralised units through pharmacy-controlled satellite units, to nurse/doctor

operated, ward/clinic based, controlled or uncontrolled environments. Commercial services, either industrial or NHS based are also briefly considered. For each of these options potential advantages and disadvantages are presented. The next section deals with facilities, including equipment selection and types of working environment. The various types of laminar flow cabinets and isolators are considered. It should be emphasised that this book does not provide a blueprint as to how an ideal reconstitution service should be set up and neither should it be expected to have done so. It does however provide a useful starting point by detailing the various factors which must be considered prior to embarking upon the establishing of a successful service, the level of which will be very variable from centre to centre depending upon a multitude of individual factors. The next part of the book considers protective clothing and disposables. There follows a useful chapter on ambulatory infusion pumps which is for some reason separated by 40 pages from a chapter on Home Based Cytotoxic Chemotherapy. In between are chapters on Health and Safety Aspects of Cytotoxic Services; documentation including consideration of methods of prescribing and ordering drugs, clinical protocols, drug monographs, worksheets, labelling, information documents for ward/clinic staff and pharmacy patient records. The next chapter considers

the education and training of the staff who will be involved in cytotoxic reconstitution which is followed by an invaluable chapter on the management of extravasation of cytotoxic drugs.

Section two of the book is likely to be a constant source of reference. It comprises a valuable alphabetical listing of monographs of individual drugs that are used intravenously. Each monograph has been prepared by a named member of the working group according to a common structure. There is a section on nomenclature which includes the names of manufacturers and suppliers in the UK. There follows sections on chemistry, stability profile, clinical usage, details of how individual drugs are prepared for injection or infusion

Evolution of Cancer

S. Okuyama and H. Mishina, Tokyo: University of Tokyo Press, 1990, 266 pp. £57.50.

This is a highly provocative book, written by two clinical radiotherapists, on the evolution of cancer. The authors base their approach to the treatment of cancer on the hypothesis that cancer represents a process of evolution in reverse, which they call 'devolution'. This concept is applied to develop theories on carcinogenesis, epidemiology, diagnosis and especially the strategy of cancer treatment. Fanconi's anaemia is cited as an evolutionary experiment of nature on carcinogenesis. The tumours described in patients with the DNA repair syndrome were classified according to their epithelial, -non-epithelial and gonadal origin. The early manifestation of non-malignancies and the later occurrence of epithelial tumours is considered as a support for the evolution theory. The cancer incidence in Japan following the explosion of the atomic bombs would also support this evolution theory. The parallel evolution of biology with the

together with handling precautions. The final section considers how residual drug and contaminated articles should be destroyed. It should be emphasised that the working group has deliberately refrained from providing details of 'standard protocols for various indications'.

In summary this is a book that should be read by any members of the 'Oncology Team' involved in setting up a reconstitution service. It should also be available in the departmental library of all Oncology Departments and all Pharmacies where any cytotoxic drugs are reconstituted and administered.

T.J. Perren

physicochemical alterations on earth are also cited in support of the evolution theory of cancer. Such arguments are then used for the formulation of a therapeutic strategy, starting with the repair of DNA damage, via carbohydrate biochemistry to immunotherapy and antiviral therapy.

A large variety of arguments are used to formulate a strategy in surgery, radiotherapy, chemotherapy and immunotherapy. For most readers of this book it will be difficult to find practical advice regarding strategy of treatment that will have to be used. The two last chapters deal with differentiation of cancer cells induced by the immunostimulant Bestatin, sex hormones and prostaglandins.

This book is difficult reading, because the authors use a wealth of biological data to search for support of their concepts on evolution and devolution of cancer. They have not succeeded in formulating a clear strategy for treatment, based on the postulated mechanisms of evolution.

F.J. Cleton

An Introduction to Radiobiology, A.H.W. Nias, New York: John Wiley & Sons, 1990, 346 pp. £17.50.

The stated aim of this book is 'to provide an extremely readable introduction to the subject of radiobiology'. However, it is perhaps better described as an introductory textbook of cellular radiobiology designed for would-be radiobiologists and medical physicists to peruse prior to consulting more advanced sources. It is not a primer to be read by the uninitiated where the reader is gently led to deeper levels of understanding. Despite this caveat the book has many admirable qualities in its 346 pages including copious graphics and illustrative diagrams and succinct summaries of the basic conclusions at the end of each of its 20 chapters.

Chapter 1 is a rather eclectic ten pages of the history of radiobiology with paragraphs on radiation, radiation units and timescales. Chapter 2, although entitled 'Cells and Tissues' is really devoted to a single aspect of cell biology viz. cell synchronisation and methods to attain it. Unfortunately, the first sentence of this chapter implies that all human cells are nucleate and this is only amended later in the text. The author also repeats the ancient phrases about G_1 and G_2 being 'gaps in our knowledge' of cell cycle events. This is hardly tenable after nearly 40 years of research into pre- and post-DNA phase biochemistry and cell metabolism. Chapter 3 goes into the greater details of cell population kinetics.

Chapter 4 is the standard introductory account of radiation physics to be found in numerous kindred textbooks. It is high time these were all updated to include the last decades exciting advances in microdosimetry so as to illustrate the meaning of 'dose' at the cellular, subcellular and molecular levels.

Chapter 5 'Subcellular Radiobiology' is only 14 pages and purports to cover 'radiation biochemistry', 'molecular radiobiology' and 'cytogenetics' – a very tall order. A critical opportunity has however been missed, namely the provision

of a clear popular exposition of DNA damage and its repair and misrepair. This topic, so central to the chain of events between energy absorption and final expression of biological damage, is barely mentioned. This contrasts with repair at the cellular and tissue levels which are fully discussed in Chapter 7.

Chapter 6 describes the post irradiation fate of individual cells – giant cell formation, interphase death and then focusses most of its attention, quite correctly, on mitotic death.

Chapter 8 on 'Intrinsic Radiosensitivity' discusses the various shapes of cell survival curves using both *in vitro* and *in vivo* studies. It touches on the 'SF at 2 Gy' a current hot topic in radiobiology but much of the chapter hinges on the older and all but discredited target theories, rather than more recent interpretations of repair/saturation models. Two small errors have also crept into the algebra of this chapter. The next section is on the special qualities of densely ionising radiations such as alpha particles, neutrons and pi-mesons.

Chapter 10, on the radiosensitising and dose modifying effects of oxygen is good but marred by one of the figures (Figure 10:7) which indicates a crossing over of two survival curves clearly implying oxygen protects cells at doses below 2 Gy. This contradicts the text and will puzzle all casual readers. The next chapter is on sulphhydryl(-SH) containing radioprotective agents and on electron affinic radiosensitisers and is illustrated by data on clonogenic assays.

Chapter 12 compares the radiobiology of normal and malignant cells with the emphasis yet again on clonogenic assays. The book is beginning to feel repetitive. There follow two chapters of pathology, the first on tissue effects and the second on the whole body radiation syndromes.

Chapters 15 and 16 are a potted version of the radiobiological basis of fractionation radiotherapy.

The author describes the final 60 pages as covering the effects of low dose and low dose rate radiation; the study of