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 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 'Onco 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

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 late 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 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 phrase about G1 and G2, 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 radiobiology physics to be found in numerous textbooks. There 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 radiosensitizers 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