

perimental tumors were used. Romantsev and Nikolskij give a short communication on the problems of radiosensitization. They believe that compounds actively involved in cyclic AMP metabolism will be of much value in the search for radiomodifiers. Four papers deal with nitroimidazoles. Adams and Fowler review nitroimidazoles as hypoxic cell sensitizers in vitro and in vivo. Studies done with the 2-nitroimidazole Ro-07-0582 reveal that when fractionation schedules are used, such that reoxygenation is not optimal, the remaining hypoxic cells are sensitized by the drug. This compound seems to be equally effective when neutrons are used instead of X-rays. Another important observation is that radiosensitizing efficiencies correlate well with measured one-electron reduction potentials. These authors anticipate that clinical sensitizers even better than Metronidazole and Ro-07-0582 will become available. Révész and Littbrand, working with Chinese hamster cell cultures, show that sensitization with Ro-07-0582 was radiation-dose dependent. If anoxic cells in tumors are of importance, the effective use of sensitizers would require large radiation doses, and small doses would have little or no effect, or even some adverse effects. Work is under way to substantiate the model proposed by these authors. Van Putten and Smink studied the effect of Ro-07-0582 and radiation on a poorly reoxygenating mouse osteosarcoma. Preliminary results suggest that the combination of tolerated doses of 0582 with radiotherapy in schedules of five treatments per week may be less effective than the combination of the sensitizer with fewer, more widely spaced treatment fractions.

In the only paper on clinical trials of Ro-07-0582, Lenox-Smith and Dische review measurement of half-life of the compound in healthy volunteers, as well as in patients with carcinoma (about 12.0 hr), and side effects in patients given 4–10 g Ro-07-0582. A dose of 140 mg/kg was found to be an upper limit for clinical tolerance (GI side effects), but it was shown that even with doses of this order and lower, there is higher radiosensitization of hypoxic as compared to oxic skin. Seven patients with multiple metastases had one group of metastases treated with 0582 + radiation, and the remainder with radiation alone. Results were inconclusive, and details have been already published.

The five papers on radioprotectors deal with the role of glutathione in cellular radiation sensitivity (Quintiliani et al.), synergistic effect of radioprotective substances having different mechanisms of action (Sztanyik and Santha), MPG (2-mercaptopyrionylglycine) (Sugahara and Srivastava), radioprotectors and radiotherapy of cancer (Maisin et al.), and changes in the ratio of activity of reparative and replicative enzymes of DNA synthesis as a basis for the search for radioprotective drugs (Filippovich and Romantsev). Harris made an evaluation of radiation modifiers and their clinical potential (cautious optimism and much work to be done), and Riklis and Ben-Hur considered some approaches to

selective modification of radiation response, including suicide by incorporation of radionuclides and synergistic effects of hyperthermia and radiation. The book ends with a set of conclusions and recommendations and a list of research priorities that will be especially useful to newcomers.

The brief description given here (sometimes by title alone) cannot do justice to the high quality of the papers presented in this meeting. Most of the authors discuss possible mechanisms of action, as well as new directions for research, that cannot be summarized here. The interested reader should be sure this volume is in his/her library.

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FUNDAMENTAL ASPECTS OF MEDICAL THERMOGRAPHY. Teaching Booklet No. 3. W. M. Park and B. L. Reece, London, British Inst. of Radiology, 1976, 36 pp, £3.40.

This is the third in a series of teaching booklets published by the British Institute of Radiology. The two companion booklets on nuclear medicine and ultrasound are reviewed in a previous issue of the Journal.

The first section of the booklet describes the physical properties of infra-red radiation including the dependence of the emission spectrum on the temperature and surface properties of a body as well as on environmental conditions. Principles of infra-red imaging are presented in a concise and readable manner, and the mechanism by which infra-red radiation interacts with the electrons of materials to produce a change in electrical conductivity is explained. A description of the image scanning system covers the focusing elements, scanning mechanism, signal processing, and display hardware, and methods of achieving quantitative representation of temperature. The section on instrument performance and calibration includes techniques for measuring thermal and spatial resolution using phantoms.

The segment on clinical applications should be of interest to clinicians and technologists who are nonexperts in medical thermography, because it is especially well done, starting with a discussion of the information content of the thermogram, patient preparation, and camera procedures. Normal and abnormal thermographs are presented with excellent color photographs and a comprehensive discussion of each case. A variety of clinical conditions are presented covering all parts of the anatomy. A brief discussion of malignant diseases is included at the end.

This teaching booklet is well written, well illustrated and certainly valuable as a first reading on the subject of medical thermography.

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