BOOK REVIEWS

KURTSIN, I. T., *Effects of Ionizing Radiation of the Digestive System,* New York, American Elsevier Publishing Company, Inc., 1963, $16.00, 276 pages, 27 pages of references, indexed, 72 illustrations, 68 tables.

The publishers blurb for EFFECTS OF IONIZING RADIATION ON THE DIGESTIVE SYSTEM states ". . . *a practical outline of the prevention and treatment of serious radiation injury to the digestive organs is not neglected, and many references are included.*" The words "prevention" and "treatment" and related words are not included in the index. I went through the text, page by page and could find no references to them. The reference list is long (mostly Russian articles) and I could not check them. However, the misleading blurb and a preliminary "note" (by the author?) is sufficient to confine the book to the waste basket; but this might not be the fault of the author.

Dr. Kurtsin reviews the history of digestive-system radiation damage, in a short introduction, differently from the way I have been taught the literature. Many of the articles quoted are articles I recognized as having little or nothing to do with the digestive system, and some that I recognized are not even secondary references. There is a puzzling reference to *"gastric paresis"* during the first 24 hours of the chronic course of a disease. I am not sure what the first 24 hours of a chronic course is. There are references to *"signs of central nervous system, functional disorders"* at doses *"occasionally at five to ten times above maximum permissible levels."* Most of the book is a description of the authors "team of scientists" work on prolonged chronic experiments on 100 dogs. There is a great talk in the foreword on using both dose and dose rate. The body of the text makes little reference to dose rate except in the most general terms. A good indication of the direction of the work described is in the foreword, *"this research has been conducted in conformity with the general theory of I. P. Pavlov on higher nervous activity and the teaching of K. M. Dykov on functional interrelations between the cerebral cortex and the internal organs."* This is different from the American radiobiological tradition of conducting all work in conformity with the blood stream and bone marrow.

All the basic functions of the digestive system—secretion, motility, and absorption—are said to be damaged by radiation (various doses and dose rates—various digestive-system functions). Apparently the clinical summary referred to by the author in the foreword is contained in the last chapter, which very briefly states that *"a detailed analysis of the function of an organ is important . . . a major element in diagnosing radiation injury to the digestive function is the composition of the secretion . . . a clinical appraisal of the digestive disorders, then, must take into account all the signs of radiation sickness . . ."* The statement on therapy is included in the last paragraph of the book ". . . *must be based on the individual approach . . . should include combined measures aimed at overcoming the pathological phenomena both in the digestive system proper and in the higher divisions of the central nervous system regulating its activity.*" The book might be of interest to radiobiologists who are surfeited by the haematological and DNA fads. It is of almost no value to physicians.

M. B.

LEBEDINSKIY, A. V. AND NAKHIL'NITSKAYA, Z. N., *Effects of Ionizing Radiation on the Nervous System,* New York, American Elsevier Publishing Company, Inc., $12.50, indexed, 154 pages, 39 pages of references, 44 illustrations, 5 tables.

This book on effects on the nervous system should be of greater interest to scientific historians than to radiobiologists. According to Lebedinsky and Nakhil'nitskaya ". . . *before and after the turn of the century, radiobiology was almost entirely concerned with the discovery*

of the nervous effects of X rays." This is a switch because it is almost totally untrue in western radiobiology. The authors point out that ". . . *the notion arose that the nervous system is insensitive to ionizing radiation. It is only recently, mainly because of the work of Soviet investigators, that the concept that the nervous system participates in the organism's reaction to ionizing radiation has been accorded its rightful place.*"

According to the authors the effects of ionizing radiation on the central nervous system were first studied experimentally by Tarkhanov in 1896. Tarkhanov was a pupil of Schenov and followed the techniques of Vvedenskiy who was the first to study the effects of light on the central nervous system. Tarkhanov used frogs and flies; he studied the effects of radiation of "*acid reflexes in the frog*" in which the entire animal except for one limb was shielded with lead. (I do not agree or disagree, it is just a new thought and I cannot check it.)

The pre-1900 observations of Edison on the use of the "new light" in blindness is mentioned as the beginnings of direct stimulation of the retina, which is considered evidence for a nervous-system stimulation. In western radiobiology most of the visual effects were explained on the basis of a biochemical reaction and little attention was paid to subsequent work except as an explanation for an observation, Apparently in the Soviet literature these are serious predecessors of the study of effects on nervous tissue.

One chapter is devoted to a review of what happens to the "analysors"—eye, ear, nose, throat, skin. A chapter on the direct effects of ionizing radiation on the nervous system both peripheral and central is followed by much discussion of conditioned reflex activities with many different kinds of radiations under different conditions of shielding. There is considerable discussion of experiments with various istopes, P^{32}, Sr^{90}, Po^{210}, Co^{60}, and purely external radiation. The EEG changes are analyzed in detail "*from all this we can conclude that even insignificant doses of X-irradiation, 'tracer' amounts of* Na^{24}, P^{32}, *and* I^{131} *caused changes in the EEG that consist of an initial rise in electric activity followed by its depression.*" I can find little attempt to separate possible chemical effects from purely radiation effects and there is a wide range of doses with little mention of dose rate except for gross and somewhat obvious measures. There is a long discussion of experiments done on embryos and very young animals, on the pereability of the blood brain barrier, on cerebral circulation, and intracranial pressure. The attempt to explain nervous-system effects involves both biochemical and morphological changes. The authors' summary stresses the lack of knowledge and the need for further research.

Once you get over the enormous shift from a western to a Russian prejudice toward a 99.9 per cent neurological physiology, this is not an inconsequential book. Since my prejudices are somewhat different from those of the authors, I find myself confused by a mass of (seemingly) inconsequential detail mixed with some excellent experimental observations, all carefully rendered in a scientific-political verbiage that is different from the scientific-political verbiage to which I am accustomed in western literature. I think this is a worthwhile book for western radiobiologists. There is not much of practical value to western physicians.

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