Trypanosoma cruzi in the Treatment of Cancer

Biotherapy of Malignant Tumors. N. G. Klyuyeva and G. I. Roskin. Translated from the Russian edition (Moscow, 1957) by J. J. Oliver. W. J. P. Neish, Ed. Pergamon, London; Macmillan, New York, 1963. x + 315 pp. Illus. $12.

This translation is published 6 years after the Russian edition. The book has not been revised or brought up to date in translation, with the exception of a short section (with four references) which summarizes the work of French clinicians using a preparation of *Trypanosoma cruzi*. None of the remaining 344 references in the bibliography refer to work reported after 1957.

This book is a poorly prepared tract, whose purpose is to create interest in the use of *Trypanosoma cruzi* (the trypanosome causing Chagas' disease) in the treatment of cancer. Poorly controlled and presented observations and uncritical statements together with wordiness, irrelevant detail, and repetitious arguments make it difficult to avoid an early categorical judgment—but a reviewer must read on.

The authors believe that it "is possible to isolate from *T. cruzi* a substance which is harmless to normal tissue but selectively active against human malignant tumors." In describing their approach to cancer therapy, they superficially review attempts to treat cancer by biotherapy: studies with Coley's toxins, bacterial polysaccharides, diphtheria toxin, tuberculin, bacteriophages, viruses, bacteria and fungi, and various antibiotics. Pages 55 to 217 are devoted to a review of their clinical results with preparations of *T. cruzi*, including details of histological and histochemical change in the cancer cells produced by the treatment. During the period 1948 to 1951, 24 patients with lip cancer and 73 women with breast cancer were treated with these preparations; several miscellaneous types of cancer were treated prior to this period. Many patients had early and localized disease, and the case reports are redundant, inconsistent with respect to the type of detail presented, and often lack information that, by American standards, is essential. The authors state that their patients, apparently free of disease for 5 years, were examined by a special committee of the Presidium of the Scientific Council of the Ministry of Health of the U.S.S.R. in 1955. This would seem to be an unusual procedure, and although the committee's statement about an individual case is included in the report of that case, the overall report of the special committee is not mentioned.

The book concludes with a disjointed account of animal experiments, the attempts to standardize the preparations, and the results of a number of random experiments. The authors appear to be critical of the deficiencies in their work, and they have a section entitled "Defects in observation."

The reporting of their clinical results is poor. The cases are not summarized in an orderly manner. The use of the *T. cruzi* preparation is discussed as a prophylactic procedure, although there is no convincing evidence that it has inherent activity against cancer in man. It is stated, for example, that in treating breast cancer ". . . relatively prolonged effects were obtained from the use of the preparation only after the clinicians started to resort to the excision of the primary tumor nodule to the extent of the macroscopically affected tissue, carrying out this doubly palliative interference during an uninterrupted course of intramuscular injections of the trypanosome preparation." How can one separate the therapeutic results of the surgery alone from any additive benefit from *T. cruzi* injections, without the use of control patients? In another case, patient Z had difficulty swallowing, and although a biopsy was not taken, the patient was started on the *T. cruzi* treatment. Within 5 days the x-ray appearance of the esophagus by barium swallow was restored from a slow passage before treatment to a normal flow, and 3 years later the patient was well. The authors conclude that this observation "established the positive effect of the preparation on a condition of the esophagus clinically interpreted as cancer. . . ." In analyzing their animal as well as their clinical work, the authors appear to have no conception of the need for statistically interpretable data and sound clinical experience as the basis for valid conclusions.

The bibliography is carelessly prepared; in some of the references the year of publication is omitted, in others the name of the journal or the pagination of the article; perhaps worse than this, an author, referred to in the text, is not in the bibliography. If research on the biotherapy of cancer, as defined by the authors, is to contribute to the care of the cancer patient, the quality of work will have to be conducted on a level much higher than that reported in this book. A book translated and published in an elaborate format such as this one, demands attention. But after reading this book, I can only feel a little bitterness at having wasted my time; there is, however, some consolation—perhaps my review will help save others from a similar experience.

DAVID KARNOFSKY
Sloan Kettering Institute for Cancer Research, New York

Organic Chemistry

Technique of Organic Chemistry. A. Weissberger, Ed. vol. 11, pts. 1 and 2, *Elucidation of Structures by Physical and Chemical Methods.* K. W. Bentley, Ed. Interscience (Wiley), New York, 1963. pt. 1, x + 665 pp. $19.50; pt. 2, x + pp. 643–1181. $16.50.

"Organic chemistry, from its very beginning, has used specific tools and techniques for the synthesis, isolation, and purification of compounds, and physical methods for the determination of their properties. Much of the success of the organic chemist depends on a wise selection and a skillful application of these methods, tools and techniques. . . ." This statement is from the general editor's introduction to the series "Techniques of Organic Chemistry." The two books that constitute volume 11 of the series will play no small part in helping the organic chemist to make the wise selection and the skillful application of the experimental techniques necessary for his success.

The material in the two parts of volume 11 can be divided into four categories. Chapter 1 deals with the isolation and purification of organic compounds. Chapters 2, 3, and 4 treat the main physical methods for obtaining structural information. Chapter 7 discusses the use of biogenetic theory to make intelligent guesses about the structure of natural products. The remaining 13 chapters are devoted to chemical methods of structural analysis.

The main emphasis is on the determination of the structure of natural products, and the authors of each chap-