

many reasons: that it captured the mood of America at the time; that it was a politically neutral project and fitted well a system of values in which technology and competitiveness are equated with progress and strength; that there was something in it for most of the influential or prestigious institutions and groups in American society: the Congress, private industry, universities, the scientific and engineering communities, unions and blue-collar workers, the mass media, especially television, the banks, and the military; that it related to a delimited goal that could be understood and achieved with existing scientific knowledge; that it was backed up by an unusually competent management team and a highly dedicated group of rocket scientists.

Whatever effect the landing on the moon may have had on American prestige and self-confidence, it has surely been overshadowed by other events: Watts, Detroit, the Democratic convention of 1968, Jackson and Kent State, and above all the Vietnam war, the last of these initiated by the same administration that earlier had fixed our gaze on "the challenge in space." Which is more indicative of the quality of our political decision making? Why have we had an Apollo but not, for example, a decent health care or welfare system? Why can there be such agreement, so much energy and innovativeness, and so many resources devoted to one and not the other? It is certainly legitimate to choose to present a history of this decision within the limited framework adopted in this book. It is less legitimate to tout this decision as evidence of a political system operating at its best. Or, if it is its best, we may well worry for the future.

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Drugs against Tumors

Single Agents in Cancer Chemotherapy. ROBERT B. LIVINGSTON and STEPHEN K. CARTER. IFI/Plenum, New York, 1970. x, 406 pp., illus. \$20.

At the present time, cancer chemotherapy can induce cures in only a few rare neoplasms, such as chorio-carcinoma and Burkitt's lymphoma; however, significant palliation of symptoms and prolongation of useful life expectancy are being attained for patients with a wide variety of more

common malignancies. Oncologists are generally aware of the major indications for use of many of the drugs, but the large body of clinical reports on individual agents has not until now been collated in a coherent form. Livingston and Carter, who as staff members of the National Cancer Institute have been closely involved in the administration and evaluation of the nationwide program, begun in 1955, for clinical evaluation of anti-tumor agents, have undertaken the sizable job of succinctly summarizing the various clinical trials in tabular form.

The title of their book accurately describes the contents. It does not deal with radiation therapy, with surgery in cancer, or with "adjuvant" therapy in which various approaches are combined. The authors have limited their analysis to 16 major drugs that are commercially available plus nine that still remain investigational. The chapter devoted to each drug includes a brief outline of relevant pharmacology, the authors' critical analysis of the drug's current and projected role in cancer therapy, and—the most valuable and lengthy component—a series of documented tables that give comprehensive data concerning the various tumors in which the agent has been tried, the dosages and schedules used, and objective responses and major toxicities observed.

A number of surprises become apparent to the specialist in the tabular data. As C. Gordon Zubrod points out in his foreword, "... some drugs are more active against certain tumors than had been realized; ... evidence for the activities of certain drugs against specific tumors is sometimes tenuous; [and] some highly active agents have never been tried against some of the fairly common tumors." Examples can be ferreted out from the tables in this book. Additionally, in some instances it becomes clear that the generally recommended or "standard" dosage and schedule may be less than optimal (as with 5-fluorouracil) and that alternative schemes of administration cause less toxicity with equal or superior benefits.

The authors limit their tabulations to the effects of single agents; they emphasize that this information is vitally important for the development of rational forms of combination chemotherapy. Animal studies of the kinetics of tumor cell proliferation and response to treatment have shown that in many tumors individual drugs destroy a con-

stant fraction of the cell population. In contrast, use of combination chemotherapy may have synergistic effects on tumor cells but not on normal tissues, and thus may reduce the number of tumor cells by many orders of magnitude more than could be accomplished with the single agents—sometimes producing cures. This approach also decreases the likelihood of development of drug resistance. In disseminated neoplasms in man (where more than 10^{12} tumor cells may be present in the body), combination chemotherapy has been applied with increasing effectiveness in disorders such as acute leukemia, Hodgkin's disease, and testicular tumors. The "hard data" presented in this handbook provide the necessary background for development of new forms of combination chemotherapy and further evaluation of certain of the single agents.

This volume will be an invaluable reference tool for the practicing clinical oncologist as well as for the researcher.

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The Science of Waters

History of Hydrology. ASIT K. BISWAS. North-Holland, Amsterdam, and Elsevier, New York, 1970. xii, 336 pp., illus. \$16.

There are some fields so little touched upon in the undergraduate science curriculum where most historians of science are recruited that only a practitioner has the knowledge to write their histories. This book is a practicing hydrologist's account of his own branch of earth science from antiquity to 1900. Though Biswas must be more familiar with modern developments, he has chosen to devote the first half of his volume to the period before 1500. Beginning with archeological evidence of hydraulic structures, he moves in chapters largely chronological through the written record of man's ideas about groundwater and streams, their measurements and motions. Two themes emerge.

The first is the conceptualization of the hydrologic cycle, summed up in the millennia-long argument about the origins of springs and rivers, which was not concluded until, with the rise of modern science in the 17th century,