

Book Reviews

ONE MAN'S VIEW OF CANCER

Neoplastic Development

Vol. 1. By Leslie Foulds. Pp. xi + 439. (Academic Press: London and New York, May 1969.) 110s; \$16.50.

As cancer research becomes more complex and fragmented, it becomes more and more difficult to comprehend the significance of results which may be obtained using highly specialized techniques and to appreciate their significance in relation to cancer in general. For this reason, one man's view on the nature of cancer and its origins is of great value, particularly when the author has been concerned with cancer research for much of his working life in many of the most active cancer research centres in Europe and America. His main aim is to organize a mass of facts into a comprehensive theory of neoplasia and to provide a unifying concept which can be used as a basis for experiment. Another object is educational and seems to have two objectives. The first is to provide a simple historical introduction to cancer research, a review of theories of neoplasia and a survey of the biological characteristics of tumours. The second, and perhaps the more important, is to discuss recent views and discoveries in molecular biology and cybernetics and to consider how they may help to throw some light on tumour biology. According to the publishers, the book "contains an assessment of the extent to which recent ideas about biological organization may provide a useful terminology and conceptual machinery for the discussion and synthesis of information" already available. A second volume is to deal with special cases of tumour development in man and in animals.

The author's thesis is that neoplasia is a developmental process akin to normal development in some respects, but differing from it in important particulars which are not yet well defined. In the first volume the author achieves his aims with admirable clarity. The sections on general and experimental pathology summarize most of the basic theories on aetiology, tumour development and tumour characteristics, although the chapter on biochemical characters is brief. Foulds suggests that the development of neoplasia after the action of extrinsic or intrinsic inducing agents takes the form of a step-wise progression. Initiation of neoplasia takes place rapidly, is long lasting and probably irreversible and is not necessarily accompanied by any distinctive changes in the affected cells. It probably affects a whole "field" rather than single cells. The change is a change in reactivity and comparable to "determination" in embryonic development; it establishes a developmental bias without overt signs. Initiation is followed by tumour promotion which pro-

gresses through the stage of "conditional" tumour formation ("conditional" tumours regress when the promoting stimulus is withdrawn) to the development of autonomous tumours. These autonomous tumours then progress, developing new and usually, but not always, more malignant characters. The structure and behaviour of the tumours are "determined by numerous characters that, within wide limits, are independently variable, capable of highly varied combinations and assortments and liable to independent progression". The likelihood of progression depends on the competence (in its embryonic sense) of the tumour cells. Their further development may take place as a response to a specific inductive stimulus or if their competence has reached a high peak (developmental imminence) induction may take place in response to non-specific stimuli. The future characters of the fully autonomous tumour may depend on the developmental "programme" of the tumour cells, but their expression may be influenced by the reactions of the host.

The evidence for these suggestions is discussed in some detail and in addition the author gives extensive summaries of his views on tumour progression, normal and tumour growth and regression, tumour invasion, and the histological analysis of tumours. As a final *tour de force* there is a large section on biological organization and the developmental biology of unicellular and multicellular organisms which gives the general biological basis for the author's theories. This book is an admirable introduction to the general biology of cancer and pinpoints those areas which might profitably be studied in depth by cell and molecular biologists.

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EARLY MEDICINE

Galen on the Usefulness of the Parts of the Body

Translated from the Greek with an Introduction and Commentary by Margaret Tallmadge May. Vol. 1: Pp. xv + 461. Vol. 2: Pp. vii + 463-802. (Cornell University Press: New York, 1968.) 238s.

IN spite of the enormous importance of Galen, the Greek physician who practised in Rome in the second century AD, few of his writings have so far appeared in the vernacular. His influence on Western medicine was still evident even at the beginning of the last century, and it is therefore remarkable that historians and classicists have not prepared for wider audiences more editions of the works of such an influential person. Translations into English of even the more important of Galen's writings are still awaited and so the appearance of an English version of one of his greatest works, the *De Usu Partium* ("On the Usefulness of Parts"), is a significant event for medical historians.

Galen's book basically deals with anatomy and physiology, but it is also an elaborate consideration of the teleological relationships between them, argued from Aristotle's contention that "Nature does nothing in vain"; with unerring precision, structure is intimately aligned with intended function. Having studied the animal body carefully and having marvelled at its complexity, there was for Galen only one conclusion—that each part had been created for a specific function. With this bias, which must always be recognized when reading the *De Usu Partium*, he gives a remarkably detailed account of the body, basing his descriptions on animal dissections and experiments. There are seventeen books or chapters, and the reading of any one of them immediately induces considerable respect for Galen and a realization that Greek medical science was not as primitive as might perhaps be imagined. It is "... a classic fundamental to an understanding of Galen and of the anatomy and physiology of his time" (page ix), and its influence in the Medieval and Renaissance periods was no less extensive.