The Cancer Problem. By William Seaman Bainbridge. The Macmillan Company, 1914.

Within the last decade several books have appeared dealing with the cancer problem; those of Carl Lewin, P. Menétrier, W. Roger Williams, W. H. Woglom, and the encyclopedic work of Jacob Wolff may be especially mentioned. Of those written in the English language, the book by Williams appeared seven years ago and Woglom's work treats mainly of experimental cancer research.

Dr. Bainbridge considers the cancer problem from many aspects; being a surgeon, however, the author devotes the greater part of his book to the clinical aspect of cancer (274 pages), while to the scientific side proper 142 pages are given. In the clinical part the author gives much first-hand experience, while in the scientific part he leans more or less on the judgment of others, especially on the writings of Bashford, and this part represents in part a summary of the reports of the English Cancer Research Fund. The book on the whole is well written and contains much interesting information. If in the following we mention a few of the errors which we find here and there, and take issue with some of the views expressed and with the author's treatment of certain aspects of scientific investigation, our purpose is not to detract from the value of the book as a whole.

In Section I. a survey of the various institutions and associations for the study of cancer is given. The American Association for Cancer Research did not come into existence in 1912 (p. 28), but was founded a number of years previously. On page 7 the "famous Althoff" who promised the aid of the government to the German Society for Cancer Research, is erroneously designated as "Kultus minister." The German society as such was not committed to the parasitic theory of the origin of cancer, for although some members supported this hypothesis, other important members, notably Orth and Von Hansemann, opposed it.

In Section II. we find a discussion of the botanical distribution of cancer. The analogy between crown gall and animal cancer is not accepted "since it presupposes the parasitic origin of cancer," and since "notably the presence of the parasites in Smith's secondary growths is in contradiction to the way in which secondary growths arise in man." In reality we can not be certain that even in man in certain tumors included among cancers, parasites are not within the tumor cells which give rise to the metastases. In the chapter on the zoological distribution, it is stated that the evidence is conclusive that benign as well as malignant tumors may occur in any multicellular organism. Whether typical cancer occurs at all in invertebrates is doubtful; certainly in the large majority of classes of invertebrates no cancer has been found. Carcinoma of the caruncula seems to be the most common site of cancer in cattle in various parts of America, not only in Wyoming, as might be inferred from the author's statement.

As to the ethnological distribution and cancer statistics the probabilities are very great indeed that the cancer rate among the African negro, the natives of Guinea and the American Indian is considerably lower than among the whites in Europe and America. The especially interesting data of Levin concerning cancer among the American Indian are not mentioned by the author. The value of possible objections to the conclusion that the cancer incidence is very different in different races seems to be overestimated. The author accepts as correct Murray's work on heredity of cancer in mice, which leads to the conclusion that heredity is responsible for a difference of only 10 to 15 per cent. in the cancer incidence in mice; in common with Bashford he attributes therefore only slight importance to the factor of heredity. As a matter of fact Murray's work is based on false premises and it proves neither the presence nor the absence of hereditary factors. Bainbridge makes no mention of more recent investigations carried on in Granby, Mass., and in Chicago, which indeed prove the great significance of heredity in cancer of mice, accounting for as great a

difference as 90 per cent. between some strains.

In Section IV. the various hypotheses concerning the origin of cancer and in a second chapter the predisposing causes are discussed. Ehrlich's "atreptic theory" ought to have been included in the first chapter; it is, as far as the etiology of cancer is concerned, a mere hypothesis and not one of the "predisposing causes." Long-continued action of Roentgen rays might almost be considered as "essential" and not merely a "predisposing" cause, if we bear in mind the great number of early Roentgen-ray operators who developed cancer of the exposed skin. The argumentation of C. P. White, apparently refuting as unthinkable a parasitic origin of cancer, is given in detail. Notwithstanding this argumentation, certain sarcomata of fowl which in their behavior seem to be distinguishable from human sarcomata, may perhaps be caused by micro-organisms.

The section in histopathology contains a series of clear drawings. The description is of necessity brief. The purely local origin of cancer is emphasized. The origin of rodent ulcer is declared to be still uncertain, despite the fact that recent investigations have undoubtedly shown that in certain cases at least it originates in the epidermis.

Section VI. deals with "Cancer Research — a Résumé of the World's Work." The author has in view especially experimental research. Thirty-six pages are devoted to this chapter. Here we have to deal mainly with a résumé of the work of the English Cancer Research Fund. American work is to a great extent ignored. Not rarely when a fact established by an American author is mentioned, the author's name is not mentioned, so that a reader unfamiliar with the history of cancer research would be inclined to attribute the work to the English cancer research and to conclude that American research played a very subordinate part in this field. Such an assumption, however, would be incorrect, and it is to be deplored that much of the important work of Tyzzer, Gaylord, Flexner and Jobling, Weil, Levin, Sweet, Corson-White and Saxon, Fleisher and others is not mentioned. Peyton Rous's name is omitted in the brief reference to his work in this chapter. The early work on Chicago rat sarcoma is entirely omitted, although the survival of the tumor cells after transplantation had been demonstrated at an early period of this investigation.

It is not possible to go into a detailed criticism of some of the views expressed in this chapter; we may mention, however, a few statements with which issue might be taken. Bashford's and Murray's views as to the rhythm of tumor cells is accepted as proven; the work of other investigators (especially M. S. Fleisher) who arrived at different conclusions, is ignored. It is taken for granted that tumor cells differ from ordinary tissue cells in their potential power of unlimited growth, while on the contrary this characteristic is common to both kinds of cells and the difference consists essentially in the increase in cell multiplication in the case of tumor cells, as the reviewer pointed out many years ago. The fact that animals can, through immunization, be protected against successful inoculation with foreign, but not with their own tumors, is erroneously assumed to prove that no external element can be concerned in the origin of cancer, while this fact merely proves that an organism usually can be immunized much more readily against foreign cells than against its own, and also that in the first origin of tumors other factors are concerned than in the continued growth of established tumors. No conclusion can be drawn from this fact as to the presence or absence of parasites within the tumor cell. The work of Uhlenhuth which to a great extent disposes definitely of the hypothesis of athrepsia, is not mentioned.

In the second part, dealing with the clinical aspect of cancer, the clinical course of the disease, diagnosis, prophylaxis, treatment by surgical and non-surgical means, are discussed. Various quack treatments are also described. Especial attention is given to Handley's work dealing with the extension of mammary cancer, to the fulguration treatment and thermoradiotherapy of de Keating

Hart, to electro-coagulation and to the author's negative results with Beard's methods of treating cancer with injections of pancreatic ferments, as well as to the author's method of starvation ligature of blood vessels and lymphatic block in advanced cancer of pelvic organs. The wide experience of the author in this field, his insistence on applying the results of theoretical research in clinical surgery, give especial value to this, the larger part of the book. This work ought therefore to have a wide circulation especially among physicians. Here it can do much good. To the scientist who will keep in mind some of the limitations of this book, it will give a conception of the great variety of problems and methods in cancer research.

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The Age of the Ocala Limestone. By Charles Wythe Cooke. U. S. Geol. Surv., Prof. Paper 95–1, 1915. Pp. 107–117.

In the first half of the last century it was assumed by American geologists of the Atlantic seaboard that certain extensive calcareous formations in the Carolinas represented terranes intermediate between the Cretaceous and lowest Tertiaries of Europe, or, perhaps were "newest Cretaceous." This assumption seems to have been made on account of the prevalence of light-colored, calcareous matter, chalk, in the upper Cretaceous of the Old World; the lithological resemblance of certain Cretaceous beds in New Jersey to calcareous beds of the south; the supposed identity of certain molluscan species from both areas; and the admixture of fossils from different horizons (really brought about mechanically, or from careless collecting). Lyell took a keen interest in this strange formation in America, and with his skill in observation "on the spot," was able to place these "white limestones" in the Eocene, to the satisfaction of all.

Again in our Eocene stratigraphy we see how a few accurate observations in the field have upset our notions regarding sequence of formations; this time, however, it is the "Ocala limestone" so-called (yet strangely enough largely equal to Lyell's "white limestone"), that has been the misplaced member. Here, too lithological resemblance, preconceived notions in faunal resemblances and unhappy identifications have been at the base of the trouble. Mr. Cooke's observations on the fauna of the beds beneath the St. Stephen's limestone in Alabama, has led to the identification of the same with the Ocala beds of Florida. The preliminary paleontological proof he brings to bear in favor of his contention seems very satisfactory. The Ocala limestone, therefore, is upper Eocene (Jacksonian) and below the Marianna limestone, and not upper Oligocene and above the Marianna as heretofore held. The importance of this revelation on the geological mapping of Florida is patent to all. We take great pleasure in seeing the distinctness of *Pecten poulsoni* and *P. perplanus* biologically and stratigraphically emphasized. The "Ocala limestone fauna" as modified by Cooke (p. 111) has a most decidedly Jacksonian aspect. The "*Mitra* like *millingtoni*" is quite probably that species for I have found it above the Claiborne "sand" at Claiborne, Alabama, thus well on towards Florida from Jackson, Miss. *Scaphander grandis* is a most remarkably characteristic Jacksonian form. Judging by trans-Mississippian faunas, we should expect soon to find in the Ocala such dominant forms as the Fulguroid *Levifusus branneri,* varieties of *Mazzalina inaurata;* and we already have traces of the high-spired "*Amauropsis*" in Dall's *A. ocalana.* Incidentally, with the Jackson age of the Wilmington beds established, it will be interesting to watch the final disposition of the following references:

Paludina (cast), Wilmington, Jr. Geol. Soc. Lond., Vol. 1, 1845, p. 431, text fig. *c.*

Viviparia lyelli Con., Am. Jr. Conch., Vol. 1, 1865, p. 32.

Polynices (*Amauropsis*) *ocalana,* Dall, Tr. Wagner, Ins. Sci., Vol. III., 1892, p. 377.

Amauropsis Jacksonensis Harris, Proc. Phila. Acad. Nat. Sci., 1896, p. 474, pl. XIX., fig. 3.

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