viewpoint of optical theory. In general, however, the author's experience and thoughts, as embodied and compiled in the methods presented here, will probably be useful both to beginners and to experienced workers seeking to gain information about tissues with the light microscope.

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Tables Numériques de Physique Nucléaire. Charles Noël Martin. Gauthier-Villars, Paris, 1954. 258 pp. Paper, $5.15; cloth, $6.79.

This book contains 14 tables. The first six are tabulations in various forms of a semiempirical mass formula due to Weizsäcker and modified later by several authors. Similar tables calculated by computing machines under the direction of Metropolis and Reitwiesner were published by the Atomic Energy Commission, as Report NP 1980, several years ago. I do not know whether they are still available.

Tables 7 to 14, with the exception of Table 11, contain simple functions that are easily calculable on a slide rule: for example, $r_0A^{1/3}$ as a function of A with r_0 constant. Table 11, Gamow penetration factors, is useful in several problems, especially of alpha decay, and cannot be calculated immediately on a slide rule.

The author's introduction contains the statement: "All calculations were hand made without using any machine for it is my opinion that mistakes are statistically less numerous when using mental arithmetic than when striking keys of a machine and transcribing the figures." This goes a long way in explaining the contents of a good part of the book. It is doubtful whether people not sharing the author's opinion on calculating machines will have much use for a large portion of the tables.

The typographic presentation is excellent.

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Organic Chemistry. Lawrence H. Amundsen. Holt, New York, 1954. xii + 368 pp. Illus. $4.75.

This textbook is designed for a one-semester course in elementary organic chemistry and, as such, is necessarily limited in scope. In common with many elementary text books, the primary emphasis is on aliphatic chemistry; aliphatics are followed by brief treatments of amino acids and proteins, carbohydrates, carbocyclic aromatics, heterocyclic compounds, and a concluding chapter dealing with natural products. A group of simple exercises at the end of each chapter is essentially a guide to the student in assimilating the contents.

It should be possible, even in a brief treatment, to show that organic chemistry is magnificently systematized, rests on clarifying theoretical foundations, and is a fascinating field. This has not been achieved. Great stress is placed on nomenclature. A large number of syntheses and structures are tabulated with little elaboration and no theoretical considerations, and much weight is given to industrial processes, sometimes resulting in misleading implications about typical reactivities of classes of organic molecules.

Many students who elect a one-semester course in organic chemistry may never again have formal contact with an experimental science. It would seem of primary importance to use this opportunity to further their understanding of the scientific method. This book, with its dry statements of fact, throws little light upon the development of ideas. However, it is liberally sprinkled with discussions of the practical aspects of organic chemistry, photographs, and drawings. And, if the purpose of a short course for nonchemists is to provide some familiarity with names of compounds, with structures, with reactions, and with industrial processes, this treatment will serve.

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Residual Stresses in Metals and Metal Construction. William R. Osgood, Ed. Reinhold, New York, 1954. xii + 363 pp. Illus. $10.

This book, prepared under the guidance of the Committee on Residual Stresses of the National Research Council, is comprised of 22 papers dealing with the present state of knowledge on the effects of residual stresses upon the flow and fracture of metals. The book concludes with an exceptionally good summary, based on the statements made in the papers as well as the opinions of the members of the committee. The conclusions reached are as follows.

1) So long as the behavior at any point in a body is elastic, residual stresses superpose with any other state of applied stress. However, if yielding occurs, the residual stresses are relieved and will have no pronounced effect on the performance of a structure. When plastic flow is restrained, as for example, under conditions of triaxial stressing, residual stresses combine with the load stresses.

2) It is recognized that high reaction stresses in welded structures result in high levels of latent energy. However, the influence of latent energy on the failure of structures is still unknown.

3) The presence of the right type of residual stresses is beneficial for structures subjected to fatigue loadings.

4) Residual stresses may assist in the initiation of brittle fractures in ships and affect adversely the fatigue strength of ship steel. The effect of residual stresses on the propagation of ship fractures is less clear; but unless spontaneous fractures can be explained in the absence of residual stresses, these stresses cannot be considered as unimportant.

Recommendations for further research, both in the various papers and in the summary, emphasize that there is still considerable work required before the effects of residual stresses on the behavior of structures will be fully understood.

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