numerical methods. Two final chapters relate to the origin of partial differential equations and the solution of boundary-value problems by Fourier series.

The logical and pedagogical presentation is handled with skill. Basic problems of existence and uniqueness are pointed out and disposed of by quoting theorems, with appropriate reference to proofs elsewhere. In the treatment of applications, derivations of a number of equations are given in detail, based on physical principles.

The collection of up-to-date practical problems is excellent. Numerous exercises with answers are given in each chapter; these fall into three categories: standard drill problems; more interesting, involved problems; and problems intended to broaden the scope of the text.

I would like to have seen a chapter stressing geometrical aspects. The sketching of integral curves in the phase plane by the method of isoclines would have led at once to a discussion of nodes, centers, foci, and so on. Questions of stability, existence of limit cycles, and so forth, would come next, all treated qualitatively and to some extent intuitively.

The questionable and long-standing practice of presenting something on partial differential equations in a text such as this, which, in my opinion, really should be devoted to ordinary differential equations, is followed here. Space which could have been devoted to such topics as Hurwitz stability criterion, asymptotic series solutions, further details on numerical methods, and geometry is lost.

A little amplifying by the instructor along the lines indicated should make this book, however, a most satisfactory text.

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Human Infertility. C. Lee Buxton and Anna L. Southern. With a chapter on endometrial diagnosis by Earl T. Engle. Harper, New York, 1958. x + 229 pp. Illus. $7.50.

This little volume was written by authors well known for their contributions in the field of involuntary infertility—medical doctors who were trained where exposure to basic research in the physiology of human reproduction was inescapable.

The diagnosis and treatment of the infertile couple is complicated, first by the fact that sterility concerns two individuals, not one. In this book the major attention is given to the female partner; the importance of examination of the male is emphasized, but treatment of the infertile husband the authors leave to the urologist.

Many variables are involved in a diagnosis of sterility; this renders research only partially susceptible to rational statistical analysis. Enough statistics are given in this book to enable the physician roughly to estimate the effect of his treatment; the difficulty of evaluating different types of treatment is increased where the follow-up reveals the fact that, whether the patient is treated or not, the cumulative percentage of "cures" gradually increases, either spontaneously or as a result of treatment, at least for 10 or 12 years.

Much is made of the psychological factor. The beneficial effect merely of the quieting assurance of the wise physician has been noted by many. The rather surprising finding that the greatest percentage of pregnancies in the authors' study population of some 2000 patients occurred during the first months of investigation implies that factors other than treatment are at work. The conservatism implicit in this statement is characteristic of the book. While cautioning against undue enthusiasm with respect to corrective measures employed, the authors proceed to evaluate the therapeutic measures which, research has shown, bring about a certain percentage of cures. For the general reader of *Science* the book gives a brief and authoritative clinical abstract of the sterility problem.

For the general reader, too, the authors present as background the basic physiological processes in human reproduction. There is a chapter on the methods of diagnosing whether or not ovulation takes place—methods that depend on basal body temperature, determination of urinary pregnanediol, and endometrial biopsy. To help evaluate the last method, there is included a chapter on "Endometrial interpretation," by the late Earl T. Engle, to whom the book is dedicated as the authors' "guide, friend and preceptor."

For the physician, the current methods of diagnosing causes are presented and evaluated in the light of the authors' not inconsiderable experience over a decade.

As the results of tests for ovulation give information on the endocrine status of the sterile woman, particularly with reference to the pituitary gland, the ovaries, the adrenal cortex, and the thyroid, the activity of these glands is carefully evaluated. The clinical importance of the *cervix uteri* for the entrance of spermatozoa and the patency of the fallopian tube, through which sperms must ascend to the ampulla and through which the egg descends to the uterus, are discussed in detail.

The role of prenatal death of the ovum due to genetic causes is not mentioned, probably because there is nothing one can do about it, and stimulation of a laggard ovary by irradiation is not endorsed because "geneticists advise against this type of therapy."

In the chapter on the sociological implications of efforts to correct sterility, the authors point out that such efforts concern the individual's right to have children, if it is at all possible, and that medical help in this direction will have no great impact on the frightening demographic problem of overpopulation that faces the world.

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Principles of Physical Chemistry. An introduction to their use in the biological sciences. Wallace S. Brey, Jr. Appleton-Century-Crofts, New York, 1958. vii + 433 pp. Illus. $7.

Intended as a textbook to be used in a one-semester course for premedical students, this book is strengthened in that purpose by limited examples in which physicochemical principles are applied to biology. Consistent with the objective is the serious attempt to employ only the simplest mathematical operations. In a few cases, this causes fundamentally easy derivations to appear complex, but usually the author has achieved his desired effect of inspiring confidence in the validity or reasonableness of equations without the tedium or complication of detailed development.

The book is about half as long as most of today's textbooks in physical chemistry. This has required that there be deletions or extreme brevity in some fields. There is nothing about the phase rule, solid solutions, or eutectics and very little about the solid phase. Except for solutions of electrolytes, the treatment of homogeneous equilibrium is fragmentary; the kinetics of heterogeneous equilibrium are omitted altogether. Even more surprising, in a book for biologists, is the confinement of photochemical reactions within one short sentence. The discussion of photosynthesis is separate and almost as brief. Nevertheless, these are prices that must be paid to reach a group who never try very hard to learn physical science. Despite the exceptions mentioned, nearly all customary topics have been included and accorded adequate treatment.

The author appears not to acknowledge the jurisdiction of the General Conference on Weights and Measures or the national standardizing laboratories to determine the temperature scale. He gives