view of Physiology, Annual Review of Biochemistry, and others? The answer is a qualified yes, since the *Recent Progress* series contains articles of relatively limited scope, derived from the deathless yearly Laurentian Hormone Conferences, and the *Annual Review of Physiology* must serve the entire field of physiology. Affirmation here must be qualified because much would depend upon whether the editors of *Current Topics in Experimental Endocrinology* are wise in the choice of topics, as well as in their choice of authors.

It would seem that in their first venture they have been quite successful, and we may hope that future volumes are as well executed.

The volume contains eight essays on widely diverse subjects. There is a highly useful discussion by R. P. Ekins of the principles underlying "saturation analysis techniques," which to the endocrinologist means the recently developed techniques for measurement of minute quantities of hormones at low concentrations in body fluids by radioimmunoassay or by various specific binding procedures. The fringe areas of endocrinology are served by a review (by A. L. Goldstein and A. White) of the thymic factor or factors involved in conferring immunological competence in lymphoid tissues, and by a discussion (by J. D. Flack, P. W. Ramwell, and J. E. Shaw) of the roles of prostaglandins in endocrine responses.

The five remaining reviews deal with more conventional topics, some of which have been adequately reviewed elsewhere recently but perhaps in a less conveniently available format. They include an article on steroid hormonal evoked differentiation of the nervous system (B. Flerkó) and one on the subcellular phenomena in which ovarian hormones engage at the target tissue level (E. V. Jensen and E. R. DeSombre). There are more conventional reviews on the "posterior pituitary" by T. Chard, on calcitonin by J. T. Potts, Jr., H. D. Niall, and L. J. Deftos, and on long-acting thyroid stimulator by D. S. Munro.

On the whole, this will probably become a useful series for the harried endocrinologist who cannot keep up with the impossibly abundant flow of endocrine literature, and for the student seeking a recent summary of a particular field.

AUBREY GORBMAN
Department of Zoology,
University of Washington, Seattle

Histamine Research

Biogenesis and Physiology of Histamine. GEORG KAHLSON and ELSA ROSENGREN. Williams and Wilkins, Baltimore, 1971. vi, 318 pp., illus. $21. Monographs of the Physiological Society, No. 21.

This monograph is an account of experiments in histamine physiology carried out by Georg Kahlson's laboratory in Lund over a period of more than 20 years. This laboratory, together with that of R. W. Schayer, has dominated research into histamine physiology ever since Schayer and his colleagues developed specific and sensitive isotopic methods for quantitating various parameters of histamine metabolism in the early 1950's. This record, therefore, is valuable not only because it presents Kahlson's publications under one cover but also because it must reflect, regardless of the authors' intentions, the dominant patterns of histamine research over this period.

The number of original observations made by Kahlson's group is impressive by any standards. Prominent among these have been the demonstration of the astonishing changes in histamine metabolism which occur during pregnancy in rodents, the regulation of histidine decarboxylase in gastric mucosa by gastrin, and the occurrence of high levels of histamine formation in a variety of rapidly growing tissues. These are the main topics covered in the book.

Research into the role of histamine has suffered badly from isolation. An overview of the period covered by this volume would suggest that it has been one of first-class observation rather than insight. For too long histamine research has consisted of a series of monologues often unconnected with and largely uninfluenced by developments in associated fields. As M. A. Beaven once put it, "we need to appreciate biology more" if the biological role of histamine is to be unraveled. This is apparent in the section on the role of histamine in gastric acid secretion, and nearly a quarter of the book is devoted to this controversial topic.

In 1964, Kahlson and co-workers published their now classic paper demonstrating the release of mucosal histamine and stimulation of histidine decarboxylase when starved rats were refed or given an injection of gastrin. From this was developed a model defining the relationship between histamine and acid secretion. A temporal similarity between two events is not proof of a causal relationship, and the discussion is never pursued with the vigor demanded. Indeed, a comparison of this chapter with a recent review in *Gastroenterology* by L. R. Johnson on the same subject entitled "Control of gastric secretion: No room for histamine?" is illuminating in suggesting why so little real progress has been made following the initial observations. This book testifies, therefore, to a series of remarkable and sometimes brilliant discoveries even if, as a signpost to the future, it leaves one frustrated and intellectually dissatisfied.

YUTAKA KOBAYASHI
DAVID V. MAUDSLEY
Worcester Foundation for Experimental Biology, Shrewsbury, Massachusetts

Protozoa

The Biochemistry and Physiology of Tetrahymena. DONALD L. HILL. Academic Press, New York, 1972. xii, 230 pp., illus. $12.95.

Tetrahymena pyriformis is undoubtedly the most studied of the 6000 named species of ciliated protozoa. Thousands of papers have been written about it, the majority in the last 20 years. Since the first report of its axenic cultivation by André Lwoff in 1923 and of its cultivation in a defined medium by George W. Kidder and Virginia C. Dewey in 1951, it has been an extremely popular subject for biochemical and genetic work. It occurs commonly in fresh water throughout the world, its generation time is short, and it multiplies readily in the laboratory. There are other species of *Tetrahymena*, a few of them even being parasitic, but they are not nearly as well known.

Hill has performed the tremendous task of pulling together all the literature on the biochemistry and physiology of *Tetrahymena*. He discusses carbohydrate, lipid, energy, amino acid, protein, purine, pyrimidine, and nucleic acid metabolism, biochemical genetics, vitamin and inorganic requirements, effects of radiation, drugs, and hydrostatic pressure, and evolution.

Like other protozoa, *Tetrahymena* is an animal, but it has many plant-like characteristics. It is motile, it ingests food, it has no chloroplasts, it has the same amino acid requirements as man and rats and has similar vitamin requirements, it synthesizes and stores glycogen, and it has hemoglobin. These