most of the changes in our fisheries because this proved to be the case in my first effort in the field of population study."

In the case of marine fisheries for species that have a high reproductive potential, such as the sardine, environment may properly be assigned a relatively important role, if not a dominant one, in designating the possible factors that determine numerical population changes. Supporting this side of the debate, Merriman concludes (*Sci. Monthly,* **68**, 13 [1949]) ". . . in fisheries with large numbers of eggs the fluctuations in abundance are likely to be due more to the environment than to the size of the adult stock."

The symposium review article does not overlook the importance of ecological factors in their relation to natural fluctuations. Quite the contrary, it points out (p. 2) that "Knowledge of how the ecological factors of the marine environment influence the size and composition of the catch is quite as important as an understanding of how fishing intensity affects the population," and again (p. 4) that "In the ocean, interest centers on the effect environment exerts on population numbers." Here, we are clearly in agreement. In fact, from what I am able to glean from Burkenroad's communication, we may be more in agreement than in disagreement. Obviously, one should hesitate to jettison, arbitrarily and without comparable supporting record, the findings and hypotheses of some of the most widely experienced fishery investigators—such as Thompson and Taylor—much less to relegate a serious consideration of their contributions to the realm of naïveté.

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Erratum

In the article entitled "The Use of an Ion Exchange Resin for the Hydrolysis of Casein and Coffee Proteins" (SCIENCE, **115**, 95 [1952]), we have inadvertently omitted glycine 4.53 and 4.38 mg of nitrogen for the HCl and resin hydrolysates, respectively, in Table 1.—G. E. UNDERWOOD and F. E. DEATHERAGE.

Book Reviews

Biochemistry and Physiology of Protozoa, Vol. I. André Lwoff, Ed. New York: Academic Press, 1951. 434 pp. $8.80.

In the introduction the editor states, "For the future development of protozoan biochemistry, it seems of utmost importance that an atmosphere develop in which more biochemists may feel, without external pressure, that many problems of the biochemistry of Protozoa are now ripe for further investigations. . . ." The book aids in creating such an atmosphere.

A section on phytoflagellates by S. H. Hutner and L. Provasoli discusses, with extensive references, the comparative biochemistry and photosynthesis, including suggestions for demonstrating in phytoflagellates types of photosynthesis similar to those found among bacteria, and for testing postulated first products of photosynthesis by supplying them as nutrients to obligate phototrophs; evolution and biochemistry of photoreceptors; biochemistry of "acetate" flagellates; induction of apochlorosis with streptomycin; vitamin requirements, with particular reference to B_{12} nutrition and assays of bound vitamins using phagotrophs; mineral requirements and chelating agents for mineral buffering; and sexuality in *Chlamydomonas.* Many speculative ideas are developed that should stimulate experimental investigation.

In "The Nutrition of Parasitic Flagellates (Trypanosomidae, Trichomonadinae)," M. Lwoff reviews the requirements of trypanosomes for hematin and the evidence that ascorbic acid is an essential growth factor. The effect of changes in chemical configuration on thiamin activity is of particular interest. The anaerobic nature and the sugar fermentation of *Trichomonas* are described. Cailleau's detailed work on the cholesterol requirement of *T. columbae* is reviewed, including the experiments on the influence of chemical configuration on activity. These experiments constitute some of the most convincing evidence that protozoa may contribute notably to biochemistry.

Von Brand's extensive researches on the metabolism of parasites qualify him for the authoritative discussion of the "Metabolism of Trypanosomidae and Bodonidae." The high oxygen consumption of certain trypanosomes and its variation with developmental state are described. The carbohydrates fermented and their fermentation products are given, and fat and protein metabolism is briefly reviewed. The mechanism of host injury and the action of drugs on trypanosomes are discussed in detail.

A short chapter on the "Nutrition of Parasitic Amebae" by M. Lwoff emphasizes the oxidation-reduction potential and the requirement for cholesterol.

In "Biochemistry of *Plasmodium* and the Influence of Antimalarials," R. W. McKee discusses the blood changes accompanying infection, *in vivo* and *in vitro* nutrition, metabolism, natural immunity, and antimalarials. Investigations in this field have proceeded so rapidly since the war that this organization of results is particularly appropriate.

The section on "Biochemistry of Ciliates in Pure Culture" deals chiefly with *Tetrahymena,* the most studied ciliate. G. W. Kidder and Virginia Dewey, themselves active contributors in the field, have pro-