quence," reveals just the opposite. Jaki asserts (p. 292) that Curtis and Shapley were the "respective leaders" in the controversy over the island universe theory, which culminated in their historic Great Debate in 1920; in fact, surviving letters (now at the National Academy of Sciences) show that the sides in the conflict appeared oblique at the time and that the first participants proposed for the debate were Shapley and W. W. Campbell, not Curtis. Jaki's detailed discussion of the debate rests upon its published proceedings; but the papers actually presented, as well as over two dozen letters between Curtis and Shapley related to the event, still exist, and they show that the published version barely resembles what truly occurred. Jaki repeats (p. 301) the familiar saw that on 1 January 1925, when Hubble's classic discovery of Cepheids in spirals was formally announced at a meeting of the AAAS, both Curtis and Shapley were present and that the finding abruptly ended one era and began a new one; again, private papers show that Curtis was not present, that almost everyone in the field had known of the discovery for many months (the *New York Times* had even run a story on it in November of 1924), and that some distinguished astronomers were not immediately convinced by it.

It would be too much to expect a single author to ferret out every source; and, overall, Jaki has made an admirable effort in that regard. The book's dust jacket boldly claims that this will undoubtedly be "the definitive reference work on the Milky Way's history for many years to come." For the recent periods this is sheer hyperbole; for the early ones, which constitute the bulk of the book, it likely will be true.

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Aquatic Diets

Fish Nutrition. JOHN E. HALVER, Ed. Academic Press, New York, 1972. xii, 714 pp., illus. $32.50.

Mammalian nutrition has for many years been studied systematically by means of synthetic feeds of controlled composition. Use of these methods with fish presents problems, however. A special expertise, which has evolved only relatively recently, is required to prevent the loss of soluble constituents or the breakup of the food in the water and to make sure that the exact amount of test material is actually ingested by the fish. It is therefore a pleasure to find this book summarizing what has been discovered about fish nutrition.

The volume is edited by a pioneer in the field and gives pride of place to the doyen of fish nutritionists, Arthur Phillips, Jr., who has contributed the first chapter. There are 11 chapters in all, each by one or two distinguished contributors, presenting altogether a most useful collection of information. Separate chapters deal with requirements for calories, vitamins, proteins, and lipids. Others show the effects of absorption of excessive or unbalanced proportions of nutrients and of consuming nonnutritive or even toxic materials that happen to be included in the diet. The remaining chapters, apart from one on fish enzymes, are concerned with feed formulation, husbandry techniques, and disease, and the text concludes with an appendix setting out typical diets. A bibliography concludes each chapter, and there is a full author index and a general subject index at the back of the book.

As most of the experimental work in toxicology has been done with mammals, the consequences for fish of eating such materials as soybean and cottonseed can usually only be surmised. Thus Friedman and Shibko's chapter is devoted largely to the responses of mammals, but the advantage of this approach is that it points the way to future studies using fish. L. M. Ashley's chapter on nutritional pathology balances more evenly the findings on mammals and fish and where possible draws valid comparisons between the two.

Hugh Tarr's chapter ("Enzymes and intermediary metabolism") cannot honestly be said to fit into the pattern of the book at all, but it is a superb chapter which gives a biochemical background to the experimental animals. As in standard biochemistry textbooks, the Embden-Meyerhof and hexose monophosphate pathways and the tricarboxylic acid cycle are laid out—but here at each step a reference number shows where the appropriate enzyme has been found in fish.

A consequence of the long time taken to compile this book is that there are few references beyond 1966; one author refers to a paper "recently" published in 1962. Apart from this I have two main criticisms. The first relates to the Latin nomenclature—no fewer than 25 Latin names are misspelled: rainbow trout comes in various chapters as *Salmo iredius* (sic), *S. gairdneri*, and *S. gairdnerii*, and *Thynnus alalunga* on p. 279 appears as *Germo alalunga* on p. 312. In a reference work of such importance these should have been standardized. Second, there is considerable duplication which could have been eliminated by tactful editing: the symptoms of vitamin deficiency in fish have been tabulated independently by three of the authors, and, incredibly, in three separate chapters there are photomicrographs of "clubbed" gill filaments resulting from pantothenic acid deficiency. There are also two independent photographs of goitrous tumors and two of lipoid degeneration of the liver, the latter two apparently borrowed from the same source.

However, these slips detracted little from my enjoyment of a fine book which should be a source of reference material for fish culturists, nutritionists, and biology students for a long time to come. It is beautifully produced and contains a large number of informative photographs and photomicrographs.

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Molecular Biology

The Mechanism of Protein Synthesis and Its Regulation. L. BOSCH, Ed. North-Holland, Amsterdam, and Elsevier, New York, 1972. xiv, 590 pp., illus. $38. Frontiers of Biology, vol. 27.

Control Mechanisms and Protein Synthesis. S. D. WAINWRIGHT. Columbia University Press, New York, 1972. x, 550 pp., illus. $20.

These two books attempt to present a contemporary view of protein synthesis and its regulation. Taking a global view one must say that on the whole they have succeeded, particularly for a reader with access to both of them—an expensive undertaking, by the way. In many ways they are complementary, one dealing mainly with synthesis, most successfully with prokaryotic systems, and the other mainly with regulation, with principal emphasis on eukaryotic systems, specifically of vertebrate animals.

The Mechanism of Protein Synthesis and Its Regulation attempts in 16 chapters to present the state of the art as