ly negative, that have been carried out. The only discovery of continuing interest is the "Australia antigen," an isoantigen found in some 30 percent of Down's syndrome patients, 9 percent of leukemic individuals, and 5 percent of patients with viral hepatitis, and not at all in normal controls.

Lilienfeld urges that future large-scale epidemiological studies focus on "specific types of Mongolism," for example trisomy, translocation, and mosaicism, and that clinical mongolism be considered as a heterogeneous entity. Further, he urges a search for different etiologies, with explorations of drugs, radiation, infectious agents, thyroid antibodies, and so on. Equally important are basic biologic studies, which would include meiotic studies in the male and female to define the timing, origin, and mechanism of production of the chromosomal nondisjunction; the development of suitable animal models for study of the trisomic state; and the use of in vitro fertilization methods for study in the experimental animal of the effects of the trisomic state on early embryogenesis.

The book is strongly recommended to those interested in mental retardation, epidemiology, and human genetics. It may also interest those biologists who wish to understand better how a chromosome anomaly, which has analogies in plants and other species, can be studied in man.

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Population and Yield

Theory of Fish Population Dynamics as the Biological Background for Rational Exploitation and Management of Fishery Resources. GEORGE V. NIKOLSKII. Translated from the Russian edition (Moscow, 1965) by J. E. S. Bradley. R. Jones, Ed. Oliver and Boyd, Edinburgh, 1969. xvi, 324 pp., illus. £8.10.0.

During the past four decades the fishery scientists of Europe and North America have studied the dynamics of fish populations with the objective of determining the relation between the amount of fishing and the sustainable catch. They have developed a substantial body of theory that has been applied successfully to a large number of animal populations and has led to major improvement in the management of some major marine fisheries, such as halibut of the northeast Pacific, plaice of the northeast Atlantic, yellowfin tuna of the eastern tropical Pacific, and whales of the Antarctic.

The theory has been developed for single-species populations with man as a predator. Much of it is based on the Darwinian concept of a constant overpopulation of young that is reduced by density-dependent mortality resulting from intraspecific competition. The unfished population tends toward a maximum equilibrium size with a relatively high proportion of large, old individuals. As fishing increases, both population size and proportions of large, old individuals are reduced, but growth is increased and natural mortality is reduced. Fishing mortality eventually takes the place of most natural mortality. If the amount of fishing is increased too much the individuals will tend to be taken before realizing their potential growth, and total yield will be reduced. The maximum sustainable yields can be taken at an intermediate population size that in some populations is about one-third to one-half the unfished population size.

G. V. Nikolskii, of Moscow State University, develops his theory from a different approach. He is a non-Darwinian and is (he says) a nonmathematician; rather he considers himself an ecologist and a morphologist. He argues that Darwin's concept of constant overpopulation has led to neglect of the problem of protecting spawners and young fish. He argues also that Darwin's concept of a variety as an incipient species has led to extensive mathematical analysis of racial characteristics without understanding of the adaptive significance of the characters. Nikolskii considers the main laws of population dynamics to be concerned with the succession of generations: their birth, growth, and death. The details are governed by the relative rates of adaptation and environmental change. The mass and age structure of a population are the result of adaptation to the food supply. The rate of growth of individuals, the time of sexual maturity, and the accumulation of reserves vary according to the food supply. These factors in turn influence the success of reproduction in ways that tend to bring the size of the population into balance with its food supply.

The adaptations of populations of fish are documented extensively from both Soviet and Western literature. There are chapters on food, fecundity and spawning, growth and maturation, population structure, and mortality. The closing chapters include the effects of fishing, basic laws of population dynamics, forecasting, and increasing productivity.

Western fishery scientists should not conclude that Nikolskii is in opposition to their approach to population dynamics. His approach is complementary, in that it suggests ways in which we may study the deterministic and stochastic variation in the parameters we use. He stresses that we should consider more deeply the quality of stocks. Nikolskii documents many of the factors that can be used to measure quality, but by omission indicates that much remains to be done to quantify those factors.

The translation by Bradley and editing by Jones are good, although the publisher has failed to allow Nikolskii to read the proofs, so that a number of errors have occurred. This seems to be a widespread practice in the Western world, and is to be deplored. Publishing houses should, in their own interest as well as as a service to the author, communicate as completely as possible. Scientific authors in the Soviet Union should not be an exception.

In his final chapter, Nikolskii suggests some future problems in the study of population dynamics. He points specifically to the need of better knowledge of variability within populations and adaptations to self-regulation of numbers. He emphasizes the urgency of further studies because we are approaching the end of new stocks to exploit. His book should be in the library of all serious students of fisheries.

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Endocrinology

Steroid Hormones and Metabolism. KENNETH W. MCKERNS. Appleton-Century-Crofts, New York, 1969. xii, 180 pp., illus. $6.95. Perspectives in Cell Biology.

In the last several years McKerns has edited the proceedings of several symposia concerning the biosynthesis and metabolic effects of adrenocortical and gonadal steroid hormones. These volumes have been of great service to experts and to workers wishing to in-