cranberries. Commercially, blueberries may be kept for 2 to 4 weeks or from the middle of August to the first of September. For home use blueberries were stored for several months in sealed glass jars placed in the home refrigerator. The temperature in the home refrigerator was above the optimum for storage, but a very satisfactory result was obtained. The author enjoyed a delicious pie made from berries that had been kept in the home refrigerator for six months.

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SCIENTIFIC BOOKS

OVERFISHING

The Overfishing Problem. By E. S. RUSSELL, Director of Fishery Investigations, Ministry of Agriculture and Fisheries, Great Britain. 130 pp. Cambridge Press, 1942. New York: The Macmillan Company.

SELDOM does one find so clear and understandable, so forthright and unpretentious and so readable and entertaining a condensation of more than a half a century of scientific research as is found in Dr. Russell's little book embodying the De Lamar lectures delivered before the School of Hygiene of the Johns Hopkins University in March, 1939; nor could one conceive of a subject of greater importance to the fisheries of the United States with their potential six-billion-pound yield of war-time food than "the overfishing problem" which is the subject of these lectures.

Although the specific illustrations and the supporting scientific data were drawn chiefly from the fisheries of Great Britain, in the North Sea and from the Arctic Coast of Norway and Iceland, to the Atlantic shelf of Africa, the general principles which control anywhere in the world the development, the rise to maximum production and the ultimate decline of sea fisheries under intensive exploitation are clearly defined in such a way that the American reader will find frequent application to familiar conditions in home waters. Each of the lectures—(1) the exploitation of the fish stocks, (2) the depletion of the older grounds, (3) age analysis of fish populations, mortality rates and rate of growth, (4) the overfishing problem in its modern formulation, and (5) the regulation of the sea fisheries—is complete in itself and affords a leisurely hour's reading. Such a reading, however, will provoke many hours of thoughtful reflection, and such reflection should lead to profitable action on the part of American fishery interests.

In his conclusion, Dr. Russell says:

> We have seen in the course of these lectures that the state of overfishing exists in many of the trawl fisheries in Northwestern European waters. Two things are wrong. First, there is too much fishing, resulting in catches below the possible steady maximum, and second, the incidence of fishing falls too early in the fishes' life, resulting in a great destruction of undersized fish which ought to be left in the sea to grow. Mesh regulations, if sufficiently drastic, will cure the second evil so far as round fish are concerned, and they may well be reinforced by suitable size limits. For the first evil, there is only one radical cure, namely a reduction of the amount of fishing.

This is a familiar theme to fishery biologists in the United States who have reached identical conclusions from extensive data gathered over a period of years by the old Bureau of Fisheries and the present Fish and Wildlife Service. It is on the basis of such research that Herrington has recommended increased mesh sizes and minimum size limits for the New England trawl fisheries, and minimum size limits for lobsters; restrictions on the intensity of fishing have been recommended by Dahlgren for the Alaska herring and by Nesbit for the Atlantic shad and other shore species. The latter recommendation is based on a fundamental principle which Dr. Russell fully develops: ". . . that up to a point you can increase yield by increasing fishing, but after this maximum is reached the more you fish the less weight of fish you catch." From a series of simple theoretical calculations and from a great number of practical illustrations taken from many years' records of the British fisheries, he draws the general conclusion "that there must be for every fish an optimum rate of fishing. When the rate exceeds the optimum the yield will fall in spite of the increased effort expended."

Dr. Russell cites a well-known example of the benefits of a reduced fishing rate in the Northern Pacific halibut fishery in which legal control of the rate of fishing has been applied under the treaties made between the United States and Canada in 1924 and 1930, renewed in 1937. He recalls to us the fact that the formerly depleted halibut fishery was restored under regulation. On the southern banks the abundance of halibut increased by as much as 60 per cent. So great was the general increase in the stock that the fishermen are able to catch their limit in five months instead of in nine and the commission now estimates that the earnings of halibut fishermen are $1,000,000 a year greater than they would have been without regulation.

To an American fishery biologist the book is most refreshing not because the facts are new—they have all been published in the technical literature—nor because the conclusions and the plan of action for restoring the fisheries of Northwestern Europe are unique but because they parallel so closely the conditions revealed by fishery research in American waters and because the correctives for overfishing in Europe are the same as those that must be applied here. Indeed, Dr. Russell's conclusions have universal application and, although the method of applying them will vary for different species and in different localities, it is for this reason that the book merits thoughtful reading by American fishery administrators, operators and fishermen.

The American scientist also may well find the book a fascinating introduction to a distinct and rapidly developing field of science with which he is, by and large, quite unfamiliar. The late great Dr. Raymond Pearl recognized the affinities of fishery biology with the particular field of human biology in which he had labored so effectively. It is to him that the handful of us are so greatly indebted for the privilege of becoming acquainted with the rugged integrity and the kindly, homespun personality of Dr. Russell—a man honored at home with the Order of the British Empire for outstanding scientific work in a field so "lowly" as the fisheries.

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SOCIETIES AND MEETINGS

THE WISCONSIN ACADEMY OF SCIENCE

THE annual meeting of the Wisconsin Academy of Sciences, Arts and Letters was held at the University of Wisconsin, on Friday and Saturday, April 17 and 18. Forty-one papers were presented by members and guests of the academy, while 32 papers were read in sessions of three societies which met jointly this year with the academy—the Wisconsin Archeological Society, the Wisconsin Museums Conference and the Wisconsin Folklore Society.

Dean of speakers on the academy program was the 91-year-old ex-president of the University of Wisconsin, Edward Asahel Birge. Mr. Birge has been a member of the Wisconsin Academy since 1876, six years after the founding of the academy by act of the Wisconsin Legislature in 1870. During this period Mr. Birge has been one of the most regular of attendants at academy meetings, and has published many limnological articles in the *Transactions*. Mr. Birge delivered a paper entitled "The Relations between Water and Transmitted Sunlight."

Papers dealing with a wide variety of subjects were presented by academy members from Wisconsin colleges and universities, as well as by members from outside of Wisconsin. Two programs of correlated papers were arranged by Professors Lowell E. Noland and Arthur D. Hasler, both of the zoology department of the University of Wisconsin. The first-named group included several papers on the fresh-water clam, *sphaerium*, and the snail *Lymnaea stagnalis*. Professor Hasler's group of papers included a series of studies of Lake Geneva, Wisconsin, where in the summer he is the director of the Lake Geneva Institute of Natural Science.

Officers elected for 1942–1943 are as follows: A. W. Schorger, Madison, *President;* W. N. Steil, Milwaukee, *Vice-president in Sciences;* Ralph Buckstaff, Oshkosh, *Vice-president in Arts;* Berenice Cooper, Superior, *Vice-president in Letters;* Loyal Durand, Jr., Madison, *Secretary-Treasurer*. The secretary is also editor of the *Transactions*, a new number of which is being started to press. Award of the research grant from the American Association for the Advancement of Science was made to Professor James F. Groves, of Ripon College.

LOYAL DURAND, JR.,
Secretary

NORTH CAROLINA ACADEMY OF SCIENCE

THE forty-first annual meeting of the North Carolina Academy of Science was held at the Woman's College of the University of North Carolina, Greensboro, on April 24 and 25. Despite emergency curtailment of tires and gas and despite the fact that many of our members are directly engaged in war work, the meeting was well attended. About 300 scientists heard a varied program of some 70 papers. The North Carolina Section of the American Chemical Society met at the same time and place with 9 papers on their program.

A new section dealing with the problems of wildlife conservation and management was organized this year. The program of 10 papers was heard by a large group, and considerable discussion followed each paper. This appears to be a very desirable section, which promises to grow in interest, and one which may operate to the profit of all who are interested in making the most of our wildlife.

In addition to the usual sectional program of formal papers the psychologists held a panel discussion on