Any devices for protection that are installed will doubtless require continual changes to perfect their operation. The number of migratory fish that pass over the dams will vary from year to year, and unless it can be definitely shown that these fluctuations are not due to changes in the intensity of the commercial fishery the success of the fish-protective work at the dams can not be determined. For this reason a study of the influence of power dams on the runs of migratory fish in the river must of necessity involve a statistical analysis of the commercial fishery and require the annual and daily counts of fish passing the obstructions at various points on the river to be correlated with the escapements of fish in the various tributaries, both above and below the dams. Since some of these dams are impassable, practical and scientific experiments will be required to perfect means of propagating by artificial methods the runs so permanently obstructed.

3. A biological study of the Columbia River fishery will be required. This will include a biological survey of all tributaries of the Columbia River, which form the present and past spawning grounds for migratory species of fish, to determine the total spawning areas in each tributary, the extent to which these spawning areas are utilized, the extent to which unavailable spawning areas can be recovered and the effect of pollution and other unfavorable factors reducing the success of natural propagation. The biological study will include observations on the life histories of the various species. It will also include studies of methods of artificial propagation and transplantation of migratory species of fish to determine the possibility of restoring depleted runs, of restocking tributaries that are now unproductive and of improving the quality and character of the various runs of fish, thus increasing their total economic value.

REPORT ON AGRICULTURAL EXPERIMENT STATIONS FOR 1933

DR. J. T. JARDINE, director of the U. S. Agricultural Experiment Stations, and Dr. W. H. Beal, assistant director, have issued their annual report.

According to the introduction, the purpose of this report is to show the use made of the federal funds, amounting to $4,462,560, appropriated in the Hatch, Adams, Purnell, and supplementary and special acts for the support of state agricultural experimental stations and those under the supervision of the Department of Agriculture in Alaska, Hawaii and Puerto Rico, as well as of $11,114,000 of state and other funds provided for the same purpose during the year ended June 30, 1933; to indicate the contributions of the stations to the solution of some of the major problems of rural life and well-being; and to review the progress made in coordinating the work of the stations with that of the department and other agencies for more economical and efficient use of funds in agricultural research. The report also discusses briefly personnel, additions to permanent equipment, research programs and projects and their coordination and adjustment to meet more fully present conditions and needs, trends in station research, and various matters relating to organization, administration and functioning of the stations as research and service agencies.

For the year ended June 30, 1933, the experiment stations reported a total financial support of $15,576,632.98, which, compared with $17,245,163.83 received the preceding year, represented a reduction of $1,668,530.85, or 9.6 per cent. Of the total support, $4,359,000 was derived from appropriations under the Hatch, Adams and Purnell Acts and $103,560 from appropriations to the Department of Agriculture for the maintenance of the experiment stations in Hawaii and Puerto Rico.

The income of the experiment stations from other than federal sources, $11,114,072.98, was 71.4 per cent. of the total. It was $1,544,060.85, or 12.2 per cent. less than for the preceding year, due mainly to a decrease in state appropriations and allotments from $9,501,097.10 to $7,740,247.56, or 18.5 per cent. The income from fees was 4.6 per cent., from sales 12.2 per cent. and from miscellaneous sources 13.6 per cent. less than in the previous year. This was offset to some extent by an increase of over 50 per cent. in balances carried over from the preceding year.

The decline in state support from the all-time high of 1931, which began in 1932, was still further accentuated in 1933. Only eight stations, namely, Alabama, Connecticut (State), Georgia, Maine, Maryland, Mississippi, New York (Cornell) and Rhode Island, reported increases from state sources during the year. The other stations experienced reductions in income of from 1.5 to 43.9 per cent. In the aggregate the Federal Government contributed about $1 to every $2.50 from other sources for the support of the stations during the year.

RECENT DEATHS

DR. JOHN BERTON CARNETT, chief surgeon of the Graduate Hospital and professor of surgery at the University of Pennsylvania Graduate School of Medicine, died on July 29, in his fifty-eighth year.

DR. MARY VIOLETTE DOVER, associate professor of chemistry at the University of Missouri, known for her work on petroleum, died on August 8.

DR. MARION NEWBIGIN, editor of the *Scottish Geographical Magazine*, died on July 20.

DR. MARCUS SEYMOUR PEMBREY, late professor of physiology in the University of London, died suddenly on July 23, at the age of sixty-eight years.

M. BENJAMIN BAILLAUD, honorary director of the Paris Observatory, died on July 8, aged eighty-six years.

THE death is announced of Dr. Jean Cantacuzino, professor of bacteriology at the University of Bucharest.