

intervals throughout the night; in the other case, a continuous record of the intensity was obtained by means of a filter and slit moving over a photographic plate. With the most efficient of the spectrographs used, it was found possible to obtain satisfactory spectrograms of the green-line radiation from the night sky with exposures so short as 30 minutes.

By co-ordinating all the results obtained during a period that included observations on nine consecutive nights, it appears that from sunset onwards there is a gradual increase in the intensity of the auroral light from clear night sky. The intensity reaches a maximum at about an hour after midnight, and from that time onwards until sunrise it gradually lessens.

Haddock Biology.

IN *Fisheries, Scotland, Sci. Invest.*, 1927, III. (January 1928), Dr. Harold Thompson continues his account of recent investigations into the economy of the haddock fisheries. In this paper he deals particularly with the haddock of the north-western North Sea, including the Moray Firth, the bight on the east Scottish coast (Buchanness-Fife Ness) and the Firth of Forth.

Two matters are of special interest. For the first time on record, living haddock marked and released were recaptured. The haddock is a delicate fish to handle, and efficient implements of capture, such as the trawl, damage the fish beyond hope of recovery. Thus it is necessary to employ the tedious method of hand-lining for securing the specimens to be marked. A total of 1112 fishes were marked and released at different times during the years 1923-27. Of these, only 57 were recaptured, mostly within three months from liberation. It is thus seen that large numbers of haddock would require to be marked to secure a fair number of returns, especially of fish absent more than three months.

In his extremely interesting study of the fluctuations in the annual recruitment of haddock stock by new brood, Dr. Thompson demonstrates that there are great differences in the number of surviving brood haddock during a series of years. In the extreme case in the North Sea, the numbers contributed in a specially good survival year may be twenty-five times more than those of an unusually poor year. Natural variations of this order, occurring at source, place the question of 'fishing out' or 'overfishing' in a new light.

The experience of recent years has been that, provided that a cycle of good to moderate brood years is experienced, the severe pruning effect of the fisheries is more than counterbalanced. On the other hand, a succession of poor to moderate years inevitably leads to an outcry on account of the scarcity of haddock, and at such times attacks are made on the present-day methods and intensity of fishing. Since the War there has been in the North Sea an example of both a poor and a good cycle of brood years. Thus, the years 1921 and 1922 produced a pair of broods almost negligible in numbers, and the years 1923 to 1926 good, or at least moderate, broods. In 1922, 1923, and the first part of 1924 the haddock catches in the North Sea dwindled away to an unprofitable point, but from the latter part of 1924, when the splendid 1923 brood had reached a marketable size, the average catch per unit of time kept mounting up until the winter of 1926. Since then, however, the average catches in the North Sea generally have tended steadily to fall to a more regular level, but to increase in the area north-west of Scotland. The main cause of this fluctuation was the gradual elimination of the prolific

and widely distributed 1923 brood, together with its normal movement towards the north and west, which are the localities where the haddock makes its chief home in later life. The broods of the succeeding years 1924 to 1926 were not capable of maintaining the increased average catches occasioned by the 1923 brood.

The Public Library System of the United States.

IN the year 1926, with the assistance of the Carnegie United Kingdom Trustees, a visit was paid to the jubilee conference of the American Library Association by a representative body of British librarians. The observations of six of these were published by the trustees last year under the title "Some Impressions of the Public Library System of the United States of America." The value of this report induced the trustees to invite two other British librarians, Miss K. E. Overbury and Dr. E. E. Lowe, to attend last year's annual conference of the American Library Association, held in Toronto.

As the American public library system is probably more developed than that of any other country of the world, this account of a pilgrimage among American libraries cannot fail to be of interest to librarians in England. The publication is confined to aspects of the subject which were not treated at length in the earlier report.

In the United States, the public libraries are definitely considered as part of the educational machinery of the country. It is evident that a rapidly growing nation, with a large immigrant population of all nationalities, must use every means of educating its new citizens rapidly. The public library service is a ready and efficient means of accomplishing this object. Consequently, work with the schools and children is probably more developed in the United States than elsewhere; although, of course, this may be due in part to the preponderance of women librarians, and their natural regard for children. Collections of books for children are sent to schools by a large majority of the libraries. In many libraries there is a well-appointed children's room with a specially trained librarian. Children come to the library room in groups for a library hour under supervision. Stories are told and book-talks given. This story-hour has been the cause of considerable discussion, and librarians have been divided in opinion as to the value of the service. It continues, however, to be developed.

A particular feature of the progressive libraries in America is the number of the staff, which is very much greater than is provided in Great Britain. Excellent provision is made for their accommodation and comfort; one library has a luxurious lavatory with five baths and hot-air blasts for drying, instead of towels.

Another speciality are the numerous well-organised travelling libraries, like those of Samuel Brown in Scotland from 1817 to 1836. Book vans in the States serve isolated communities, which are too small to have a branch or deposit station. The vans have 'stops' in various sparsely populated districts and also visit houses. A valuable feature is the social side of the work. Miss Overbury recounts a humorous occasion when the librarian, who had left books on poultry for the farmer's wife, inquired after the chickens and whether the books had been useful; the farmer replied favourably, adding, "My wife reads the books and I look after the poultry."

S. C. B.