

can get, and sincerely hope you may be able to visit and give us such advice and instruction as may seem best to you after examination of our grounds and work.

We may add that the oyster industry in these waters is rapidly becoming very large. It is claimed that there have been this season over 500,000 bushels of seed from the Chesapeake planted here. It seems to me that much may be done here towards raising our own seed. Thus far the shells which we planted early in this month do not appear to show any "set" of spawn, though they still remain pretty clean and free from muddy deposit.

If you can favor us with a visit, we shall be most happy to be initiated fully into your views and methods and do all in our power to assist you in your experiments.

STOCKTON, WORCESTER Co., MD., June 15, 1883.

**167.—CAN HERRING LIVE AND INCREASE IN INCLOSED WATERS?\***

**By W. FINN.**

The following contribution towards the solution of this interesting problem has been communicated to the editor of the Norwegian Journal of Fisheries:

About the end of May several barrels of salt "great herring" from Lof-foden were received in Bergen. These fish had been caught during the first half of the month, and the person who received them forwarded some specimens to the editor for the purpose of investigation. The specimens which were examined showed the following dimensions:

	Length.	Height.	Breadth.
	<i>mm.</i> *	<i>mm.</i>	<i>mm.</i>
No. 1. Spawner .....	338.5	73	32
No. 2. Milter .....	354.5	68	34
No. 3. Milter .....	349.0	71	28
No. 4. Spawner .....	336.0	73	32

\* About 25 millimeters make 1 inch.

These herring were, therefore, of the same size as large spring herring and Iceland herring, or as the former so-called "great herring."

The examination of the sexual organs showed the following results:

	Length.	Height.	Weight.
	<i>mm.</i>	<i>mm.</i>	<i>Grams.*</i>
No. 1. Spawner .....	165	84	45
No. 2. Milter .....	154	83.5	49
No. 3. Milter .....	182	96	61
No. 4. Spawner .....	182	40	100

\* About 28½ grams make 1 ounce.

\* "Kann der Häring in geschlossenen Gewässern leben und sich vermehren?" From the *Deutsche Fischerei-Zeitung*, Vol. VI., No. 46, Stettin, Nov. 13, 1883. Translated from the German by HERMAN JACOBSON.

No. 4 was almost ready to spawn, and the sexual organs of the other three were so much developed that the latter half of May must be supposed to have been their spawning season. At the same time several spawners were examined which had been caught in the middle of March in the Mjöfjord in Iceland. The maximum length of these herring was 347.5, 353.5, and 350 millimeters, respectively, and the weight of the spawn-bags 71, 62, and 91 grams, respectively. The spawning season of these Iceland herring sets in probably somewhat earlier than that of the Norwegian herring. We have merely stated this because the spawning season of both these kinds of fish sets in later than that of the spring herring.

The Loffoden herring had been caught in the Borgefjord. This fiord, which is scarcely half a mile long, and somewhat narrower, is connected with the Polar Sea by a narrow sound, not quite a quarter of a mile long, which can only be crossed by boats in a few places when the tide is in, and which is almost dry when the tide is out. The Pollen, a sheet of water farther inland, which is somewhat larger than the fiord, is connected with the latter by a short watercourse about 3 feet deep. The greatest depth of this fiord is said to be 40, and that of the Pollen 60 fathoms. In the fiord the tide can be noticed, but not in the Pollen, whose waters are said to contain but little salt. The herring prefer to stay in the fiord, but they have also been caught in nets in the Pollen. Besides herring the *Gadus virens* is occasionally caught in the fiord, and both here and in the Pollen not a few salmon and salmon trout. It is said that there are no other fish in these waters.

From information furnished by the inhabitants of this region, it appears that about ten years ago, during the "great herring" period, herring first made their appearance in these waters, some probably as early as the autumn of 1871, and that, unable to leave them, they propagated here, which may be concluded from the circumstance that young fry of all sizes are found, even up to the "Christiania herring," which must be considered as the oldest offspring of the immigrants. The large specimens which we examined belonged, therefore, to the original immigrants. The fisheries take place almost exclusively in spring when the ice has melted, and when large schools of herring appear on the coast. It is difficult, however, to catch the herring, because they are very shy. At other times they are but rarely caught in nets. As only nets with large meshes are used, only full-grown fish are caught. During the present year 30 tons have been taken; but as a general rule the quantity is much less. In exceptional cases 50 tons have been taken in a year.

From all the information obtained it seems certain that one and the same tribe of herring has lived and propagated in this natural aquarium. The conditions, strange in more than one respect, under which these herring have been compelled to live during this long period in their involuntary imprisonment, do not seem to have had any hurtful influence on

their well-being, or to have shortened their life; provided, of course, that the specimens which we examined were some of the original immigrants. Undisturbed by all their enemies, man alone excepted, and seemingly free from care as far as obtaining food was concerned, this quiet life has possibly aided in lengthening their existence. On the other hand, their offspring seem to be somewhat feeble, as is also the case with the salmon in inclosed waters. A more thorough examination of the conditions of temperature, food, saltness of the water, and a number of herring of different age at different seasons of the year would be of great interest, and would form an exceedingly valuable contribution to the natural history of the herring; as it is highly probable that we have here before us one and the same generation at a different age.

As there are several places in Norway where the conditions are the same as in the Borgefjord, the editor of the journal from which we have given the above extract has requested all persons interested in this subject to furnish him with information in regard to it.

---

**168.—FISH IN THE NATIONAL PARK AND TRIBUTARIES OF SNAKE RIVER—PROPAGATION OF WHITEFISH.**

**By J. E. CURTIS.**

[From a letter to Prof. S. F. Baird.]

I spent two months of the past summer in the Yellowstone National Park, and while there an item concerning fish came to my notice, which I would call your attention to. I have hope of your using your influence that some effort may be made towards preventing the destruction of certain kinds of fish. This seems to me would be the right and proper thing for the Government to do, particularly in that portion of the country which has been dedicated to the people as a national park. There is a lake there called Lake Henry, situated on the public road built by the Government leading from the Upper Geyser Basin to Virginia City. This lake is the headwater of one of the tributaries of Snake River. I spent some three or four days in a thorough examination of this lake, and have become satisfied that it is the breeding ground of the salmon-trout, which are so plentiful in Snake River and its tributaries. There was no boat on the lake, and of course I could get over it only on a clumsily constructed raft poled around by the men I had with me. The trout in this lake were in schools three or four deep, one above the other, seemingly packed as close together as fish could conveniently be, and these schools extended as far as the eye could reach. There is going on a terrible destruction of these fish by the visitors of this park by spearing, and there is not only taken out as high as 600 to 700 pounds in one night, but they wound and mutilate nearly as many as they catch.