

the bays are more or less lined with bog iron ore which has been deposited from springs. I have seen it at Cedar Key, at Tampa, and I think it is found all over the peninsula. Sulphur almost always is found combined with all iron ores, and arsenic and phosphorus often, which latter is as poisonous combined with hydrogen as either of the substances named.

Now, during the dry season, when there is not much or any surface water, the chemical reactions I have described would be going on, and lakes of underground water (or pools, if you please) existing along the watercourses, would become saturated with these poisonous gases. When the rains come and force out into the sea this accumulated poison the fish are killed. They are killed at every flood and they are not killed except at a flood. Smack fishermen say that they sometimes observe at sea a brownish spot or area of water, and sailing into it the fish in their wells begin to die at once. In these last two mentioned facts lies the objection to the volcanic theory, for it is difficult to see what connection a flood can have with a submarine volcano, which, being submarine, should be abundantly supplied with water.

OSPREY, MANATEE CO., FLA., *December 3, 1885.*

6.—HATCHING LOBSTERS AND COD IN NORWAY.

By G. M. DANNEVIG.

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

I am now engaged in hatching lobster eggs, and seem to be succeeding. During the past two days about 200 young lobsters have been hatched, and they are very lively—rather too much so, as they eat the other young ones as soon as these last come from the shell. I intend to find out what else they will eat, as their present food is rather inconvenient to furnish. The so-called artificial hatching of lobsters has often been tried before this; but in such cases simply lobsters with spawn were put into a live-box and kept there till the young hatched out; while in my experiments I take the spawn from the parent lobsters and hatch it out in a specially-constructed apparatus. If this latter method of hatching can be carried out on a large scale, of which I have no doubt, many millions of lobsters could be hatched every summer. If we could succeed in raising them for a while before planting them, so much the better. I would like to know if anything in this line has been attempted by the U. S. Fish Commission, and with what success.

Some time ago I read an account of your trying to send lobsters by rail from the Atlantic to the Pacific coast. Instead of sending the lobsters, why do you not try sending well-developed spawn? This could

* For previous letters in regard to hatching lobsters, see F. C. Bulletin, 1885, pp. 280, 446.

be conveniently hatched during transportation, so that on arrival most of the young could be liberated. I do not know how long the fry could be kept alive in the box in which they were carried, but think that an objection on this score could easily be obviated.

I have not yet overcome the difficulties in regard to the hatching of codfish. The result this year (1885) was about 24 millions of fry, which were liberated when about a week old. The longest I could keep them was for 15 days after hatching, after which period they would gradually die.

FLODEVIG, near ARENDAL, NORWAY, *June 29, 1885.*

REPLY BY PROFESSOR BAIRD.

Several experiments have been made at this station in hatching detached lobster eggs; and most success has been gained by using the McDonald glass hatching-jar, such as we now use in our shad work. Lobster eggs placed in these jars 6 or 8 weeks ago have done well, and at least two-thirds of the number are now alive, despite the fact that for the first 2 or 3 weeks we were much troubled by iron-rust and other impurities. The lots of eggs placed in the jars since then have fared much better, and we have kept them 4 or 5 weeks with scarcely any mortality. The rate of development at this time of year, however, is very slow, and we have not succeeded in hatching any young. The experiments will probably be continued during the fall and winter, and the development may be hastened by slightly increasing the temperature of the water artificially. The best results are anticipated from next year's work, and every means will be used to make a success of it, as our supply of lobsters is rapidly decreasing on all parts of the coast.

WOOD'S HOLL, MASS., *September 19, 1885.*

7.—EXPORTS OF FISH AND FISHERY PRODUCTS FROM NEW-FOUNDLAND DURING 1884.

[From Customs' Returns.—W. J. S. Donnelly, receiver-general.]

Article.	Countries to which exported.	Quantities.	Average price.	Value.
Dry cod (in quintals)	United Kingdom	50,752	\$3 00	\$152,256
	Dominion of Canada	24,012	5 00	120,060
	United States	27,362	5 00	136,810
	British West Indies	88,758	2 60	230,771
	Spanish West Indies	10,885	2 60	28,301
	French West Indies	008	2 60	1,581
	Gibraltar	101,768	3 20	325,657
	Spain	133,872	3 80	508,713
	Portugal	313,820	4 50	1,434,600
	Sicily	15,100	3 20	48,320
	Italy	45,041	3 20	147,011
	Corfu	1,800	3 20	5,760
	Greece	2,870	3 20	9,184
	Brazil	375,089	4 20	1,575,873
Total		1,197,637		4,724,487