

what can be done to stop it and insure the future prosperity of the fishery? The task of remedying the evil will be much more difficult than the proof of its existence, and the question is one regarding which we have as yet no definite ideas.

Past legislation has certainly not been very effective, nor can any laws avail much until the true character and extent of the evil has been determined; neither are laws beneficial unless they can be enforced; an exceedingly difficult task in the case of any fishery.

The question of artificial propagation has been raised, and a few unsuccessful attempts have already been made to carry it on. But the failures have not been without cause, as we do not yet even know the rate of growth of lobsters, or whether they require six or a dozen years to attain the adult size, which is about ten or eleven inches. Immediately after hatching they swim freely about at the surface of the water, and continue their erratic ways of life during most of the first season, after which they settle down upon the bottom and assume their future habits.

The first task, therefore, which we suggest for the would-be benefactor of the lobster fishery is a most thorough investigation of all points bearing upon the natural history of the species, upon the changes which have occurred in the fishing grounds, and upon the relations of the total catch for each section to the number of fishermen and traps set, and the average size of the lobsters taken.

With the census returns, soon to be published, as a starting point, a plan of the work can be easily sketched out, and the figures there given may serve as a basis for future calculations.

#### 206.—REARING CARP IN ALKALINE WATER.

By E. S. STOVER.

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

Your request for specimens of young carp raised in alkali water and sample of the water is received, and I shall take great pleasure in complying.

I received this lot of carp from Mr. Menaul at Laguna, N. Mex., in the spring of 1883, he having received them from you the fall before. As it was the first in this part of New Mexico I gave them some very severe tests, simply to see if they were hardy and would do well in alkali water. I dug a small hole in the ground that was full of alkali, the whole ground about being incrustated with it, and in this hole which filled itself from the surface water I put two of the carp, really expecting that it would kill them. But to my surprise they flourished in it, and, if anything, did better than those which I put in the basin of my fountain which contained pure water from the well.

When winter came I took all of them (some 18) and put them in a large tank of pure cold water fed by a windmill from a deep well, and kept them there until April last without any food whatever, or without any mud or other substance for protection. The tank was about 10 feet deep and froze over several times during the winter, the thermometer standing as low as 14° above zero for several weeks. From this tank I transferred them to a shallow pond dug in the alkali bottom near by, which has simply been supplied from the surface water draining in through the quicksand. In this pond at the age of two years and after such treatment they have bred, which I think proves conclusively that they are a very hardy fish. I did not lose one of them during the tests or since. Since putting them in the pond I have fed them liberally on corn-meal mush, wheat bread, spoiled cheese, &c., and they have grown wonderfully. I am confident they will be a great success in the Rio Grande Valley and other parts of New Mexico.

The Rio Grande is well stocked with catfish, suckers, eels, and several other varieties. I am confident that carp would do finely in it also.

ALBUQUERQUE, N. MEX., August 10, 1884.

**207.—ON THE SCARCITY OF MACKEREL IN THE GULF OF SAINT LAWRENCE.**

**By Capt. J. W. COLLINS.**

In view of the fact that the reciprocity treaty with Great Britain will soon expire by limitation, and that it is possible another may be negotiated, affecting to a greater or less degree the prosperity of the fishery industries of the United States, I assume that additional and reliable information relative to the mackerel fishery in the Gulf of Saint Lawrence may be of interest. The accumulation of such data may enable the legislative and executive departments of our Government to gain a more comprehensive idea of the subject under consideration and to estimate more accurately than could otherwise be done the probable gain or loss to our fishing interests by a renewal of the treaty on its former basis. It is not, of course, necessary for me to dwell on the well-known fact that the extraordinary claims made by Canada when the treaty to which I have referred was made, and also before the Halifax Commission, were based chiefly on the assumption that fishermen of the United States derived great profits from being able to participate in the inshore mackerel fisheries of the Gulf of Saint Lawrence. Therefore I beg to submit the following facts relative to the mackerel fishery of the Gulf, and which I have obtained from an interview with my brother, Capt. D. E. Collins, who returned last Saturday, August 30, from a cruise in the Gulf:

He left home June 18, in the schooner *Susie Hooper*, of this port, fully equipped for a mackerel trip, and carrying two purse-seines and