

83.—RAISING CARP IN RICE-FIELDS.**By R. J. DONALDSON.**

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

I have the honor to report the result of my experiment with German carp in a rice-field. I drained it to-day and cleared it of fish. The result is extraordinary as to growth of fish, but a failure as to numbers.

Last April I received from you 20 breeding fish. I had prepared the 10-acre field by filling up the main drains, except about 100 yards of one of them. I now believe this had better not be done, but that the fields should be left as they are for raising fish. Spawners should be provided for differently. The field had an ordinary rice field trunk, which I incased on the inner side with a frame 8 feet square, one side of which had galvanized wire screen with one-eighth of an inch mesh. The gate was so arranged as automatically to reduce the water 4 inches and re-fill twice a day. All the fish were supposed to be removed. In this pond the carp were put; but two of them were sick when received, and afterwards died. The growth of grass and water-plants in the pond was all that could be desired. A man was placed in charge of the field, whose duty was to keep off fish-hawks, cranes, snakes, &c., which are very plentiful here. Vast numbers of frogs found their way into the pond during the spawning season.

We found evidence during the summer of 6 large carp being destroyed, which, with the 2 previously mentioned as dying, would leave only 12 breeders; others might have been destroyed without our knowledge. During the spring hundreds of little fish were taken from the outside of the screen, where they had been killed by the force of the water pressing them against and into the screen. They were eels, trout, and that class of fish which abound in our waters.

During the summer we had a visitation of salt in our rivers, and not having full faith in your statement "that it would not injure carp, as they would adapt themselves to it," I was afraid to risk it, and so shut out all water. After three weeks a leak occurred in my trunk, and the water gradually left the pond until it was very low and became quite warm. The water still contained salt in the river, and I dared not use it. During this time numbers of beautiful fish were seen swimming in the drains, as the water was now in the drains alone, the surface of the field being uncovered. These, from their graceful appearance, I thought were carp. At this time a series of extra high tides set in, with a north-east wind, and the salt water, which I would not let in, came over the banks in such quantities as to make the little water remaining in the pond rather salt. If I had allowed the gate to continue taking in its usual flow on a full field, the salt, in all the time it continued, could not

have made the pond brackish. As it was, the schools of beautiful fish that I had thought were carp began to die, and these fish died by hundreds. They proved to be young menhaden, or a fish exactly like them. Other small fish died at the same time, and I took out a large number; but no fish that resembled a carp could be seen after the most careful observation. During this time one large carp jumped upon the bank at night and was not quite dead in the morning, but from its size I concluded it was one of the breeders. Fresh water was soon obtained and has been kept up until to-day, when I drew it off and obtained about one-half barrel of common fish—trout, gars, suckers, bream, perch, eels, flounders, crabs—and, to my great surprise, 73 large carp.

As they were being taken, I concluded that they were the breeders received from you, but when 12 had been taken out and still they kept coming of the same size I was confounded, as they all appeared larger than those you sent to me. I weighed 10 of them, with the following results:

Specimen.	Measurement from tip to tip.	Weight.	Specimen.	Measurement from tip to tip.	Weight.
	<i>Inches.</i>	<i>Lbs. oz.</i>		<i>Inches.</i>	<i>Lbs. oz.</i>
First	16	2 5	Sixth	15	1 14
Second	17	2 10	Seventh	14	1 14
Third	16	2 5	Eighth	17	2 8
Fourth	16	1 14	Ninth	15	1 15
Fifth	15	1 14	Tenth	15	1 14

They were principally mirror carp; a few were full scaled; and one beautiful specimen was entirely free from scales. They are a beautiful lot of fish, but whether any of the original breeders are among them or not I cannot say.

Two things are demonstrated absolutely by these results:

1. That carp will live in warm shallow water, and will live in such water even if the same is largely impregnated with salt.

2. That rice-fields are pre-eminently adapted to the growth of carp. Here is a positive growth of 1 pound and 14 ounces in the smallest fish of the 73, which cannot possibly be more than 11 months old and may be only 7 months.* These fish are of such a size that even now they would readily sell as edible fish. If an acre of rice-field will sustain and perfect 1,000 of these fish annually, they would at 18 months old readily sell at 25 cents each. The failure with me has been in the propagation. If this difficulty could be overcome I see no reason why carp on rice-fields should not be a most important factor in the successful working of our rice lands, large bodies of which are now idle.

GEORGETOWN, S. C., March 24, 1885.

* Mr. Donaldson sent two specimens of these 30-ounce carp to Washington, and they have been placed in the National Museum (accession No. 15920). Should small propagating ponds be used for spawning the success of Mr. D. would be complete.—
EDITOR.