

on board, which were brought on deck and baited with clear salt pork (we having no other bait on board). The lines were lowered and immediately each line had a fish. On being hauled in we found them to be codfish, and for two hours we caught codfish as fast as we could lower and haul in our lines. We caught several hundred. A breeze sprang up, and we filled away for the Chesapeake. The weather being very warm, we dressed and split our fish and salted them in our chain cable boxes, having no other means to keep them. We arrived at Baltimore the next day, and there was a great demand for our corned codfish. We had a great rush for them and soon sold out. I have no doubt that codfish can be caught in the same locality to-day. It is but a short run from Norfolk, Va.

6 BOYLSTON HALL, BOSTON, MASS.,

February 20, 1882.

RECENT CONTRIBUTIONS TO POND CULTIVATION.*

BY MR. EBEN-BANDITTEN. *u*

Read at the general meeting of the Fishery Association of East and West Prussia.

[From *Deutsche Fischerei-Zeitung*, vol. 5, No. 6, Stettin, February 7, 1882.]

In all works on pond-cultivation, and by all practical carp-cultivators, spawning-ponds of small extent are considered best suited to the purpose.

With your permission I shall give a brief extract from the fourth report of the Fishery Association of East and West Prussia, for the years 1880-'81, which contains a general description of pond-cultivation:

"The spawning-pond, as its name indicates, serves for the increase of the carp. For this purpose small ponds of an area of one-tenth to one-half hectare are selected, with a depth of water remaining as much as possible the same at all times. Such ponds are easy to superintend; they are quickly warmed by the sun, and furnish ample food for the young fry. Only in a few places the water need be 1 meter deep, whilst its general depth should not exceed 10 to 20 centimeters. *Frogs are considered as dangerous enemies.* For spawning-carp well built and (especially as regards fins and scales) perfectly healthy fish are selected, weighing from 1½ to 2 kilograms."

The above was written by Prof. Dr. Benecke, the secretary of our association, who, by his enthusiasm for, his knowledge of, and his experience in, pisciculture, has gained an almost European reputation.

I fully subscribe to all he has said in the above quotation, but would remark at the same time that I, as well as many others, have not succeeded in raising carp with absolute certainty. The best proof of the

* "Neuere teichwirthschaftliche Mittheilungen."—Translated from the German by Herman Jacobson.

above will be found in the circumstance that innumerable inquiries on the subject, which, during this spring, I had addressed to many persons in Prussia, Silesia, Brandenburg, and Pomerania, were invariably answered negatively. This summer, however, I have made some interesting observations, showing that, also, with regard to this subject the well-known words of the greatest of our German poets are eminently true: "All theory, dear friend, is gray; but green the golden tree of life."

In my garden, which is close to my house, there is a meadow in a very favorable and sheltered position, which, in accordance with my principle, I had for some years used as a pond, and which was now again to serve for agricultural purposes. I have to go back to the preceding year. In the spring of 1880 I sowed suitable seed on the black pond-bottom, and as early as the middle of June, I was enabled to mow the finest grass at the rate of about one wagon-load per acre. The rainy season, which set in soon after June 24, lasted, with hardly any interruption, for seven weeks, and on the 14th August ended in a terrible flood, so that the beautiful meadow (10 acres in extent), which was almost ready for a second harvest of hay, was, within half an hour, flooded 5 feet deep, causing me again to use it as a pond. I intended to observe also, in pond-cultivation, the change of matter which, on a large scale, we had often had occasion to notice in agriculture. Formerly I had always used the pond as a spawning-pond for carp, but now I intended to use it as a pond for *raising* and *fattening* carp. As I knew the quantity of food contained in its waters, I this spring stocked the pond with about 500 carp, weighing on an average 1 to 1½ pounds each, 400 *Cyprinus orfus* of different size, and a few eels, and determined to raise ducks on this pond in the proportion of about 1 duck to each carp. I succeeded very well, 300 ducks, 100 geese, and 2 swans making this pond their residence for the summer. It should also be mentioned that a flock of young wild ducks, which had been caught in the neighborhood, were also quartered in this pond.

Although there was some danger that these aquatic birds might deprive the fish of much food, I fully expected that they, on the other hand, would furnish a great deal of other food for the carp. I found my expectations fully realized.

I must here remark that while, during the first months, the pond was swarming with immense numbers of frogs, both young and old, of which the older male frogs caused a good deal of trouble and danger to the old carp, these frogs were in a very short time entirely destroyed by the ducks. The croaking of the frogs which, as soon as warm weather set in, might be heard all night long, was heard no more. The more food the ducks received the more food also fell to the share of the fish.

I soon discovered that there were in the water of the pond large masses of spawn, both of the carp and of the *Cyprinus orfus*. I had supposed that the large number of aquatic birds (about 400), especially the ducks, would entirely devour the spawn. But this did not take place,

at least not to the extent that I had supposed. I had daily occasion to observe how the young fry flourished, although undoubtedly many young fish were devoured by the birds. The following was the result of my observations: Last autumn, about the beginning of October, I had about 50,000 very fine young carp, 100 of them weighing about 2½ pounds; of *Cyprinus orfus* I had only about 1,000. The weight of the old carp, originally weighing 1 to 1½ pounds, had increased 100 to 150 per cent.; while the weight of the *Cyprinus orfus* had not increased quite as much; and all this in the face of the fact that 300 ducks, 100 geese, and 2 swans, not to mention a flock of wild ducks (which are particularly fond of young fish), had staid on this pond all summer. Frog-spawn, which carp-cultivators, as a general rule, carefully remove from their ponds at the most suitable time, *i. e.*, in spring, I shall certainly put in this pond, where also during the coming year carp, *Cyprinus orfus*, ducks, and geese are going to live together in peaceful harmony. Frog-spawn forms a good, nourishing food for ducks, and consequently it will increase the quantity of carp-food. I considered the above observations, which are principally based on the change of matter (*stoff-wechsel*), of such importance as to deem it my duty to communicate them to my fellow-workers in the cause of pisciculture.

ON THE RACES OR VARIETIES OF CARP, DENYING THE EXISTENCE OF BLUE CARP AND GOLD CARP.

By F. ZENTZ.

[Translation.]

LOWER FRANCONIAN DISTRICT FISHERY ASSOCIATION, WÜRZBURG.

WÜRZBURG, *February 13, 1882.*

HONORED SIR: To-day, at last, I find time to answer your inquiry relative to *blue carp* and *gold carp*, and to return the enclosure of your letter.

RÉSUMÉ: There is no such fish as the *blue carp*, whether viewed from the standpoint of the naturalist or from that of the pisciculturist, and we will do all in our power not to increase, without any special object, the nomenclature of the carp, which has, as it is, too many names and subdivisions.

As it was my object not to report anything that is not authentic, I have reached the above result by conferring with several of the most experienced carp-traders and carp-raisers, and I have likewise examined a large number of different carp, some of them in tanks, all of which will sufficiently excuse my delay in answering your letter.

There are *three* principal races or varieties—not special kinds—of carp:

(1) The SCALE-CARP, *Cyprinus carpio* (French; *Carpe commune*), the