

XXXIII.—SOME RESULTS OF CARP CULTURE IN THE UNITED STATES.

BY CHAS. W. SMILEY.

A report of the distribution of carp, made by the United States Fish Commission, from the young reared in 1879 and 1880, has already been published in the report of 1882, page 943. In order to ascertain what success these persons had had, a circular was prepared and sent out in July, 1883, to over two thousand addresses named in that report. The circular was accompanied by a blank form containing 15 questions, as follows:

1. When did you first receive carp, and how many?
2. Have you received any since?
3. What have you kept them in? If a pond, state its size and depth, and the nature of its bottom.
4. How much water usually flows through it, and how cold is it?
5. What water-plants or grasses does it contain?
6. What other fish, frogs, turtles, &c., does it contain?
7. What food do you give the carp? How often?
8. How many carp have you of the original lot?
9. How many young have they produced?
10. What is the present size or weight of the old ones?
11. What is the size or weight of the young ones?
12. What disposition have you made of any of the young?
13. Have you eaten any carp? How were they cooked, and what was the opinion of their edible qualities?
14. Have the carp been troubled by any disease or fatality?
15. What has been your most serious difficulty in their care?

From the replies received to this circular and from the correspondence of the Commission the 1,036 statements which follow have been compiled. These are classified geographically as follows:

	Statements.
New England States	40
Middle States	176
Southeastern States	364
Southwestern States	249
Northwestern States	175
Pacific Slope and Great Plains	32
Total	1,036

The following exhibit shows the number from each State and Territory:

States and Territories.	Number.	States and Territories.	Number.
Alabama.....	21	Mississippi.....	43
Arizona.....	2	Missouri.....	26
Arkansas.....	1	Nebraska.....	3
California.....	8	New Hampshire.....	2
Colorado.....	12	New Jersey.....	29
Connecticut.....	21	New Mexico.....	2
Delaware.....	9	New York.....	65
District of Columbia.....	8	North Carolina.....	28
Florida.....	6	Ohio.....	69
Georgia.....	46	Oregon.....	2
Idaho.....	1	Pennsylvania.....	73
Illinois.....	26	Rhode Island.....	1
Indiana.....	17	South Carolina.....	36
Indian Territory.....	1	Tennessee.....	56
Iowa.....	7	Texas.....	67
Kansas.....	32	Utah.....	4
Kentucky.....	29	Vermont.....	2
Louisiana.....	6	Virginia.....	110
Maine.....	2	West Virginia.....	25
Maryland.....	105	Wisconsin.....	8
Massachusetts.....	12		
Michigan.....	8	Total.....	1, 036
Minnesota.....	5		

The facts and opinions obtained concerning the edible qualities of carp have already been compiled and published in the Fish Commission Bulletin for 1883, page 305. An extra edition of this paper was published in pamphlet form and copies have been sent to persons making inquiries concerning the value of carp for food.

In the following statements the entire testimony is cited both for and against carp, in order that readers may be able to judge for themselves concerning its value and in regard to the standing of carp as an American food-fish.

It will easily be seen that the meagre results attained by some persons were due to a neglect of the following suggestions which the Commissioner has made to every applicant by printing them upon the blank form which each person desiring carp is required to fill out:

"It may be well to state that it is of no use to introduce carp in waters already occupied with such fish as bass, sunfish, perch, trout, or any other flesh-eating species whatever; even chubs and minnows are objectionable. Although the fish supplied might not be liable to injury, their eggs and young would certainly be devoured, and no result would come from the experiment. It is, therefore, recommended to persons interested in the subject who are not sure that their present ponds are free from fish, to begin by preparing a pond of say fifty feet square for the reception of the carp. After they have attained the age of from three to six months, they may be transferred to other suitable waters."

STATEMENT OF PERSONS ENGAGED IN CARP-CULTURE.

[Arranged alphabetically by States, counties, and post-offices.]

ALABAMA.

1. *Statement of H. M. Hunter, Eufaula, Barbour Co., Ala., April 7 and Sept. 17, 1882.*

DISPOSITION OF CARP RECEIVED.—I received 20 small carp, from 2 to 3 inches long, about December 20, 1881. My pond is from 8 to 40 inches deep, and is supplied with water from a number of fine, bold, clear and cold springs. It has a sandy bottom, and covers about one-half an acre, and is surrounded by ditches and an embankment of sand. The surplus water flows through a plank trough, which keeps the water of uniform temperature and depth.

PLANTS.—My pond is well-nigh filled with a long, tender, green and moss-like grass or growth, resembling purslain, though tender, and another kind, jointed, sending out roots at the joints, also delicate. These plants protect the fish from their bird enemies and make it more difficult for man to capture them, as the fish pass through these growths with ease and freedom. They protect the eggs, and also regulate the temperature of the water. Turtles may have an advantage in catching the fish in and about the bunches.

ENEMIES.—I know of a few snakes, one large and one small turtle, and 3 large bullfrogs in my pond. I have killed 8 fish-hawks and 4 white cranes. I examined the intestines of a small white crane that visited my pond, but I found nothing resembling, in the most remote degree, fish, tadpoles, or anything else save a quantity of fine black mud. I find my fish are much more shy than formerly.

FOOD.—I fed my fish regularly upon corn-bread twice a day until July last—six months after I received them. Since then I have fed them irregularly, and many days have given them no food at all. They seem careless in eating, and I never dreamed that fish could be made to grow as fast as my fish have. I am satisfied that they draw liberally from the natural products of the pond. The long, fine, tender fibers of moss also afford them some nutriment.

GROWTH.—April 7, 1882, I saw a dead carp in the edge of the water of my pond that was 9 inches from the tip of its tail to the end of its nose and was $2\frac{1}{2}$ inches at its greatest width. My son saw a carp which he says appeared to be fully as large as the dead one. The growth of the fish from 3 to 9 inches in length and $2\frac{1}{2}$ inches at its greatest breadth is truly remarkable, especially when we consider that the carp have been in the pond only about 4 months, and winter months at that, during which carp in the North are hibernating and not growing at all. Only 2 of the carp were 3 inches long when received; the other 18 did not average over $2\frac{1}{2}$ inches. The fish that remain in the pond now (September 17, 1882,) average no less than 20 inches in length. I do not see more than 10 carp at any one time.

MISCELLANEOUS.—The dead carp had 4 wounds on its side and abdomen, having the appearance of being bitten by a small dog.

The grasses seem not to grow food for fish, but they seem to serve as a lodgment for certain food upon which the carp feed and do well. They can also hover under these grasses and partake of the food and protection unmolested.

2. *Statement of H. I. Irby, Eufaula, Barbour Co., Ala., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 32 carp in December, 1880. The pond is one-fourth of an acre large and 7 feet deep, with a muddy bottom. It is furnished with water by springs which rise in and around it, and yield barely enough to supply the waste by evaporation.

PLANTS.—It contains the native bog-plants of the country.

ENEMIES.—There are bull-frogs and mud-turtles in it.

FOOD.—I feed them with bread and truck from the garden—not regularly; only enough to keep them gentle.

GROWTH.—I fried one of the old ones and one died; so I have 30 left. They are about 20 inches long; I do not know the weight. The young ones are about 15 inches long.

REPRODUCTION.—They have produced a great multitude of young; I have no means of knowing how many.

DISTRIBUTION OF YOUNG.—I sold some at from \$5 to \$10 per hundred, and have eaten some.

MISCELLANEOUS.—I did not know until the receipt of your circular that there were other varieties of carp. I should be pleased to get a few of each kind, as I am building other ponds and intend to make carp-culture a business.

3. *Statement of W. N. Reeves, Eufaula, Barbour Co., Ala., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—About three and a half years ago I received 20 carp and have received some since. I keep them in two ponds; one covering half an acre and the other $2\frac{1}{2}$ acres. The bottom is muddy and the average depth is 5 feet. Water flows into the small pond from three springs—say 4 square inches; into the large one through a flume of about 10 square inches. My plantations are under the care of my agents, who have not time to give enough attention to the carp.

PLANTS.—The ponds contain wild grass and some water-lilies.

ENEMIES.—The large one has in it catfish, bull-frogs, and other animals; also small turtles. There are none but carp in the small pond.

FOOD.—The fish are seldom fed at all. They are occasionally given fresh meat; sometimes baked dough.

GROWTH.—Mine at the end of 6 months had grown from the size sent me to 8 and 12 inches long. At that time my dam broke. I saw and measured but did not lose them. They were all in the pond; none had died or been lost. Some seem to be 18 inches long now. I can't catch them. I tried with hook and line and can't get them. Only caught two—12 and 18 inches long.

MISCELLANEOUS.—So far as my information goes they will do finely here and be of great value to our people if properly taken care of. My purpose is to drain off my larger pond, free it of everything but carp, and give them a fair trial. I wish our people could be induced—those that live on their farms—to give them a fair trial. They will doubtless thrive and do admirably in this section.

4. *Statement of P. H. Coleman, Union Springs, Bullock Co., Ala., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp three years ago, all of which got away. In December, 1881, I bought 25 scale carp of Mr. Wright, of Georgia. I placed them in a pond 75 by 100 feet, with a muddy bottom, which is fed by cool spring water at the rate of two gallons to the minute.

PLANTS AND ENEMIES.—It contains Bermuda grass and a few bull-frogs.

FOOD.—The fish are fed once every day with garden truck, table scrap, boiled corn and peas.

GROWTH.—The old ones nearly all survive, and weigh almost 2 pounds each. I am partial to the scale carp.

REPRODUCTION.—They had a few young ones last summer. This summer there are any quantity.

DIFFICULTIES.—I think the pond is too small and too deep.

MISCELLANEOUS.—I am surprised that every housekeeper does not raise carp. I am satisfied they will do well in almost any Southern waters. As to their being a game fish, there is nothing in our waters that equals them.

5. *Statement of Jas. H. Savage, Cross Plains, Calhoun Co., Ala., Dec. 26, 1882.*

GROWTH.—About February last I received 23 small carp, 7 of which were dead, having been in the hands of the express company four or five days. They all sickened and died except one as soon as we got them into fresh water. I kept that one in a 40 by 40 pool of fresh water, and it now weighs $1\frac{1}{2}$ pounds.

6. *Statement of William I. Dunn, Sepulga, Conecuh Co., Ala., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1882. The pond in which I placed them is 20 feet square, has a very muddy bottom, and is furnished with tolerably cool spring water; the quantity is not large.

PLANTS.—It contains native grasses, but no water plants, and has grass and trees growing around it.

ENEMIES.—Small creek fish occur in the pond and some frogs and turtles.

FOOD.—I give them bread and scraps from the table once in three days.

GROWTH.—I do not know whether they have spawned or not. They were 8 inches in length eight months ago, since which time I have not seen them on account of the murkiness of the water.

7. *Statement of Mrs. L. K. K. Hogan, Selma, Dallas Co., Ala., Sept. 15, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp I received last March are doing finely, though several of them died just after their arrival, probably due to being hurt on the way. My pool is fed by four springs and is beautifully situated.

FOOD.—I fed them every day with bread, biscuits, crackers, coarse hominy, and candle-flies (caught in soap-suds near the lamp every evening), and cut-worms from the garden. They seem to like candle-flies and cut-worms better than the other food. The large carp come to the surface to eat them.

GROWTH.—Those that survived the journey have grown immensely, and are more than a foot long.

REPRODUCTION.—The last week in June I found the pool full of young fish, exceedingly small; now they are about 2 inches long. There seem to be three sets of them. They are very gentle. I have never been able to find any eggs, but don't know how to look for them.

MISCELLANEOUS.—I have another pool 30 by 45 feet, containing trout. The water is very clear. I can see them at any time of the day. Some 500 or 600 of these trout were taken from a large pond and brought to my pool. I take great interest in fish-culture.

8. *Statement of R. B. Dunlap, Boligee, Greene Co., Ala., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp about four years ago, and placed them in a pond covering one acre, which has a bottom half of black muck and half of gravel and sand. A three-fourths inch stream of water enters it from an artesian well; it becomes very warm in summer.

PLANTS.—There is a species of Bermuda grass in it, which grows very high.

ENEMIES.—It also contains perch, bull-frogs, and a few turtles and minnows.

GROWTH.—I do not feed them, and they have produced no young that I have seen.

I am afraid that they are all of the same sex. I have 13 old ones, which all seem to thrive, and one of them, which I weighed last October a year ago, weighed 6 pounds.

9. *Statement of Greene B. Mobley, Eutaw, Greene Co., Ala., Sept. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—November 11, 1879, I received 21 carp, 2 of which died. The remainder were put into a pond, with a muddy bottom, covering about one-third of an acre, and having a depth of from 4 inches to 6 feet. The pond is formed by a railroad embankment over a marsh, and cannot be drained. The marsh is caused by springs.

PLANTS.—The common swamp grasses grow around it.

ENEMIES.—I find in it some trout, an abundance of bream, and frogs and turtles.

FOOD.—I fed them often, for the first year, with corn-bread and crackers. Since then I have not fed them much.

GROWTH.—I have been unable to catch any of the large ones, but I can see them occasionally; they will weigh from 12 to 18 pounds. The young ones are of all sizes, from an inch long to from 6 to 8 pounds' weight.

REPRODUCTION.—I do not know how many young they have produced; but I have eaten several hundred, commencing in 1881.

STREAMS STOCKED.—I am satisfied that the creeks and branches are stocked below this pond. I recently saw a carp 12 inches long that was caught 2 miles below.

MISCELLANEOUS.—The lack of a good pond, capable of being drained, has been my most serious difficulty. I have now purchased an excellent pond $4\frac{1}{2}$ miles from town, most one-quarter of a mile long, 200 yards wide, and with a depth varying from 4 inches to thirty feet. I should like to get 20 of each variety of the carp to stock this pond.

The success of carp in this section is assured. In a few years the carp, in my opinion, will be the predominant fish here in all our ponds with muddy bottoms.

10. *Statement of James E. Webb, Greensborough, Hale Co., Ala., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 2 carp alive out of a lot of 25 or 30 sent by express in June, 1881; and 10 out of a second shipment in March, 1882. I got them for Mr. A. F. Flynn, who put them in a pond 60 feet square, with a depth ranging from $2\frac{1}{2}$ to 5 feet. The bottom of the pond is muddy, and some boxes of gravel have been put on it. The supply of water comes from a spring, and is very cold; the inflowing stream is of the size of an inch.

PLANTS.—Water-cress and wild grass-head containing grass seed are found in the pond.

ENEMIES.—There are no other fish in it, and I have tried to keep it clear of frogs. I have had difficulty in protecting the carp from hawks.

FOOD.—They are given corn-bread, about half done, and worms once every day.

GROWTH.—The old ones are from 14 to 16 inches long and 4 inches thick, and will weigh 2 pounds. The young ones are from a pin's size to 2 inches long.

REPRODUCTION.—They have produced a great many young.

11. *Statement of M. Wilkins, Faunsdale, Marengo Co., Ala., July 12, 1882.*

GROWTH.—I received 20 carp, averaging about 4 inches in length, and put them in my pond on December 12, 1881. They have done splendidly, the remaining 9 being from 1½ to 2 feet long.

12. *Statement of M. S. Gilmer, Matthews, Montgomery Co., Ala., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in 1881, 1882, and 1883. I placed them in a pond measuring 20 by 200 feet, with a muddy bottom, which overflows occasionally in winter. The water is warm from April to October. There are none of the 1881 lot left now, and but 6 of the 1882 lot. All of those of 1883 (60) are still left. I have now put all the carp in our creeks, and would like to get as many more this winter as possible.

PLANTS.—The pond contains Bermuda grass.

ENEMIES.—The crawfish in it were a great annoyance, but I have exterminated them.

GROWTH.—The carp are all of the same size; seem not to grow any the second year. They weigh about one pound each.

13. *Statement of H. M. Bush, Montgomery, Montgomery Co., Ala., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I have received 26 carp. The pond has a sandy bottom, is covered with sediment, and measures 80 feet up to 120 feet. There is water enough to fill a 6 inch pipe of continuous flow, and it averages 67°.

PLANTS.—Water grasses grow around the edge of the pond.

ENEMIES.—It contains bream, red-horse, perch, and some frogs and turtles.

FOOD.—We try to feed the carp daily with corn-bread, slightly baked, and slips of meat.

GROWTH.—I should judge there are 20 or more of the original lot that are still alive from the number we see when feeding them. They are from a foot to 16 inches in length.

DIFFICULTIES.—We see no young fish which seem to be carp. There has been no difficulty with the carp except that we have not seen them increase as we expected. The fish seem to be livelier this year than heretofore. We have placed brush in the water for the spawn to attach to.

[Of course there are no young carp when he has so many bream, red-horse, perch, frogs, and turtles to eat all the eggs.—EDITOR.]

14.—*Statement of J. M. Falkner, Montgomery, Montgomery Co., Ala., Sept. 19, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 22 carp, and in the fall of 1881, 20 more. I kept the first lot in a small pool for about a year, and lost all but 6. The 6 remaining, together with a second lot, I put in a small pond formed by excavating the earth below a small spring and constructing a dam. It is about 60 feet wide, and the dam is 66 feet from the spring. The supply of water is about 3 gallons per minute. The bottom is a mixture of sand and clay, and there is no vegetation in the pond. The pond has an average depth of 3 feet, and the carp keep it muddy all the time.

ENEMIES.—The few frogs which have appeared have been killed as soon as possible.

FOOD.—The fish have been fed daily with bread, cooked potatoes, cabbage, beans, lettuce, and occasionally with the refuse from dressing poultry.

GROWTH.—I think I lost but one of those placed in the pond. They will not, in my opinion, average over a pound and a half in weight.

REPRODUCTION.—There are no young ones in the pond, and I have not been able to discover any spawn, though I have placed brush there and everything I thought necessary. I attribute their failure to spawn to the smallness of the pond and to the lack of vegetation.

MISCELLANEOUS.—I have nearly completed a new ten-acre pond with an abundant supply of water, grass, &c. I shall also prepare several small breeding ponds, so as to hereafter watch their growth and movements more accurately.

15. *Statement of J. J. Shaver, Pine Level, Montgomery Co., Ala., Aug. 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 in December, 1882. The pond in which I placed them covers an area of about three acres, and has a muddy bottom;

the surrounding soil is sandy. The pond has no inlet, being supported by springs in its bed. It is about 3 feet deep, on an average, and the water is not cold, but mild.

PLANTS.—It contains bushes. Their name is unknown to me.

ENEMIES.—There are in it pike, perch, catfish, trout, and roaches; also toads, bull-frogs, hard-shell turtle, and terrapin.

FOOD.—I give them bread about every two days.

GROWTH.—The old ones are about 8 inches long, and the young ones about 4 inches long.

REPRODUCTION.—Judging from their appearance in a drove I think there are about 100 young ones.

DIFFICULTIES.—I think they should have produced better, if no disease has been among them and they have not been eaten by other fish.

16. *Statement of A. G. Barnes, Gainesville, Sumter Co., Ala., Nov. 7, 1881.*

DISPOSITION OF CARP RECEIVED.—The carp received in January, 1881, I put in an artificial pond, 60 by 80 feet, having a depth of 4 feet in the center and 18 inches around the edges. It has a sandy bottom, covered with 2½ inches of sediment, and leaves that fall from the trees which shade the pond. The spring that rises in the bottom of the pond supplies it with water, the surplus water running out at one side.

ENEMIES.—On May 12, 1881, I found that the perch which inhabited my pond had destroyed all of my carp but 7.

GROWTH.—When I examined my pond on May 12, 1881, I found that the 7 carp had made a wonderful growth, the largest being 10½ and the smallest 8½ inches in length. On July 20, 1881, the largest had attained a length of 15 inches, and the smallest 12½ inches. October 20, 1881, the largest were 16½ and the smallest 15 inches long. From the rapid growth my carp have made, I am inclined to believe that all the conditions necessary to their successful culture exist in my pond.

17. *Statement of A. G. Barnes, Gainesville, Sumter Co., Ala., April 21, 1882.*

GROWTH AND REPRODUCTION.—Those received January 12, 1881, are now 20 inches in length. The first indications noticed of their breeding occurred March 19, 1882. Eggs found attached to the grass were taken and placed in a tub. The young were seen on the seventh day afterwards; the weather cool and wet. Again, on the 3d instant, I saw them deposit their eggs. A lot of these eggs placed in a tub hatched out on the fourth day; the weather warm and pleasant; the water during the day indicating about 70°. Those hatched on the 26th of March are now 1½ inches in length. The prediction that they would spawn in the South in their second year has proved true. My carp have made more rapid growth and have propagated a year sooner than in their native waters.

MISCELLANEOUS.—I have not tested their eating qualities, but as my pond is now well stocked, I propose to try one or two of my breeders as soon as they recuperate from the exhaustion necessary to spawning. My success so far has been eminently satisfactory, and now, when I find by test that I have, in addition to his other good qualities, a good food-fish, I shall be more than compensated for my trouble, expense, and waiting. With my experience I do not hesitate to say the Southern waters are peculiarly well adapted to the propagation and rearing of carp.

18. *Statement of Marcus Parker, York Station, Sumter Co., Ala., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp November 26, 1879. The dam to my pond broke soon after I received them, and I lost every one.

19. *Statement of Dabney Palmer, Snow Hill, Wilcox Co., Ala., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881, but they were frozen, and I think they died. My pond is 70 yards square and 5 feet deep, with a muddy bottom. About 100 gallons of water enter it per hour. I don't know the temperature, but it is about the same as that of our Southern creeks. Please send another lot of carp.

PLANTS.—There is a water-grass growing around the edges, of which I don't know the name.

ENEMIES.—There are bull-frogs and toads in it in the spring.

ARIZONA.

20. *Statement of Thomas G. Greenhaw, Phoenix, Maricopa Co., Ariz., July 14, 1884.*

GROWTH.—The first carp sent me have done very well, some having attained a weight of from 3 to 4 pounds. One lot of the carp spawned the last of June.

21. *Statement of C. L. Whitney, Pinal, Pinal Co., Ariz., Aug. 18, 1884.*

GROWTH.—The carp received last winter have done finely. I have one dozen which are each a foot or more long, and will average $1\frac{1}{4}$ pounds. An artesian well supplies my pond with water, which is always of a given temperature. The water runs through the pond continually.

ARKANSAS.

22. *Statement of Enos W. Smith, Arkadelphia, Clark Co., Ark., March 17, 1884.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received January 6, 1882, I put in a pond 45 by 90 feet.

ENEMIES.—The carp are only troubled by crawfish, which, at this season of the year, disturb the banks of the pond.

GROWTH.—Last October I caught a carp that weighed over 5 pounds.

REPRODUCTION.—The pond is full of young of all sizes.

MISCELLANEOUS.—Below the pond in which the carp are kept I am constructing another, which will cover more than $1\frac{1}{4}$ acres. Water will be let in next week.

CALIFORNIA.

23. *Statement of Richard Threlfall, Washington Corners, Alameda Co., Cal., Feb. 6, 1883.*

REPRODUCTION.—I placed 50 carp in a one-acre pond in April, 1881. On drawing the pond in January, 1882, I found 1,480 carp. I enlarged the pond to 2 acres, and drew it in January, 1883, and found 5,000 carp, the largest weighing 4 pounds.

24. *Statement of Wendall Dages, Big Trees, Calaveras Co., Cal., Jan. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I have a pond of about half an acre, and about 20 inches of water running into it. The water is rather cold, as it comes through a cañon running nearly east and west and densely timbered. It is fed by springs, and has an altitude of 4,500 feet above the sea. I put evergreen boughs of the yew tree into the pond. Last spring the fish seemingly were spawning among the boughs, but they afterwards went into deep water and did not come out for nearly two weeks.

FOOD.—They did not eat anything during that time that I could notice. They were always together, and nearly always in the same place.

MISCELLANEOUS.—I have been cultivating carp two seasons, but they have not increased yet. There are a great many engaged in carp-culture in California, where, in the valley, they pump water with wind-mills to supply their ponds. In the mountains some have extraordinary success and others about the same as mine.

25. *Statement of Julius Weyand, Little Stony, Colusa Co., Cal., March 29, 1883.*

GROWTH AND REPRODUCTION.—My last year's product of scale carp was as follows: from 7 pair I have 341 carp from $3\frac{1}{4}$ to $4\frac{1}{4}$ inches long.

DISPOSITION OF YOUNG.—I drained the first pond on the 10th, and put the minnows into a new pond. I have not lost a fish since I have had the carp.

26. *Statement of J. H. Pettit, San Bernardino, San Bernardino Co., Cal., Feb. 21, 1881.*

DISPOSITION OF CARP RECEIVED.—On April 16, 1879, I put 89 scale carp, measuring from $2\frac{1}{4}$ to 4 inches, and 5 carp, measuring from 6 to $7\frac{1}{4}$ inches in length, in a little pond, which I subsequently enlarged to 1 acre and 3 rods. Mine is a sulphur pond, newly excavated; was strong with iron, and the ground was black with alkali. The fish, winds, and caving of the banks keep the water very muddy. My 94 scale carp cost me \$100.

GROWTH.—In February, 1880, one of my old carp measured $24\frac{1}{4}$ inches in length, and the ones I sold in November weighed from 6 to 7 pounds. A friend at Compton, Los Angeles Co., writes: "I placed in my pond on February 20, 1880, 10 of the carp I obtained from you. On December 5 I drew off my pond and caught and carefully weighed my carp. They measured from $18\frac{1}{4}$ to 23 inches in length, and weighed from 4 to 7 pounds, the largest measuring 15 inches in circumference, and the aggregate weight of the 10 being 51 pounds."

REPRODUCTION.—To my great surprise, I had 4,500 carp in my pond in the fall of 1879, and in the following February they were from $2\frac{1}{4}$ to 15 inches long.

AN EXPERIMENT IN MINERAL WATER.—Dr. Smith put 4 small carp in a pond of mineral water in which other fish died immediately, and in the following November, in the presence of his wife and friends, caught one which weighed $6\frac{1}{2}$ pounds, and measured 23 inches in length and 14 inches in circumference.

27. *Statement of the California Fish Commissioners, San Francisco, Cal., 1880.**

DISTRIBUTION OF CARP RECEIVED.—Of the 300 carp brought to California December 29, 1879, but 2 perished. Sixty were placed in a public lake near Sacramento; the remainder were placed in a private pond of R. R. Thompson, in Alameda, who promised to protect them and allow the State to remove them and the increase whenever desired. We have no report of those placed in Sutterville Lake; probably none of them have been caught. Those placed in the private pond at Alameda are doing well. These fish were hatched from the egg in June, 1879, and when received averaged about two inches in length. During the month of June, 1880, 12 were forwarded to Mare Island.

GROWTH.—In June, 1880, one year from the time they had left the egg, they had grown to a length of more than 8 inches. The increase in the size of the fish and their fine appearance make it certain they have found congenial homes. They were probably too young to have spawned last year. The 8 carp of another variety brought to this State in 1872, from Hamburg, by Mr. J. A. Poppe, have increased largely and have been widely distributed. Whenever planted in our water they have grown rapidly and multiplied in numbers. No other variety of fish has been so long under the care and protection of man, and no other seems so capable of domestication.

HABITS.—At the beginning of the cold season carp seek deeper water, making holes in the mud, where they pass the winter in a kind of sleep. They make a cavity in the muddy ground called a "kettle." In this they pass the time until spring, huddled together in concentric circles, with their heads together, the posterior part of the body raised and held immovable, scarcely lifting the gills for the process of breathing, and without taking a particle of food. It is a most striking fact that the carp, though it does not take any food during this winter sleep, does not diminish in weight.

MISCELLANEOUS.—The carp will certainly thrive in the interior waters of this State, with the possible exception of the lakes near the summit of the Sierra Nevada, where the water in summer may be too cold.

28. *Statement of Joseph D. Redding, Cal. Fish Commission, San Francisco, Cal., Apr. 5, 1884.*

EDIBLE QUALITIES.—A gentleman friend of mine, and quite an epicure, invited me to a carp dinner. We had carp cooked in five different ways—boiled, broiled, fried, stewed, and baked. Under the head broiled I include the method, No. 335, on page 326 in U. S. F. C. Bulletin, 1883, which was by far the most delicious. In each instance the carp were properly cleansed for a period of several days by being kept in pure water constantly changed. It is to my mind a first-class food-fish, if properly treated, and should in time become to fish what potatoes are to vegetables.

29. *Statement of Levi Davis, Forestville, Sonoma Co., Cal., 1883.*

EDIBLE QUALITIES.—Carp is an excellent and cheap food, the quality of which I consider equal to the trout.

30. *Statement of Alfred La Motte, Sonoma, Sonoma Co., Cal., 1883.*

EDIBLE QUALITIES.—The table qualities of the carp are good, not equal, of course, to the brook trout, but superior to most of our river fishes.

COLORADO.

31. *Statement of Addison Baker, Denver, Arapahoe Co., Colo., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—About three years ago I received 25 carp, which I placed in a natural pond on Platte River bottom. It is 800 feet long, from 50 to 100 feet wide, and from 2 to 6 feet deep, with a gravelly bottom overlaid with black muck and moss. The water in the pond is spring water, but rises and lowers with the Platte River, which is near by, and nearly 10 miles from the foot of the mountains. When the river is low I turn in water taken from further up the stream. The temperature of the water is about 60 degrees.

* Report California Fish Commissioners, 1880, pp. 10, 11.

PLANTS.—The pond contains numerous plants belonging to this mountain region, and also a kind of moss that grows nearly to the surface of the water.

ENEMIES.—I had sun-fish in the pond at first, but, since, other mountain fish have run in through the filling pond from the river—suckers, dace, catfish, and bull-heads. Muskrats have made considerable trouble.

FOOD AND GROWTH.—I have given the carp no food. They are now, I should think, from 6 to 8 inches long, 3 or 4 wide, and from 4 to 6 ounces in weight.

32. *Statement of J. M. Broadwell, Denver, Arapahoe Co., Colo., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago this summer I received 5 mirror carp and 10 scale carp through W. E. Sisteý. I at first kept them in a pond which was fed by an abundance of cold spring water from the bottom, and had an average temperature of about 60°. This spring I made a pond about 300 by 500 feet large, and about 3 feet in its deepest part, with warmer water and a muddy bottom, to which I removed the fish.

PLANTS.—The first pond contained but little vegetation, but in the new one there are many kinds of plants, moss, and tule [or bulrush, *Scirpus lacustris* L.], and other grasses.

ENEMIES.—There are no other fish in the pond, but some frogs.

FOOD.—I only feed them the offal from trout ponds, which is liver, lights, &c.

GROWTH.—When I moved them this spring the largest ones weighed 4 pounds and the smallest ones 2 pounds. There were 14 of the original fish left. The mirror carp were much the largest. There were but 5 young ones then, and they all seemed to be of the scale kind. They were about 6 inches long in April. I think they are doing very well since changed to the new pond, and the largest fish will weigh 6 pounds now.

REPRODUCTION.—They did not thrive in the cold water; the young seemed to hatch, but did not live. Now at the present time there are or seem to be a great many young from 1 to 4 inches long.

DIFFICULTIES.—The only difficulty was that cold water.

33. *Statement of Henry Lee, Denver, Arapahoe Co., Colo., Oct. 5, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in December, 1880. My pond covers 50 acres, has a muddy bottom and an average depth of 7 feet. It is filled from an irrigating ditch, has no outlet, and is of medium warmth.

PLANTS.—It contains quite a variety of aquatic plants, one of which is called "sea-weed."

ENEMIES.—The pond contains black bass and suckers.

GROWTH.—The carp are very large, but none have been caught yet. I have not fed them, nor have I seen any young.

DIFFICULTIES.—It is a large body of water, and I have not provided any means for drawing it off.

34. *Statement of George F. Wortmann, Denver, Arapahoe Co., Colo., Sept. 17, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received 8 carp and put them in a pond 60 feet square, and 5 feet deep. The clear water is from a creek, and stands at from 60° to 75° in summer and freezes from 7 to 13 inches thick in winter. The first winter was so cold that it froze the little pond nearly to the bottom and killed the fish. I have built another pond of 3 acres and 6 feet deep for more carp. Some others have carp in this vicinity, but will not sell them for less than \$5 apiece.

35. *Statement of J. Hetzel, Longmont, Boulder Co., Colo., July 16, 1883.*

DISPOSITION OF CARP RECEIVED.—I shipped some carp 4 inches long from California, 14 months since. The reservoir in which some of them have been kept covers 20 acres, and is from 6 inches to 4 feet deep. It has no feeders from October to April. The water froze so as to leave not over 20 inches open during cold weather. Another lake had still less, and covered no more than a quarter of an acre; still there was no loss. The bottom is composed of clay and mud. The ice was cut open every day as long as it lasted.

GROWTH AND REPRODUCTION.—We do not feed the carp, which are now 2 years old and are spawning. They measure 16 inches, and weigh 3 pounds at the present time.

DIFFICULTIES.—Some parties who did not cut the ice on their ponds in winter lost all their fish. Mr. Church, I am told, lost everything, carp and all. Others lost cat-fish.

MISCELLANEOUS.—We look forward to the time when fish in this irrigating country will be very plenty, as our reservoirs seem to be just the place for them.

36. *Statement of George De La Vergne, Colorado Springs, El Paso Co., Colo., Nov. 18, 1880*

FOOD.—My carp received no artificial food, but subsisted on the natural production of the pond.

GROWTH.—When transferred to the feeding pond, about the 20th of last May, my carp were from 1½ to 2½ inches long. On the 26th of the following July they were 7 inches long. On September 2 I transferred them to their winter quarters, and they then measured 9½ inches in length, and were strikingly plump; others had made a proportionate growth.

37. *Statement of George De La Vergne, Colorado Springs, El Paso Co., Colo., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a shipment of carp in the fall of 1879, 18 of which survived, and were placed in the ponds. One pond measures 75 by 100 feet, is from 3½ to 4 feet deep, and has a sandy loam bottom. Connected with this is a pond one-third of an acre in extent and from 6 inches to 2½ feet deep, with a bottom of loam and turf. A strong spring 200 yards distant supplies the first pond, from which the water backs into the second. The temperature of the water in the ponds is 60° in summer and in winter 35°. The water freezes, but not where the supply comes in.

PLANTS.—The ponds contain Colorado wild grass, two varieties of indigenous moss, dock, rushes, &c.

ENEMIES.—There are some frogs; I sometimes kill a mud-turtle, and I am not altogether rid of suckers. A fish-hawk took one of the original fish, and one died from wounds the cause of which is unknown.

GROWTH.—They get their own food. The old ones, of which there are 16 now left, are from 18 to 24 inches long, and are bulky. They are remarkably healthy. The young vary from the size of a steel pen to 12 inches long.

REPRODUCTION.—There probably were from 1,500 to 2,000 young last spring. I think there are very many fry now.

SALES.—I sold 25 young fish last spring.

DIFFICULTIES.—The only great difficulty was the drawing down of the water and stranding of the young in the moss, weeds, &c., on the margin of the ponds.

38. *Statement of C. E. Burris, Monument, El Paso Co., Colo., Sept. 27, 1880.*

GROWTH.—The carp have done finely, increasing their size threefold.

39. *Statement of George L. Sanborn, Morrison, Jefferson Co., Colo., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—Mr. Harriman, of this place, received carp 3 years ago, which were placed in a small pond 100 feet long and 40 feet wide, fed by a springs. The water is too cold for carp; the average summer temperature is 50° Fahrenheit.

PLANTS AND ENEMIES.—Grass grows on the edge of the pond and there are frog and American carp in it.

FOOD.—The fish are fed with curdled milk.

GROWTH.—We have tried to get the original ones, but failed to find them. The young ones grow slowly on account of the water being too cold.

REPRODUCTION.—A great quantity of young have been produced, but they are mostly mixed with the American carp.

DISPOSITION OF YOUNG.—Some of the young fish have been given to neighbors who have warmer lakes, and are doing well, some of them now weighing 2 pounds.

MISCELLANEOUS.—You see that the carp have not had fair treatment. I have now a lake of 40 acres, of which the temperature is at present 80° Fahrenheit, but do not want to put in the American carp, and would like this summer or fall to get a lot of German carp.

40. *Statement of Hermann Hibsche, Leadville, Lake Co., Colo., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880 I received 8 carp, which were put into a one-acre pond from 2 to 3 feet deep, with a muddy bottom, near Denver, Colo. The pond is under the care of another man, and I suppose it is not large enough to give them full chance.

PLANTS.—The pond is full of worms and different plants of which I do not know the names.

ENEMIES.—There are no other fish or turtles, but some few frogs.

FOOD.—The carp have not been fed much. Liver and lights are all they have had so far, and only once or twice a week, and they do well with this food.

GROWTH.—The original fish weigh 8 or 9 pounds. The first young are 5 or 6 inches long, and the last are $1\frac{1}{2}$ inches long.

REPRODUCTION.—It is hard to say how many young they have produced. The water is full of fish. There are four broods.

41. *Statement of John Sheldon, Fort Collins, Larimer Co., Colo., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago last winter, I think, I received 15 very small ones from the fish commissioner at Denver. One year ago last winter I received 20 from you. I cut a hole through the ice of my lake and put them in, and have never seen one since. The lake covers about 15 acres, and is about 10 feet deep. The bottom is a dry loam, a good wheat soil, but still it will bear up a horse well, even when covered with water. Water is let in from an irrigating ditch which is 12 or 14 feet wide on the bottom, and from $2\frac{1}{2}$ to 3 feet deep. There is no outlet that I now use, but I could have one if I desired.

PLANTS AND FOOD.—The principal plant is a kind of "sea-weed" that looks some like clover in its leaves. It grows nearly all over the lake and up to the surface, even in 10 feet of water. On this the fish principally feed and keep very fat.

ENEMIES.—There are in the lake sunfish, called by some rock bass, which are sweet and solid all summer and bite a hook quickly; small cat-fish, red horse, shiners, and the finest suckers I ever saw, some weighing over 4 pounds.

DIFFICULTIES.—I do not know what to expect. I am catching out sunfish almost daily, and have caught several barrels of suckers that run up the ditch to the head gate, but have seen no carp. I fear the sunfish have eaten up all the little fellows, and I should much like to have 25 carp about 6 inches long, that the other fish could not master. The former ones may be in the lake, but I suppose I would hook them out occasionally if they were.

42. *Statement of B. H. Eaton, Greeley, Weld Co., Colo., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—Over two years ago I received some carp and put them in a canal. The water was so strongly alkaline that they all died. If I can secure carp again I will put them into a lake that has had water in it for years, and now contains sun-fish and small catfish.

CONNECTICUT.

43. *Statement of Amos Stone, Danbury, Fairfield Co., Conn., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in 1881 and put them in a nice spring-water pond with an average depth of 3 feet.

PLANTS AND ENEMIES.—It contains water-grasses and other water plants, and also trout, pike, bass, perch, and bull-heads.

MISCELLANEOUS.—I know nothing concerning the old or young, but think they will do well here. I do not feed them.

44. *Statement of Edmund O. Hurlbutt, Georgetown, Fairfield Co., Conn., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881, and put them in a pond situated on a high hill. It covers 3 acres and is fed by springs; has a depth of from 4 to 5 feet, and is surrounded by ledge and woods.

PLANTS AND ENEMIES.—There are no fish of any kind in the pond, perhaps a bull-frog or so, but no turtles. There are also swamp grass and some weeds in the pond.

FOOD.—I feed them with corn and bread.

MISCELLANEOUS.—During my absence in the West last April the pond overflowed and the fish are probably lost. I am fitting it up again and would like another supply.

45. *Statement of Samuel J. Miller, Georgetown, Fairfield Co., Conn., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp about December, 1880, and placed them in a small pond. A freshet overflowed the following spring and the carp probably went out, as they have not been seen since. They may still be in the river.

GROWTH.—Mr. Gilbert received 200 carp about the same time. I have heard of 3 of them being caught by hook this spring. They weighed from 4 to 5 pounds each.

46. *Statement of G. T. Osborn, Georgetown, Fairfield Co., Conn., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—About January, 1881, I received some carp and put them in a spring, 3 by 8 feet. Last summer I built a pond covering a quarter of

an acre, 3 feet deep, with muddy bottom. It is fed by a spring; is warm in winter and cold in summer. Wild grass grows in it.

MISCELLANEOUS.—Last summer I had 7 or 8 carp; but since I have built the pond I have not seen any, and do not think they have gone into the pond.

47. *Statement of John B. Knapp, Stamford, Fairfield Co., Conn., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—In October, 1880, I received about 30 carp and put them in Crystal Lake. It contains about 4 acres in winter and 1 acre in summer. Its depth is from 2 to 5 feet in winter. A good-sized brook of pure, cool, spring water flows through it.

PLANTS.—It contains coarse grass and sweet flags.

ENEMIES.—There are a great many frogs, some brook trout, and a few turtles in it.

GROWTH AND REPRODUCTION.—The old ones appear to weigh from $\frac{1}{2}$ to 1 pound, and there seem to be a considerable number of small ones, which are about the size of the original ones. They have not increased in size as I anticipated. I have not taken any out nor have I fed them.

48. *Statement of Wm. T. Curtis, Stratford, Fairfield Co., Conn., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp November 8, 1880, and put them in a pond containing $\frac{1}{2}$ of an acre, 6 feet deep in the deepest part, and a muddy bottom. Most of the year a small stream runs through it, and it has never been over 8 inches below high-water mark.

PLANTS.—The pond contains white pond lilies and many other plants and grasses bearing seeds.

ENEMIES.—It contains no other fish, but some frogs and perhaps turtles. During the first winter muskrats lot out the water, and I suppose the young carp perished, as I have seen nothing of them since.

49. *Statement of Hon. Daniel C. Birdsall, Westport, Fairfield Co., Conn., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp November 29, 1881, and placed them in an artificial lake, about 2 acres in area, varying from 1 foot to 10 feet in depth, with a muddy bottom. The brook running through it overflows the dam nine months of the year, and is of the usual temperature of the atmosphere. There are no water plants, grasses, turtles, frogs, nor other fish in the water.

FOOD.—From May until winter I feed the carp with garden refuse, bread, rye, and dough. In winter I give them nothing.

GROWTH.—I have seen only one of the old ones of any considerable size, and this was from 12 to 16 inches long, and evidently spawning. I have seen no young yet. I will draw off the water this fall and make a fuller report.

50.—*Statement of S. Harrison Carrington, Bristol, Hartford Co., Conn., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp, through Dr. William M. Hudson, November 4, 1880. My pond covers about half of an acre, has smooth bottom and about 6 or 10 inches of mud. A stream of pure spring water, cold enough for drinking, flows through it in quantity enough to fill a 4-inch pipe.

PLANTS AND ENEMIES.—It contains some white lilies, covering about one-third of the pond, and common grass around the edges, and also some trout and frogs.

MISCELLANEOUS.—I have never fed them and have never seen them since putting them in, but have no reason to suppose but that they are all alive. Mr. Fenton, at the State hatchery, told me that he had never seen his except the one they caught last September, weighing 2 $\frac{1}{2}$ pounds. They were of the same lot as mine, and had only 20 inches of water over the mud, while mine have 5 feet, and he thought mine would weigh from 3 to 3 $\frac{1}{2}$ pounds. I have tried various kinds of bait, but as yet have not been able to catch any.

51. *Statement of Chas. S. Mason, gardener of Miss Sarah Porter, Farmington, Hartford Co., Conn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 10 scale carp and 10 leather carp. They were placed in a pond about $\frac{1}{2}$ of an acre in size, and with a depth of 5 feet in the deepest part, and a muddy bottom. The pond is fed by springs, and overflows only occasionally. In winter it freezes to the depth of a foot. The temperature July 24 was 80°.

PLANTS.—It contains white water-lily (*Nymphaea odorata*), *Nelumbium luteum*, cat-tail flag (*Typha latifolia*), bulrush (*Scirpus lacustris*). Previous to the introduction of the

carp we were very much troubled with a confervæ, but since it has been steadily on the decrease. This summer it has not yet shown itself on the surface. I imagine it is in a measure due to the carp feeding on it.

ENEMIES.—The pond contains frogs, turtles, and bull-heads. The greatest difficulty has been to keep the bull-heads from eating the carp eggs. I found upon watching them that they followed the carp around, and as they seemed to be busily eating something, I concluded that the carp were spawning and the bull-heads eating up their spawn. In order to stop this, I purchased a few feet of wire netting and made a trap like an eel pot, and baited it with bread and meat. The result is that I have caught over one thousand of the depredators, thus thinning them out quite perceptibly.

FOOD.—We feed the carp on the waste from the table—such as bread, rice, hominy, oatmeal, and occasional scraps of meat.

GROWTH.—I should think the old ones are 15 inches long and weigh 4 pounds. I have counted 7 of them, and think there are more.

REPRODUCTION.—They have produced hundreds of young, which are of all sizes, from 2 to 9 inches in length, weighing from an ounce up to a pound or more. They did not spawn until late in the summer of 1881. We now have in the pond three different sizes of young carp, measuring from 2 to 9 inches in length. It is a curious fact, although we received both scale and leather carp, we have failed to find any pure leather carp among the young. There are pure scale carp in abundance and a plenty of what seems to be a cross between the two, resembling one figured in the *Scientific American* some time ago and called "specularis" or mirror carp. They are very handsome. One noticeable feature of these carp is their tameness during their spawning season. It was an easy matter to observe them. Since that time they have been quite shy, seldom showing themselves. Their manner of spawning seems to me to be rather peculiar. They dart in among the grass on the margin of the pond or among the water lilies or cat-tails, turning themselves on their sides and making a great splashing and commotion. In such times they go in twos and threes.

52. *Statement of Frederick Fenton, Poquonock, Hartford Co., Conn., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp which I received in November, 1880, I put in a pond of 50 acres, 20 feet deep, muddy bottom, and warm water.

PLANTS AND ENEMIES.—It contains water-lilies, frogs, and turtles. I let the carp seek their own food, and have not seen one since they were placed in the pond.

53. *Statement of Henry J. Fenton, Poquonock, Hartford Co., Conn., Jan., 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, a few carp, from 2 to 3 inches long, were placed in a small pond near a pond in which breeding-trout were kept. The pond is not more than 2 feet deep, and at the bottom there are 2 feet of black mud.

PLANTS.—In summer the vegetable growth in the pond is abundant, and the green plant known as frog-spittle is so luxuriant as to cover the entire pond.

FOOD.—The carp have never been given any artificial food.

GROWTH.—The water was drawn August 19, 1882, and 3 of the carp were captured, the largest of which weighed 33 ounces, the smallest 21 ounces, and the third 28 ounces. On the same day a carp was taken from an adjoining pond, having been placed there in December, 1881, and found to weigh 11 ounces. While the growth of these carp is not equal to that reported from some of the Southern States, yet 2 pounds in weight in 2 years cannot be regarded as a failure, especially when it is considered that they have had no food whatever except what they have found growing in the pond.

54. *Statement of Henry J. Fenton, Poquonock, Hartford Co., Conn., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp I received in November, 1880, I put in a pond of half an acre, 3 feet deep, muddy bottom, through which flows a good-sized brook during the summer.

PLANTS, ENEMIES, AND FOOD.—The pond contains lilies and brook trout. The fish seek their own food.

GROWTH AND REPRODUCTION.—I have 5 of the original lot, which weigh about 3 pounds each. I have seen some young about 2 inches long, but cannot tell how many.

DIFFICULTIES.—Some of them were troubled with fungus.

55. *Statement of W. A. Stooking, Weatogue, Hartford Co., Conn., Nov. 6, 1883.*

ENEMIES.—The carp in two of the ponds were probably destroyed by the hawks and turtles.

GROWTH.—Of the carp received last year I lost all except 3. I put them in 3 different ponds. On November 4, one weighed $1\frac{1}{2}$ pounds, and measured 13 inches. I think there is no question that many New England farmers could raise carp at much greater profit than is now derived from all their crops.

56. *Statement of Hiram G. Phelps, Windsor, Hartford Co., Conn., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 carp in 1880, and put them in a land-locked pond of 50 acres.

PLANTS AND ENEMIES.—It contains water-lilies and frogs. I let them feed themselves and have never seen one since.

57. *Statement of Caleb Leavitt, Windsorville, Hartford Co., Conn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 fish about two years ago and put 15 in each of 2 ponds. One pond, 10 by 15 rods, became dry, and the fish all died. The other pond, 30 by 40 rods, is fed by springs. No stream flows in nor out.

PLANTS.—The pond contains water-grasses and yellow water-lilies, and other common pond grasses.

ENEMIES.—It also contains bull-heads, frogs, and turtles. Turtles I have never seen, but presume they are there.

MISCELLANEOUS.—I have not fed them, and do not know whether they have spawned or how many there are left.

58. *Statement of D. F. White, Derby, New Haven Co., Conn., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In February, 1881, I received 15 carp in bad condition, and only 9 lived. These are still alive. The pond they were kept in is fed by a spring; is 4 feet deep, and has a muddy bottom. It is 30 by 100 feet in dimensions, and at present is a perfect mass of pond-lilies. Last fall I built a more extensive pond with abundance of water. It does not freeze. It has no frogs, and is a perfect carp heaven.

GROWTH AND REPRODUCTION.—The carp will now weigh $3\frac{1}{2}$ pounds each. I do not know that I have seen any young yet; there may be many. From not being fed they are very shy, and when there is nothing else to protect them from view they have a very handy way of using the muddy water for that purpose. I have seen no young, and the frogs may have eaten up the eggs. I have never fed them.

59. *Statement of Harvey S. Hall, Wallingford, New Haven Co., Conn., Oct. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880, and put them in a large pond newly made. In February, or March, 1881, a large freshet carried away the dam and all the fish. I now have 3 ponds connected and supplied with 1,000 gallons of water daily. Their average depth is 3 feet, and the temperature in summer 75° .

PLANTS AND ENEMIES.—They contain flags and coarse grass, and no enemies but frogs. I would like some more carp.

60. *Statement of J. A. Ayres, Mystic River, New London Co., Conn., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 20 carp two years and a half ago. I put them in a green-house tank the first winter, where they nearly all died. The one that was left in the spring I put in my pond, which is 100 feet in diameter and 6 feet deep. A little water flows through it, which is very warm, and the bottom is muddy.

PLANTS AND ENEMIES.—It contains all the water plants and grasses common to this section, as well as gold-fish and eels, frogs and turtles, and the abominable spawning toad, which is my chief nuisance. I have furnished no artificial food.

GROWTH.—The one carp which I have left is now 22 inches long, and I estimate that it weighs 6 or more pounds.

61. *Statement of Leonard V. Greene, Norwich, New London Co., Conn., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880, and 20 more in November, 1881. My pond covers one-half of an acre, averages 4 feet in depth, and has a bottom of clay, mud, and stone. It is supplied by a spring, and the temperature is 75° .

PLANTS.—It contains *sagittaria*, *typha latifolia*, and a fine grass growing on the bottom. A plant with branches of small oval leaves floating on the surface.

ENEMIES.—It also contains frogs and roaches. The latter are very troublesome.
FOOD.—I feed them but little, and then mostly on green corn. I sometimes have given them bread.

GROWTH.—Last October I had 12 left of the 1880 lot. These average from 2½ to 3 pounds each. I have 14 left of the scaleless carp received in 1881, which will average 1 pound each.

REPRODUCTION.—The young which I have taken this season weigh from 2 to 4 ounces each. I cannot say how many young have been produced. They have not spawned this season up to July 29.

MISCELLANEOUS.—I sent E. W. Williams, of Yantic, 12 carp, old and young, in October, 1882. I think, with plenty of food, carp will make much greater growth than any fish we have. In cool water I expect to find the flesh firmer. I hope to distribute some to ponds in the neighborhood this fall.

62. *Statement of W. H. Siems, West Chester, New London Co., Conn., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years next November I received a can of carp and put them in a pond prepared expressly for their reception.

GROWTH.—On drawing the pond in May, 1883, to ascertain my success, I found 5 carp, one of which weighed 4½ pounds. I have not seen the other 4 since, nor have I discovered any spawn in the pond.

EDIBLE QUALITIES.—I have eaten carp in Germany and know their value as a food-fish.

FUNGUS.—In May I also saw 2 large fish with white spots on their backs as large as a silver dollar. Our fish commission claims this to be a fungous growth, which will destroy the carp.

DELAWARE.

63. *Statement of William George Hill, Clayton, Kent Co., Del., Sept. 30, 1882.*

GROWTH.—I find the 3-inch carp put in my pond last fall to be over 18 inches long, and one to weigh over 2 pounds. They exceeded all my expectations. Some of them are scale carp and some mirror carp.

64. *Statement of Zebulon Hopkins, Farmington, Kent Co., Del., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 4 dozen carp in December, 1880, and put them in a spring pond, but it was a failure.

65. *Statement of T. B. Coursey, Frederica, Kent Co., Del., July 25 and Nov. 5, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 40 carp in the spring of 1881, and have received 25 since then. My first pond covered about ¼ of an acre, was from 1 foot to 3 feet deep, with muddy bottom predominating. There is water enough flowing in to fill a 2-inch pipe under a pressure of a foot head. In 1882 I made a new pond of about 1 acre area and from 1 foot to 5 feet deep, to which I transferred 20 of the carp in August, 1882, leaving a few in the first pond. In September there came a freshet and high tide, which overflowed the banks of the first pond nearly a foot and of the new pond several inches. All of the carp left the first pond and went into the creek. Subsequently the bank of the new pond gave way (undermined by muskrats), thus letting out all but 2 feet of water in the deepest place. Some of the carp may have remained there, but of those escaping 5 lodged on the flats, which I secured and put in a temporary place until spring, so as to let the banks of the pond settle and become secure.

ENEMIES.—The pond contained a few sunfish, minnows, and frogs. Minks in the vicinity have preyed upon them.

FOOD.—I gave the carp no food the first 6 months, but since then have given them scraps once a day. They now come to be fed every evening like chickens, and tumble about in the water for the scraps of bread like young porpoises.

GROWTH.—One of the carp received in March, 1881, grew in 5 months to a length of 12½ inches without any food other than that found in the water. August 24, 1882, I had 18 of the original carp, some of them then 16 inches long and weighing 14 ounces. In November, 1883, some of the carp weighed 3 pounds each. I have 24 beauties left.

REPRODUCTION.—August 24, 1882, I found a number of young. This was more than I anticipated, as I did not expect any until the following year.

MISCELLANEOUS.—I think the creek will be stocked with them and be well adapted to their growth. A neighbor living about a mile down the creek caught in his shad seine one which weighed 3 pounds. He ate it, and pronounced it a good fish.

66.—*Statement of S. H. Wilson, Greenville, New Castle Co., Del., Dec., 1882.*

DISPOSITION OF CARP RECEIVED.—The 20 carp, about 2½ inches long, received in the fall of 1881, I placed in my pond, 30 by 50 feet, with 3½ feet of water in the deepest part. It was built originally for an ice pond, and is supplied by a small spring. It has an overshoot in case of floods.

FOOD.—I did not feed nor see them for a year.

GROWTH.—November 14, 1882, I drew off the pond and found 10 fish, the largest measuring 15 and the smallest 11 inches in length. I am very well satisfied, and shall build another pond this winter.

67.—*Statement of Samuel N. Trump, Wilmington, New Castle Co., Del., Jan., 26, 1883.*

DISPOSITION OF CARP RECEIVED.—My pond is only about 40 feet in diameter, in a low place, supplied with spring water. The spring water is a detriment, as it keeps cool and the fish do not grow so fast. About 2 years ago I placed 20 carp, then 9 months' old and measuring about 3 inches in length, in this pond, and subsequently others were put in from time to time.

PLANTS.—The pond is well filled with vegetable growth, common in this part of the country, and there are no conditions other than are found in most ditches and ponds throughout the State.

FOOD.—Little or no attention has been given to them, except to occasionally throw in a handful of stale bread or cake made of corn-meal and flour. I considered a little artificial food needful, because of there being too many fish for the pond, the original 20 being sufficient.

GROWTH.—The largest fish now measures about 16 inches and the smallest about 10 inches in length. I have not weighed any of them, but should judge they would weigh from 1 pound to 1½ pounds each; this, however, is a mere guess, they may weigh more.

MISCELLANEOUS.—I have not a doubt that my carp would have been double the size, by this time, with warmer water, or water supplied from a brook and more exposed to the sun, more food or fewer carp. I am particularly interested in the culture of fish, because I think them an excellent and wholesome food. I believe they may be produced here in unlimited quantities, becoming a cheap and valuable food, and a source of revenue from spots which are now regarded worthless.

68. *Statement of George M. Outlen, Concord, Sussex Co., Del., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago last spring I received 20 carp, and later a few from a neighbor's pond. My pond covers one-half acre, has a depth of from 2 inches to 4 feet, and is amply supplied with water, which is continually changing. Its temperature is 84°.

PLANTS.—There is a good supply of what is commonly called tuckahoe and several grasses.

ENEMIES.—There are a few pike, which we have been trying to catch out.

FOOD.—Believing the pond to contain an abundant supply of food, we have not fed them regularly.

MISCELLANEOUS.—We occasionally see 2 or 3 at a time of about the size of common herring, and do not know whether they have spawned. We take pleasure in watching their gambols.

69. *Statement of G. W. Horsey, Laurel, Sussex Co., Del., Aug. 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I have received carp 2 or 3 times. My pond is 15 by 40 feet, hard bottom, and fed entirely by a spring. The water is 2 feet deep, very clear and pure. There are no fish in it now. I do not know what became of the carp, but would like some more.

70. *Statement of John N. Wright, Oak Grove, Sussex Co., Del., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 18 carp in the fall of 1881, and 30 more in November, 1882. I put them in a small pond covering 30 acres, from 4 to 9 feet deep, with muddy bottom. There is water enough flowing through to run a water-wheel for a saw-mill 8 months in the year.

PLANTS.—There is plenty of grass in the pond.

ENEMIES.—There are turtles, terrapins, pike, catfish, mullet, sunfish, and eels in the pond.

MISCELLANEOUS.—I have not seen any carp since I put them in, though I have looked a number of times. Still, I believe there are carp there, and that I have not seen them on account of the largeness of the pond.

71. *Statement of Hon. E. L. Martin, Seaford, Sussex Co., Del., Dec. 28, 1882.*

DISPOSITION OF CARP RECEIVED.—About three years ago I received 250 scale carp, 200 of which I placed in a mill-pond, and the remaining 50 in a pond near my barn, and which receives the drainage from my premises.

GROWTH AND REPRODUCTION.—About the first of May of the second year, early one morning, I was agreeably surprised to find my pond alive with fish nearly as large as shad. They were in the act of spawning, which was repeated two or three times at intervals of a week or ten days. About ten days thereafter I found thousands of little fish, barely discernible to the naked eye. In the fall, after a long continued drought, my pond nearly dried up, and I was compelled to confine the water to narrower limits and by so doing was enabled to get hold of my fish and count and weigh them. I had 33 of the original plant left, the heaviest one weighing 3 pounds and 10 ounces. I have no means of knowing how many I have in my pond now, but I have them weighing at least 5 pounds.

DISPOSITION OF YOUNG.—I took from the pond at different times and placed in other streams about 15,000 young ones during the season, some of which had attained a length of 4 or 5 inches.

EDIBLE QUALITIES.—Last spring some of our fishermen caught one in a shad seine, which weighed 3½ pounds, being then only two years old. My brother, Dr. Martin, bought the fish, which remained alive out of the water 5 or 6 hours, had it boiled and dressed similar to boiled rock, and a number of our epicures in fish who partook of it pronounced it very little, if any, inferior to the rock.

DIFFICULTIES.—I left about 5,000 or 6,000 young ones in the pond, which was a great mistake, as there was not sufficient food to sustain so many. The result was, it retarded the growth of the larger ones, and also the young ones, and nearly destroyed all the young spawn the succeeding year. About two years ago I placed some leather carp in a small pond on a meadow, intending them for distribution in the spring. But before I got to distribute them a heavy gust-tide overflowed the meadow and the most of the fish escaped to the river.

MISCELLANEOUS.—From my experience, I am satisfied we have all the conditions necessary for successful carp culture in our ponds and streams on this peninsula, and it requires only a very little intelligent care to make it a profitable business.

DISTRICT OF COLUMBIA.72. *Statement of Rud. Hensel, United States Carp Ponds, Washington, D. C., Sept. 25, 1883.*

ENEMIES.—During the past few days a great many snakes have appeared at the ponds, many of which have been killed, as follows: August 4, 16; August 5, 32; August 6, 52; August 7, 32; August 8, 39; August 9, 14; August 10, 15; August 11, 21. This makes 221 snakes killed in one week.

In the smaller snakes I found from 9 to 15 young carp, and in the larger ones sometimes over 25, besides undigested skeletons of fish. They contained no frogs nor tadpoles. We can, therefore, see that one medium-sized snake devours 40 young carp per day, for they digest very quickly. That would make, for 225 snakes, 9,000 carp per day, and 63,000 per week. That number is correct, sir; and it shows that snakes are more injurious than cranes, herons, and other birds.

I kill them by shooting, oftentimes seeing only a small part of the head in the water, or hiding beneath water plants. I have had opportunity to see how they catch the young fish, and how they devour them. An old wall constitutes their best hiding place. I often shoot them sitting in the cracks of the old wall, the head looking outside, watching the poor little fishes.—August 12, 1883.

August 15 and 16, I did not kill any snakes, by reason of the low temperature and rain. On the following days I killed 72; August 17, 52; August 18, 7; August 19, 8; August 20, 5.—August 20, 1883.

The snakes, so numerous in the ponds for some time past, have almost wholly disappeared. During the past five days I shot only 3, though watching closely for them. Since July 1 we have killed over 900, mostly by shooting.—August 26, 1883.

During the past week I killed about 150 snakes in the west pond. To-day I killed 19. All had young carp in their stomachs.

In July, 1883, I shot a marsh hen with 38 young carp in the stomach, and a night heron containing the heads of 78 young carp.

73. *Statement of Elliott Jones, Arsenal Grounds, Washington, D. C., November 10, 1880.*

GROWTH OF CARP.—Our pond at the Arsenal was drained between the 23d and 25th of last month, and I give the respective weights of the 15 original scale carp that were taken out: 3½, 3½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, 2½, and 2 pounds. This gives a total weight of 38½ pounds, and an average weight of 2½ pounds and 9½ ounces.

REPRODUCTION.—The 1,612 scale carp of last year's spawning weighed from 5 ounces to 1 pound each. The number of carp hatched this year is 5,700.

MISCELLANEOUS.—A peculiar circumstance attending the draining of the pond was the absence of strange fish. Last year and the year before hundreds of strangers, such as catfish, sunfish, perch, eels, frogs, &c., were found, whereas this year we found but 2 perch, 1 eel, and 1 frog, all the others being carp. I cannot account for this circumstance, as no screen was placed over the supply pipes. The large carp appeared to have gained very little in weight during the year.

74. *Statement of Elliott Jones, Arsenal Grounds, Washington, D. C., June 2, 1881.*

DISPOSITION OF CARP RECEIVED.—The 1-acre pond at the Arsenal was completed in the fall of 1877, and in May, 1878, I placed in it 48 of the scale carp imported from Germany and measuring from 3 to 4 inches and weighing perhaps as many ounces. A second, pond, covering $\frac{1}{4}$ acre, was constructed in July, 1880, and in this I put 6 leather carp, weighing from $1\frac{1}{8}$ to $2\frac{1}{8}$ pounds.

GROWTH AND REPRODUCTION.—The 1-acre pond was not drained until May, 1879, when it was found that the carp had grown wonderfully in size, having attained a length of from 10 to 15 inches and a weight of from 2 to 3 pounds each in one year. Half of these fish were placed in the Monument ponds and the other 24 replaced in the Arsenal pond.

In November, 1879, the pond was again drained and 6,054 young taken out with the 24 breeders, which now weighed from $2\frac{1}{4}$ to $4\frac{1}{2}$ pounds. Two thousand and nineteen young, with 18 original carp, were replaced in the pond. I drained the large pond again in October, 1880, and found that the original carp had increased little in weight, though the carp spawned the previous year had attained a weight of from 5 ounces to $1\frac{1}{2}$ pounds. Six thousand four hundred and forty-two young of from 5 ounces to $1\frac{1}{2}$ pounds and the several hundred lost by careless handling were replaced in the pond. The small pond has never been drained yet. According to my records, the following fish should now be in the ponds, exclusive of the young fish spawned this season: In the large pond, 15 scale carp (breeders), weighing from 2 to $3\frac{1}{2}$ pounds, and 1,422 scale carp (spawn of 1879), weighing from 5 ounces to $1\frac{1}{2}$ pounds; in the small pond, 6 leather carp (breeders), weighing from $1\frac{1}{8}$ to $2\frac{1}{8}$ pounds, 204 scale carp (spawn of 1879), and 62 mirror carp (spawn of 1879), weighing about 5 ounces each.

DISPOSITION OF YOUNG.—Of the young of 1879 there were 4,035 distributed to various parties, and 5,700 young of 1880 were placed in the Monument ponds.

DIFFICULTIES.—Three of the original carp were lost by jumping out of the tank when I drained the pond in November, 1879. When the pond was drained in October, 1880, 3 original carp were missing, and several hundred young lost by careless handling.

75. *Statement of Thomas P. Morgan, Washington, D. C., April 21, 1884.*

CARP IN THE POTOMAC.—A carp weighing from 12 to 14 pounds was captured a few days ago in the Potomac River, near the mills, above the Aqueduct Bridge. It probably escaped from the Government carp ponds at the time of the flood in 1881.

76. *Statement of A. S. Pratt, Washington, D. C., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp I received in May, 1881, and the 20 in 1882, I put in my pond at Rock Enon Springs, Frederick County, Virginia.

ENEMIES.—The muskrats have so cut holes in the banks that all the young have escaped into a mill-pond.

FOOD.—The carp in the mill-pond receive much refuse from the hotel. There are still some old carp in the pond.

77. *Statement of John A. Ryder, Washington, D. C., Nov. 27, 1883.*

CARP CARNIVOROUS.—The carp examined to-day was found to contain ripe milt with active spermatozoa. About a dozen small fish were taken from the intestine, each one about an inch to $1\frac{1}{2}$ inches long when alive. They seemed to be young percoids, or some small fresh-water fish.

78. *Statement of Charles W. Scudder, Washington, D. C., Jan. 4, 1884.*

VITALITY.—Wishing to examine some scale carp anatomically, on January 2d I visited the central hatching station of the United States Fish Commission in the Armory building, and called for dead carp, as they would answer my purpose as well

as live ones. Mr. J. E. Brown handed me 7 or 8, which were from 1 inch to 3 inches in length, and which had been thrown out of the tanks as dead. These I at once put into an envelope, and carried home in my pocket.

At least an hour later I removed them from the envelope and put them in a wash-bowl of water for cleansing them. I soon noticed that two of them were floating on their sides and occasionally gasping. A half hour after this, for the purpose of discovering how much vitality there might be in the two in which I had observed signs of life, I placed in the mouth of each one a drop of brandy diluted with an equal quantity of water. These I returned to the bowl, and paid no further attention to them until 6 hours afterwards. I then noticed that the two which had received the tonic showed a marked improvement, and were swimming on their sides nearly at the top of the water. I then changed the water and administered the same amount of brandy as before. On the following morning, 13 hours after the first administration of brandy and 7 hours after the second dose, the two fish in question were apparently fully restored, and were swimming naturally and actively about the bowl. The restoration proved to be complete.

79. *Statement of Chas. W. Smiley, Washington, D. C., April 30, 1884.*

RESUSCITATION OF FROZEN CARP—On the morning of January 4, 1884, 2,100 German carp were forwarded from Washington, by express, to Birmingham, Ala. Mr. F. L. Donnelly, a messenger of the Commission, proceeded by the same train to watch them on their passage and to take charge of them upon their arrival at Birmingham. The fish had been placed in the usual four-quart tin pails, and packed in crates of 16 pails each. Each pail contained 15 carp.

Mr. Donnelly and the carp arrived at Birmingham at 1.30 a. m., January 6. The packages were left in the office of the Southern Express Company through the remainder of that night, but placed within 10 feet of the stove in order to prevent the water freezing. The thermometer indicated $+4^{\circ}$ F. at the time of arrival. At 8 o'clock on the morning of the 6th Mr. Donnelly examined the condition of the fish, and, in his official report dated January 14, says:

"I was greatly surprised to find every drop of water in the buckets frozen into solid ice, and all the fish apparently dead; but upon close examination of their eyes, I thought perhaps a great many of them were still alive, though frozen solid in the ice."

Mr. Donnelly thereupon courageously undertook to see if any of the fish could be saved. He procured the necessary laborers, 4 large tubs, and a supply of water. He then broke the ice from the small pails, transferring such as contained carp to the water. He states that "in this manner a great number of fish were soon freed from their confinement, and by constant working with them during the entire day we were able to save 1,300 fish." Although the thermometer continued to remain in the vicinity of zero, by careful management he succeeded in keeping the 1,300 fish alive until the 8th and 9th, when they were distributed to the applicants throughout the State.

The saving of 1,300 carp out of a lot of 2,100, under such circumstances, may be considered a very remarkable achievement.

Having prepared the foregoing statement from Mr. Donnelly's report, I sent a copy of it to Mr. L. H. Black, route agent, Southern Express Company, Montgomery, Ala., asking how far he knew the statements to be true. Under date of January 25, 1884, he wrote me in reply as follows: "As route agent of the Southern Express Company, my duties call me to Birmingham. I saw the carp first on the morning after their arrival at Birmingham, and frequently during the day while Mr. Donnelly was at work with them. My opinion is that this statement is correct in every particular. I give it from what I saw myself, and from information Mr. Donnelly gave me during the day while he was working with the fish."

CARP IN OGEECHEE RIVER.—April 14, 1884, Mr. George A. Hudson, of Savannah, Ga., sent to the National Museum some small fish which had been caught in the fresh water of the Ogechee River in a trap set for herring, rockfish, &c. They were sent for identification, and proved to be German carp.

FLORIDA.

80. *Statement of John A. Henderson, Tallahassee, Leon Co., Fla., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 40 carp in January, 1881. My pond covers 10 acres; is 10 feet deep and has a clayey bottom. The water is from 40° to 90° temperature, according to the season.

PLANTS.—It contains grasses and bonnets.

ENEMIES.—There are none that I know of.

MISCELLANEOUS.—The carp were subjected to a severe change of temperature when they were placed in the pond, and are not known to have survived. I am making arrangements to get another supply from Rixford, Fla.

PROPAGATING BRIM.—I once stocked an adjoining pond of about 30 acres with a native fish called "brim," and have been very successful in raising large quantities of very fine edible fish.

81. *Statement of Henry Foster, Oviedo, Orange Co., Fla., Feb. 15, 1882.*

ENEMIES.—A white heron was seen to catch the large carp, and the little fellows may meet the same fate when they get large enough.

82. *Statement of L. Johnson, Sorrento, Orange Co., Fla., Apr. 23, 1883.*

GROWTH.—The 8 carp which I placed in my pond 2 years ago I did not see for the space of 14 months. They now measure fully 28 inches in length. I have been unable to see more than 1 carp at any one time. There are no other fish in the pond.

83. *Statement of Geo. C. Rixford, Rixford, Suwannee Co., Fla., July 17, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 75 carp November 26, 1879, and 20 more January 1, 1883. My pond covers about three-fourths of an acre; varies in depth from 2 to 25 feet, has a muddy bottom, and is fed by springs. There is no visible outlet, and the water is always warm.

PLANTS.—It contains water-lilies and grass.

ENEMIES.—It had black bass in it, but I have captured nearly all of them. There are small perch and minnows that I cannot get rid of.

FOOD.—I have daily given them bread made of one-third wheat-bran and two-thirds corn-meal.

GROWTH.—I presume there are 50 or 60 yet of the original lot, weighing from 6 to 10 pounds each.

REPRODUCTION.—They have not produced a single young fish, so far as I can ascertain, and I have watched them closely.

HYBERNATION.—They have never gone "into kettle," but always come for their food regularly summer and winter. They never neglected their food nor came near the shore with but one exception. That was for a day or two last year, when pursuing one of their number that had probably been bitten by a turtle. They grew nicely, and I have taken much pleasure in feeding them and in watching their movements.

DIFFICULTIES.—I am considerably disappointed at their failure to propagate. I thought I had found a fish well adapted for Florida waters. I find, however, that the black bass comes nearer filling the want. The troubles I have had to contend with are an impossibility to keep the pond clear of turtles, minnows, and small perch, which prey upon the eggs and young. Most of the ponds in Florida are not susceptible of being drained so as to get rid of them. The small fish, minnows and perch, being the natural food of the bass, he takes care of himself and protects his young.

MISCELLANEOUS.—The carp are quite tame, and when they find that I am at the feeding place they come as quickly as a drove of pigs would for corn.

GEORGIA.

84. *Statement of William S. Brantly, Macon, Bibb Co., Ga., Oct. 1, 1882.*

DISPOSITION OF CARP RECEIVED.—I received 16 leather carp November 6, 1879. I received 25 scale carp January 13, 1880, and since then I have received about 25 more leather carp. The first lot I put in a pond 20 by 60 feet, from 4 to 4½ feet deep, with muddy bottom. The second lot I put in a pond 40 by 70 feet, about 6 feet deep, with muddy bottom on one side and sand and gravel on the other. There is a flow of water through the ponds from November to June of about 2 inches, and from June to November of about one inch. October 1, the temperature of the water was 74°, but the weather is unusually warm for this month.

PLANTS.—It contains water moss, cut-tail, marsh grass, &c. I am also planting a water-lily called "bonnets."

ENEMIES.—The pond contains a destructive little minnow called top waters, large green frogs, an occasional turtle, and a few water moccasins. The minnows and frogs have been very troublesome, and seem irrepressible. I did not think, until this year, that frogs would destroy spawn. The turtles and water moccasins I can catch and kill out. I keep a turtle trap set all the time.

FOOD.—I give them refuse fruit, vegetables, bread, corn-meal, and mulberries and

blackberries, of which they are very fond. They are also very fond of grits, cow peas, and Irish potatoes cooked. I have fed them irregularly, perhaps three times a week.

GROWTH.—Of the first lot I lost all but one. This leather carp, by actual measurement, was 22½ inches in length and 14½ inches in circumference, April 1, 1882. I replaced it in a pond with a younger lot. I saw a number of my scale carp on April 9, 1882, that appeared to be from 12 to 18 inches in length, as they were floating upon the surface of the water. They are lively and beautiful. The second lot have all lived, and are doing well. Yesterday I weighed 2 of them which were from 20 to 21 inches in length and from 12 to 14 inches in circumference; they weighed 3½ and 4½ pounds, respectively.

REPRODUCTION.—The second lot produced several hundred young last year. These are now from 8 to 10 inches long, and weigh from ¼ of a pound to 1½ pounds each. There are no young this year, and I can attribute it to no other cause but the frogs eating the spawn.

I drew off the water from the second pond last year and took out 200 of the young, then from 4 to 5 inches long, and placed them in a pond (number 3) which covers about half an acre and from 3 to 14 feet deep, with a muddy bottom.

EDIBLE QUALITIES.—I have also eaten a few fried, boiled, and dressed with egg and butter sauce and parsley. The boiled were the best, their flavor being fine and next to shad. They are probably more like our red-horse. As table fish, they are good.

DIFFICULTIES.—There have been no difficulties except with the minnows and frogs. There has never been a sick or a dead one found. From some unknown cause this year I lost nine large ones out of pond number 2, where I had placed 25 select ones for breeders.

MISCELLANEOUS.—I am delighted at the prospect, especially as I find that within 3 years I can raise leather carp of the large size of the one I now have.

85. *Statement of W. B. Chapman, Macon, Bibb Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 90 carp in January, 1881, and some since then. The pond in which they were placed covers ¼ of an acre. It is 4 feet deep and muddy. The water quite cold, and is supplied from 2 cold springs. I have had some trouble to keep the dam from breaking.

PLANTS.—There are willows growing around the pond and also some swamp-grasses.

ENEMIES.—There are no frogs nor turtles in it; and no other fish except a few minnows.

FOOD.—I feed the carp twice a week with bread.

GROWTH AND REPRODUCTION.—I caught one 2 weeks ago that weighed 5 pounds and saw some that were larger. They have had several thousand young ones which are about as large as your finger.

STREAM STOCKED.—I have put some of the young in Stone Creek, near me.

86. *Statement of H. B. Davis, Macon, Bibb Co., Ga., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—Four years ago last February I received from 12 to 20 carp, and a few subsequently. Some were scale carp and some leather carp. The ponds are from 3 inches to 3 feet deep, and are supplied with 2 gallons per minute of cold, clear spring water.

I constructed my first fish-pond in February, 1879. For this purpose I drained a valley below a spring of water, clear as crystal, and which flowed into a small creek. I left a portion of the undergrowth for shade and feeding-ground. I put the first carp into this pond. Subsequently I built two ponds on the small stream, both fed from a cold clear spring; the upper was a small deep one, and the lower pond covers a considerable space, though very shallow, not averaging more than 15 inches in depth. The bottoms of these ponds are partly sand on the edges and in the center black mud, or swamp muck. Both these ponds, as in the case of the first, are only partly cleared of trees and bushes.

In the latter part of February, 1882, I constructed a fourth pond some distance from the others, which were near my house. It covered more space than any of the others, but was very shallow, not over 6 inches deep in the deepest part. I transferred six carp from one of the old ponds to this new pond, and in addition put in 160 bream.

PLANTS.—The ponds contain numerous kinds of plants and grasses, of which I do not know the names.

ENEMIES.—There are no other fish, but a few frogs and a few small turtles. I have had much trouble with snakes, turtles, and terrapins.

FOOD.—The fish in the small, deep pond were fed last year, while those in the pond below, where the fish grew to more than twice the size, had not been fed.

GROWTH.—I have 3 old ones left. They are each about 2 feet in length, and I suppose they will weigh 5 or 6 pounds. I examined one of the young ones, 15 months old. It weighed $2\frac{1}{2}$ pounds, and measured $17\frac{1}{2}$ inches.

REPRODUCTION.—My old carp spawned when 2 years old (June, 1881). I do not know how many young they have produced, as my pond broke and I lost many. I secured between 200 and 300.

SALES.—I sold some of the young at \$5 per dozen.

EDIBLE QUALITIES.—They are not full of bones, and do not taste of mud, as some would have us think, but, on the contrary, are very free from small bones, and are a most excellent table fish, to which several who have dined with me will testify.

DIFFICULTIES.—The dam broke in June, 1880, and I lost all except five, four of which were scale carp. The 5 fish then averaged 11 inches in length. They were about 3 inches long when received three months previously. June 1, 1881, I examined the pond which had contained the five carp. Only four large carp were found, three scale and one leather. These measured 18 inches in length. In April, 1882, I examined the 2 ponds built on the small streams and discovered a great difference in the growth of the fish in the two ponds, and yet it was the same water and the same kind of bottom. The fish in the small deep pond were only 6 or 7 inches in length, while those in the pond below, covering about twice the space, were $12\frac{1}{2}$ inches long.

MISCELLANEOUS.—When in 1882 I examined the pond into which I had put the carp and bream, I was surprised at the large growth of the carp as well as the slow growth of the bream. The largest of the six carp, now one year and three or four months old, measured 17 inches in length and weighed full $2\frac{1}{2}$ pounds. The bream were only a little larger when put in. But there were plenty of small bream.

My conclusions as to carp are that in southern waters it makes no difference whether the water is clear or muddy; that if they have plenty of feeding ground, it is not necessary to feed them; that they do not "kettle" in winter in this latitude; and that they will certainly spawn in two years if properly cared for.

87. *Statement of J. F. Hanson, Macon, Bibb Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 fish about 3 years ago, and put them in a large cistern 75 feet in diameter, used as a reservoir for spring water. About 10,000 gallons a day, at a temperature, say 68° to 70° , flow through it.

PLANTS.—It contains moss and weeds, growing in the water which is perfectly clear.

ENEMIES.—There are toads sometimes found in it, and a few sun perch.

FOOD.—We fed the fish with cracked Indian corn and with plain corn bread.

DIFFICULTIES.—In a short time after we received them they disappeared, and I cannot tell what became of them. I never found any of them dead. I think the water was too cold and too clean.

[No trouble arose from the water being clean. But to transfer the fish from warm water suddenly to cold water would be so violent a change of temperature as to injure them. They would then become a much easier prey to enemies or perhaps die anyway. Carp can be transferred to icy cold water if the transition is made very gradually.—EDITOR.]

88. *Statement of Charlie Herbst, Macon, Bibb Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 5 or 6 carp 2 or more years ago. Since then a few were given to me. I only have 2 now, and these I bought. I keep them in a glass tank, with a capacity of about 22 gallons, in which their shape and color are clearly seen. I change the water weekly, and handle the fish with a net.

ENEMIES.—It contains goldfish and small terrapins, known in the local lingo as "cooters." [Small water terrapins.]

FOOD.—I give them corn muffin and boiled rice.

89. *Statement of I. C. Plant, Macon, Bibb Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received my carp 2 and 3 years since; about 50 each year. I kept them at first in a pond covering about a half acre. I now have one 80 by 125 feet, inclosed by a board fence, to keep turtles, snakes, frogs, &c., out. There is a constant stream from dozens of springs on the edge of the largest pond, giving a stream say 10 inches in diameter that passes from the pond all the time.

PLANTS.—The ponds are shaded by willows, bays, and other small shrubs usually found around Southern ponds, and contains pond-lilies and dozens of kinds of water plants and grasses.

ENEMIES.—The only trouble which I have had in raising carp has been from turtles and frogs, which seem to eat up all the eggs. I lost thousands of fine fish the first 2 years in my large pond, they being destroyed by turtles.

FOOD.—I feed them with grits and refuse from a flouring mill near by, taken from the stones after grinding wheat, rye, and corn.

GROWTH.—I have a large portion of the original number left. They are large, plump fish from 12 to 25 inches long. The young ones are from a half inch to 5 or 6 inches long.

REPRODUCTION.—There are many thousands of young, though I lost a great many from the turtles eating them during the first two winters. They are all in the inclosed pond, as it is useless to try to raise fish in one which turtles and snakes can enter.

DISPOSITION OF YOUNG.—I have given away a large number to friends in this section of our State.

90. *Statement of Samuel M. Subers, Macon, Bibb Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 18 scale carp on the 10th of January, 1880, and 22 leather carp in September, 1882. I have kept them in a pond 50 feet long and 40 feet broad, with a depth varying from 18 inches to 5 feet. The bottom is composed of mud, and six springs rising through it supply the water.

PLANTS.—There are no grasses in the pond. The willow and mulberry trees and Bermuda grasses on the banks send their roots into it.

ENEMIES.—It contains bream, sun-perch, and green frogs.

FOOD.—I feed my fish on house-flies and crackers.

GROWTH AND REPRODUCTION.—Those that I have caught weighed from 3½ to 4½ pounds. I cannot tell how many of the original ones I still have. I have never found but 4 of them dead. There are no young that I have seen.

DIFFICULTIES.—I think the spawn has been destroyed by other fish, &c. I do not think they increase in small ponds as rapidly as they would in large ones.

91. *Statement of E. Witkowsky, Macon, Bibb Co., Ga., Dec. 9, 1880.*

GROWTH.—I cleaned out the pond in my tan-yard November 11 to ascertain what growth the 4 carp had made which I placed there in May, 1880. I found 3 of these fish and to my astonishment they were by actual measurement 20, 22, and 25 inches in length, respectively. The fourth carp escaped through a cut in the bank. These carp were but 2 or 3 inches long when put in the pond and their growth is remarkable.

92. *Statement of Christopher and Roberts, Fairburn, Campbell Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 8 carp December 16, 1879, and 6 more November 22, 1880. We put them in a pond covering about ⅓ of an acre with a depth of from 2 to 6 feet, and with a bottom partly mud and partly blue clay. A small continuously flowing stream of comparatively warm water flows through it.

PLANTS.—It contains "swamp-grass," a very common grass in all marshy places.

ENEMIES.—It contains no other fish, no turtles, and but a few frogs.

FOOD.—We feed the carp once a day on bread and crackers, refuse from our store.

REPRODUCTION.—Our carp have spawned twice.

GROWTH.—April 22 last the pond was broken by a heavy rain and all the carp turned loose. We picked up in the grass and mud 6 of our 8 largest fish, and about 200 of the smallest. We lost at least 500 that would have weighed a pound each at the time, and the same number that would have weighed half a pound each. The old ones at present weigh about 10 pounds each. The fish from the last spawning now weigh about 1 pound each.

DIFFICULTIES.—The only difficulty we have met with was the breakage of the pond alluded to above.

93. *Statement of W. C. Hewell, M. D., Cusseta, Chattahoochee Co., Ga., Mar. 22, 1883.*

GROWTH.—The carp received just before Christmas are doing well, and they are three times as large as when I put them in the pond.

94. *Statement of William T. Winn, Marietta, Cobb Co., Ga., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 26 in November, 1879, and 16 in November, 1880. I have kept them in a lake 110 yards long by 30 yards wide, and from 1 foot to 10 feet deep, with a muddy bottom. A cubic inch of water flows from it. It is fed by springs rising in the bottom. The temperature of the water in summer is 80° Fahr. The water is clear; no surface water flows into it; it never overflows, and can never fill up with mud or sand. It is so permanent that it will stand a thousand years.

PLANTS.—It contains swamp wire-grass and water-lilies.

ENEMIES.—The bass, blue cats, perch, frogs, turtles, and snakes, which formerly infested it have nearly all been expelled by persistent efforts.

GROWTH AND REPRODUCTION.—My carp, of which I have 25 left, now weigh from 7 to 12 pounds, but have produced no young. Walton says, in his *Complete Angler*, page 151: "There is not a reason found out, I think, by any, why carp should breed in some ponds and not in others of the same nature for soil and all other circumstances." I developed a small pond above mine this spring and put 5 spawners in it, but there was no increase. There were no fish in this pond except the spawners. One pair of spawners placed in a small pond in the Federal cemetery, which dries up in August, were fruitful. I shall put 300 fish annually from the spawning pond into my lake, and think it better than to have them spawn in the latter.

EARLY INTRODUCTION OF CARP.—In 1831, Henry Robinson, of Newburg, Orange County, New York, imported carp from France, which he said in 1851 did pretty well in his ponds.

95. *Statement of Rev. Isaac N. Moon, Powder Springs, Cobb Co., Ga., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 in December, 1880, and 20 in December, 1881. I have kept them in a pond 40 feet wide, 80 feet long, and 4 feet deep, with a bottom of black mud. It is supplied by a weak spring. In spring and summer the water is warm with a scum on top.

PLANTS AND ENEMIES.—It contains willow-grass, water-lilies, &c., &c.; also a few small perch. I keep the frogs and turtles killed out.

FOOD.—I feed the carp on cabbage leaves, lettuce, and bread, about twice a week.

GROWTH AND REPRODUCTION.—I saw two about a year ago. I suppose they are about 20 inches in length and would weigh about 3 or 3½ pounds. I have seen no young yet, and do not know whether there are any or not.

DIFFICULTIES.—I am of the opinion that my pond is too small and shallow. I am building another and would like to get some of the leather carp.

96. *Statement of M. W. Stinson, Everett's Station, Crawford Co., Ga., Oct. 12, 1882.*

GROWTH.—I have a pond near my house that was stocked with a few carp last winter. They have grown to be fine fellows.

97. *Statement of J. R. Cravens, Wildwood, Dade Co., Ga., Mar. 30, 1884.*

GROWTH.—Carp minnows received in 1881 attained a weight of from 2 to 3 pounds in November, 1882.

REPRODUCTION.—In the fall of 1881 I received 20 small German carp, which spawned last spring. I now have from 7,000 to 8,000 yearlings which are doing well.

MISCELLANEOUS.—I am now making a pond, below my carp pond, which I wish to stock with California trout. I expect to feed the trout on the surplus carp minnows escaping from the carp pond above.

98. *Statement of William E. Smith, Albany, Dougherty Co., Ga., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp some time in the fall of 1879 and distributed them among planters in Dougherty and Baker Counties. Some of the ponds in which they were put are supplied by rains and from surrounding hills; but few are supplied with running water. They have muddy or sandy bottoms.

PLANTS.—The principal plants growing in these ponds are "bonnets," water-lilies, and maiden cane.

ENEMIES.—Although the fresh-water ponds of this section are otherwise singularly adapted to carp, the game fish—trout and perch—with which our waters are filled, destroy them. The ponds are invaded by trout, suckers, bream, several kinds of perch, spring frogs, and turtles.

GROWTH AND REPRODUCTION.—There are about 60 of the original lot left. One, when about 11 months old, weighed nearly 4 pounds and was 20 inches long. I am unable to tell how many young they have produced.

99. *Statement of W. H. Carpenter, Concordia, Elbert Co., Ga., Mar. 27, 1880.*

CARP IN SAVANNAH RIVER.—There have been several carp caught in Savannah River that weighed from 6 to 8 pounds. None that have been taken from the ponds will weigh more than from 4 to 5 pounds. The ponds have all been stocked within the last 2 years. Those that are in the river made their escape during high water and the bursting of the ponds.

100. *Statement of R. E. Guthrie, Cumming, Forsyth Co., Ga., July 15, 1883.*

DISPOSITION OF CARP RECEIVED.—I bought 100 from Varner, of Buford, Ga., one year ago this week. I have kept them in a small pond, say $\frac{1}{2}$ acre in extent, about 5 feet deep, with a muddy bottom. The water comes from a good bold spring, and is very cold when it rises, but gets warm enough in the pond.

PLANTS AND ENEMIES.—No plants have yet come up, and there are no other fish. Frogs and turtles are getting numerous.

FOOD.—I feed the fish from once to three times a day with corn bread and wheat bread. They will eat most any vegetable.

GROWTH.—They will weigh now from 1 to $2\frac{1}{2}$ pounds. There are no young yet.

DIFFICULTIES.—Frogs and turtles.

101. *Statement of William A. Jett, Atlanta, Fulton Co., Ga., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp in February, 1880, and have kept them in a pond of about half an acre, 7 feet deep, with a sandy and muddy bottom. A $2\frac{1}{2}$ inch stream of water flows through it, with a mean temperature of about 60° Fabr.

PLANTS.—The ordinary swamp-lily and grasses peculiar to this section of country grow in the pond.

ENEMIES.—It also contains a few perch and the ordinary black frogs and mud-turtles.

FOOD.—I feed the carp 3 times per week with corn-meal.

GROWTH.—The oldest weigh about 6 pounds, and the others from $\frac{1}{2}$ to 1 pound each. I have none of the original lot left.

REPRODUCTION.—I cannot tell how many young have been produced, but I have 3 sizes.

MISCELLANEOUS.—I regard the carp as the best pond fish I ever saw, and believe they will be profitable.

102. *Statement of J. A. McCool, Atlanta, Fulton Co., Ga., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 22 carp in 1880, and 37 more since that time. My pond covers $\frac{1}{2}$ of an acre, varying from 1 foot to 6 feet in depth, and has a muddy bottom. About 3 inches of water flows into it from springs inside its limits.

PLANTS AND ENEMIES.—It contains no plants or grasses whatever. There are quite a number of frogs and some turtles in it. I keep them cleared out as well as I can. There is a long-toed bug which I think is an enemy of the carp.

FOOD.—I feed the carp every day with various things, but mostly with boiled corn.

GROWTH.—I have taken out 6 by hooks, and the heaviest weighed 4 pounds. They have produced no young that I have seen yet.

103. *Statement of E. B. Plunket, Atlanta, Fulton Co., Ga., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 7 small carp in October, 1879, and none since then. I have kept them in an artificial pond, $\frac{1}{2}$ of an acre in size, with an average depth of 3 feet and a bottom of muck. It is supplied from a small spring and with branch water. The water is pretty warm.

PLANTS AND ENEMIES.—There is Bermuda grass around the edge of the pond, and there are a few perch, frogs, turtles, snakes, and terrapins in it.

FOOD.—I give the carp no food at all.

GROWTH.—The original ones, of which there are 5 left, are now from 9 to 12 pounds in weight; and the largest of the young—the one-year-old ones—weigh about 1 pound.

REPRODUCTION AND DISPOSITION OF YOUNG.—I do not know how many young have been produced, but a good number. I have sold a few of them.

104. *Statement of B. J. Wilson, Atlanta, Fulton Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—About 3 years ago I received 30 scale carp, and at different periods subsequently other small lots of scale carp. I have kept them in a pond of nearly 2 acres, from 2 to 10 feet in depth. The bottom is composed partly of pipe-clay, and grassless, but the larger part is covered with decomposed vegetable mud, 4 feet deep in places. About 40 gallons of water per minute enter the pond. The spring which supplies it registers 60° Fabr., but 10 yards away, in 3 feet of water, the temperature is 72° .

PLANTS.—Three or 4 kinds of nameless algae grow luxuriantly in the muddy bottom; also the common white water-lily. When I formed the pond I planted around the margin the Hicks ever-bearing mulberry, and find it a most excellent fish-food for nearly 3 months in the year. The carp are very fond of the mulberries and become very fat on them.

ENEMIES.—The pond contains bream, sun-perch, and a large-mouthed perch, none of which attain a large size; also some turtles. I have seen no signs of young, and I think the reason is the immense swarm of bull-frog tadpoles that infest the water during winter and spring. They evidently destroy the spawn, and until I find some remedy I fear I will be unable to raise any. I now think of running off the pond lots in the fall after the frogs have ceased to spawn, and destroy the tadpoles.

FOOD.—I feed the carp very little; I give them a few scraps left from the table two or three times a week. [See mulberries under **PLANTS**.]

GROWTH.—I can't tell how many I have left, possibly 5 or 6. I have caught some weighing 8 pounds.

HOW TO CATCH CARP.—The mulberries are the most tempting bait I know of to use in fishing for them.

105. *Statement of E. M. Lasseter, East Point, Fulton Co., Ga., Sept. 5, 1882.*

GROWTH.—I received 20 fish November last. Two of them were caught for examination on the 2d instant, and were found to be from 10 to 12 inches in length, and would have weighed from 2 to 2½ pounds. When received their length was from 3 to 4 inches, and I think 1 ounce would have equaled the weight of the largest. I am wonderfully pleased with my success.

106. *Statement of Dr. Samuel Hape, Hapeville and Atlanta, Fulton Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 scale carp in November, 1880, and have kept them in a pond, ¼ of an acre in size, with a depth of from 12 inches to 6 feet. The flow of water is small, and the temperature varies from 4° to 84° Fahr.

PLANTS AND ENEMIES.—The pond contains few plants besides rushes, flags, and cat-tails. There are lots of frogs and minnows in it. Fish-hawks and cranes are troublesome.

FOOD.—I feed the fish twice a day on stale bread; mostly with crackers that are rancid.

GROWTH.—The heaviest of them would weigh at least 10 pounds. The one-year-old carp would weigh 1 pound; the later ones are quite small.

REPRODUCTION.—I cannot tell how many young they have produced, as the main pond containing them washed away during the storm in May. The first crop is a year old, and there has been another since.

DISPOSITION OF YOUNG.—I have sold a few, but most of them were lost.

DIFFICULTIES.—I have had no trouble with the carp at all. They want regular feeding and protection from fish-hawks and cranes.

MISCELLANEOUS.—They are evidently a great acquisition to our State, and will be successfully cultivated as a table fish and a source of profit where care is taken in their culture.

107. *Statement of T. S. Davis, Toccoa, Habersham Co., Ga., Oct. 14, 1882.*

GROWTH.—The fish I received in last May have grown to be from 12 to 15 inches in length. Only 4 of them have survived.

108. *Statement of W. E. Warren, Powersville, Houston Co., Ga., June 14, 1882.*

GROWTH.—The 8 carp received 18 months ago I placed in a pond covering 2 acres, which was stocked with various kinds of fish. I have seen but one of the carp since, which is from 23 to 24 inches long.

MISCELLANEOUS.—I have constructed a new pond 25 by 80 feet, having a depth of 4½ feet, and desire more carp for it.

109. *Statement of E. C. David, Harmony Grove, Jackson Co., Ga., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp in November, 1879. I have kept them in a mill pond, covering some 8 acres and from 6 inches to 10 feet deep, with a muddy bottom. The pond is fed from a small creek, and the water is of medium temperature (for this climate) where it enters.

PLANTS.—It contains rushes, water-grass and other grasses, moss, &c.; names unknown.

ENEMIES.—It is inhabited by perch, horny-heads, eels, turtles, and frogs.

GROWTH.—I only know 2 of the carp to be alive. There may be more, as the pond is large and the mud deep in places. It is difficult to take them. The 2 that I have will weigh 15 pounds each. In June of last year I weighed 3 from my pond, one weighing 11 pounds and the other two 15 pounds each.

REPRODUCTION.—There are no genuine young carp. They crossed with the horny-heads.

DIFFICULTIES.—My most serious difficulty has been the crossing of the carp with other fish. I have built a hatching-pond, in which I will allow no other fish but just such carp as I want to raise from. I would be pleased to obtain an extra supply of the scale and mirror carp.

110. *Statement of Jesse White, Harmony Grove, Jackson Co., Ga., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in September, 1880. My pond broke away in June, 1881, and all were lost, but I am going to rebuild it right away, and would like to have another supply.

111. *Statement of J. G. Justice, Marcus, Jackson Co., Ga., Oct. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 carp in November, 1880. A freshet broke my dam and they escaped in April, 1880. I received 10 more in November, 1882. I put them in a small pond 6 feet deep, 100 feet in diameter, and with muddy bottom. It is located below a medium-sized spring, from which there comes very cold water. I am sure the water is too cold in summer for the best results, and am building a larger one farther away, so as to have warm water.

PLANTS.—It contains a vine-like plant.

ENEMIES.—It contains none, except frogs.

FOOD.—I give them corn bread once or twice a week.

GROWTH.—They are now 8 to 10 inches in length.

112. *Statement of Henry P. Farrow, Porter Springs, Lumpkin Co., Ga., Feb. 2, 1884.*

PONDS AND WATER.—My largest carp pond is over 1 acre in area, and its greatest depth would exceed 10 feet, while a due proportion is quite shallow. This pond in the heat of summer warms up to 85° F. Near by is my pond for red speckled brook trout, which is equal to 75 feet square, and of almost uniform depth of 5 feet, with springs all over the bottom of it, and spring branches coming to it, and it never freezes over in winter, and never gets above 64° F. in summer.

GROWTH AND REPRODUCTION.—The carp are doing well, and have evidently grown during the winter. To-day they are as active as in midsummer. They fed all through October and in November. December and January are the only months during which they hibernate here, if they can be said to hibernate at all. The hatching of carp last summer must have been very heavy, as the display of young ones is very fine.

113. *Statement of G. H. Slappey, Marshallville, Macon Co., Ga., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp from several quarters, about 80 altogether, in January, 1880. I had 5 ponds of cold water. The upper one, in which I kept the carp, was a spring, surrounded by a bluff. There was no branch running into it, and the water was cold.

PLANTS.—It contained many sorts of grass, water-grass, lilies, and bouquets.

ENEMIES.—There were no other fish in it. I think that carp will do well enough with other fish, especially suckers or red-horse.

FOOD.—I fed them on meal and mutton or soft corn.

GROWTH.—They were from 6 to 12 or more inches long when I lost them in 1882.

STREAMS STOCKED.—I think the carp will do well in this country. The Ocmulgee and Flint Rivers seem to be well stocked, on account of the breaking of fish ponds. Many have been caught in them with nets. I think all our rivers will soon be full. Our lakes also have carp.

EDIBLE QUALITIES.—The numerous carp caught in the rivers are said to be very fine eating.

DIFFICULTIES.—Sorrow and misfortune befell me in September, 1882. A flood—a nonesuch—which washed away and broke every mill and railroad in this county, carried all the carp into the river. Very few fish ponds in this county escaped. My carp must have passed through four ponds, and some of my neighbors think some of them must be left in the mud. I have hunted much for them and cannot find any, but I am in hopes some are left. I would like to have some more sent me.

114. *Statement of M. S. McCarthery, Danielsville, Madison Co., Ga., April 6, 1883.*

GROWTH AND REPRODUCTION.—My carp, received in 1881, are doing well, some of them being 16 inches long. There are plenty of young carp in my pond.

115. *Statement of Harrison Summerrour, Warsaw, Milton Co., Ga., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 6 carp in November, 1879, and a few in 1880. The size of my breeding pond is about $\frac{1}{4}$ of an acre. It is from 1 foot to 8 feet deep, and has a muddy bottom. About one gallon of water per minute flows through it, with a temperature of from 60° to 65° Fahr.

PLANTS AND ENEMIES.—The breeding pond contains native grass, such as the rush; also a lot of frogs and fine turtles, but no other fish.

FOOD.—I give the carp scraps from the table, boiled potatoes, and any other food that is eaten by the family.

GROWTH.—I have 14 of the original fish left. The oldest weigh from 8 to 10 pounds, and the next size about 6 pounds. The young ones weigh from 4 ounces to 2 pounds.

REPRODUCTION AND SALES.—I have transferred about 3,000 young ones out of the breeding pond, and it is full yet. I have disposed of about 200.

MISCELLANEOUS.—I have 8 ponds altogether, and have stocked them all with carp. I am delighted with them. I wish to try the leather variety, as I have none but the scale.

116. *Statement of Abner T. Holt, Bolingbroke, Monroe Co., Ga., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 72 carp in January, 1880, and have kept them in a pond 150 feet long, 12 feet wide, and from 2 to 10 feet deep, with a bottom of pipe clay. About 6 gallons of water per minute flows through it. In the middle of the day, July 20, the thermometer registered 88°.

PLANTS AND ENEMIES.—It contains rushes; also bream, red-horse, trout, minnows, perch, and silver roach, turtles and frogs.

FOOD.—I give them maggots, principally from dead carcasses, and some bread, as often as required.

GROWTH.—The last one I measured, about one year ago, was about 11 inches long. They are doing well; no difficulty.

117. *Statement of Emanuel Heyser, Madison, Morgan Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I received 16 mirror carp and 13 scale carp, and in December, 1881, about 50 mirror carp. I have kept them in different ponds, usually containing about $\frac{1}{4}$ of an acre, 5 feet deep, and having a muddy bottom. The water is supplied by springs in sufficient quantity to make a flow through a pipe 3 inches in diameter. It stands at about 80° now.

PLANTS.—The ponds contain pond lilies, native grass, and water plants.

ENEMIES.—They also contain native fish, such as bream, perch, and catfish, some frogs, a few turtles, and moccasin snakes. The annoyance arising from these, of which I am trying to rid my pond, is the only difficulty which I have experienced.

FOOD.—I feed wheat, unbolted, mixed with corn-meal and baked, once a day.

GROWTH.—I now have 11 of the mirror carp and 5 of the scale carp left from the 1879 lot. The old ones are now from 5 to 8 pounds each. Those hatched in 1882 now average about $\frac{1}{2}$ a pound each. Those hatched in 1883 are about 3 inches long each. I cannot say how many there are.

REPRODUCTION.—They first spawned early in May, 1882. There were very few mirror carp. I took 4,000 scale carp from the pond, and think I left as many. Some of the carp spawned the first week in May, 1883. The others have not spawned yet.

DISPOSITION OF YOUNG.—I have sold about 1,000 young carp to stock other ponds; and have stocked my own ponds with the balance.

118. *Statement of Josiah Perry, Covington, Newton Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in October, 1880, and 20 this spring. The pond which I have kept them in is $1\frac{1}{2}$ acres large and about 7 feet deep. The bottom is about half muck, and the water is warm.

PLANTS.—It contains grass and water plants that are indigenous to this climate.

ENEMIES.—It has in it a few turtles, frogs, and branch fish, such as are found in all branches in this section. My principal difficulty has been the destruction of the eggs of the carp by the frogs and perch.

FOOD.—I feed the carp once every day with corn-bread.

GROWTH AND REPRODUCTION.—I have 11 of the original lot left. The old ones were from 5 to 10 pounds in weight last October. The young now weigh from 1 to 2 pounds. I do not know how many young there are.

119. *Statement of J. R. Ellis, Griffin, Spalding Co., Ga., April 3, 1883.*

GROWTH.—A carp that was placed in Mills's pond 2 years ago, and escaped when the pond broke, was caught yesterday in Pitts's pond, 4 miles below this place, and found to weigh 15 pounds. A scale from the fish measures $1\frac{1}{4}$ by 1 inch, and is in the possession of Captain Hartnett.

120. *Statement of Abel A. Wright, Griffin, Spalding Co., Ga., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1879 I received 14 carp alive out of 200 that had been sent me from California. I have since received 22 through the State commissioner and 23 direct from Washington. My pond covers about 1 acre, is 8 feet in deepest part, with a bottom of black mud and alluvial deposit. The water is brought from a spring 1,000 feet distant in a pipe $4\frac{1}{2}$ inches square. In addition there is a bold spring in the pond. The water is 70° on the surface; 80° in midsummer.

PLANTS.—The pond contains *Victoria regia*, *Nymphaea odorata*, *Nymphaea flava*, *Nymphaea alba*, *Nymphaea* (or Nuphar) *advena*, *Nelumbium luteum*, *Nelumbium speciosum*, several kinds of *Pontederia*, various ferns, mosses, rush, marsh grass, Bermuda grass and other grasses, waumpsee, water oats, and *Calamus acorus*. In the spawning season all kinds of aquatic plants, Bermuda grass, all kinds of rush, water grasses, regular marsh grasses, and all ferns and mosses are useful. Weeping-willow roots also are fine for them to deposit their eggs on. Cat-tails are a nuisance.

ENEMIES.—I kill all the frogs, terrapins, turtles, and water-snakes. The frogs eat carp, toads, and small frogs of their kind. I have killed frogs containing carp 6 inches long, and water-snakes containing carp 8 to 10 inches long. The most serious difficulty encountered is to keep these injurious animals, as well as the kingfishers, bitterns, cranes, herons, and fish-hawks, killed off, to prevent their destroying the young.

FOOD.—I feed the carp with wheat, pumpkins, and squashes, uncooked; boiled corn, sweet potatoes, bread of all kinds, stale baker's bread, damaged crackers, lettuce, cabbage, and table refuse. They also feed on the seeds and tender roots and shoots of the aquatic plants.

GROWTH.—I have caught carp weighing $10\frac{1}{2}$ pounds, and have had large ones break No. 4 hooks and eight-day-clock cord. I have seen those that looked to be 30 inches or more long and a foot wide. This season's hatching are from $\frac{1}{8}$ of an inch to 5 inches long.

REPRODUCTION.—They have produced young by millions. It is impossible to tell how many. They have done better this year than ever before. The old ones are still spawning, while last year they spawned till frost chilled the water. I am satisfied carp spawn at 12 months old, and not at 24 months, as in Europe. Our waters are warmer. I know a gentleman in Atlanta that had one-year-old carp and gold fish together, and they mated and hatched young at that age. I have seen one-year-old carp in my pond spawning, have removed the eggs, and hatched them in a bottle of water set in the sun in March.

SHIPMENT OF YOUNG CARP.—I have sent young carp to Pennsylvania, Virginia, North Carolina, South Carolina, Kentucky, Tennessee, Louisiana, Texas, Arkansas, Florida, and all over Georgia.

HOW TO CATCH CARP.—I catch carp with hook and line. They bite greedily at grub worms, flatheads, mush or dough, and cotton.

121. *Statement of Solicitor-General C. B. Hudson, Americus, Sumter Co., Ga.*

GROWTH.—I let the water out of my pond a few days ago and caught a carp 18 months old, which made a meal for three families. All of the carp averaged from 10 to 15 pounds each.

122. *Statement of A. D. Bates, Thomasville, Thomas Co., Ga., Nov. 2, 1881.*

DISPOSITION OF CARP RECEIVED.—The 12 carp, measuring from 2 to 3 inches, received two years ago, I put in a small, muddy pond, about 40 by 60 yards, and 6 feet deep.

PLANTS.—The pond is surrounded by weeds and shrubbery.

ENEMIES.—No other fish than carp live in the pond.

GROWTH.—As I did not know whether the carp were alive or not, I drew off the water from the pond this afternoon. I realized results which exceeded even my most sanguine expectations, having found 8 of the original carp which were 25 inches long and weighed $7\frac{1}{2}$ pounds each.

REPRODUCTION.—It seems that the original carp spawned in the springs of 1880 and 1881, as the young are of two sizes, and 6 and 18 months old. I obtained 100 young, averaging 1 pound in weight.

MISCELLANEOUS.—I never saw a finer lot of fish, and believe the culture of the carp will surpass hog-raising. Many of the citizens who witnessed the drawing of the pond resolved to obtain the seed of the wonderful fish and raise their meat without trouble and in abundance.

123. *Statement of J. T. Chastain, Thomasville, Thomas Co., Ga., July 17, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880, I think it was, I received 16 young carp. They were consigned to C. P. Hansell, but were for me. The following year I received 12, similarly consigned. My pond was then filled with all sorts of fish. In consequence, the young carp were placed in a small pool fed by a spring. In the fall of 1881 nearly all the ponds in this section went dry, my pond and the little pool included. Before the young carp could be taken from the pool, fish-hawks and similar birds caught a good portion of them. I took out 5 of the older ones and about the same number of the latter shipment. They were turned loose in a twenty-acre pond.

In the spring of 1883 I received 11 more. These were placed in a pond covering four or five acres, 5 feet deep in the center, growing gradually shallower to the edges. The bottom of this pond is sandy near the edges, muddy in the center. It has a spring head of still water which flows only at times. The temperature is from 70° to 80° in summer. Thin ice occasionally forms around the edges in winter.

PLANTS.—The small pond abounds in water-moss, with some marsh or water grass.

ENEMIES.—There are no other fish, but there are spring and bull frogs and water terrapins. [Fish-hawks—see above.]

FOOD.—No food was regularly given to the 2 former lots which were kept in the pool. I occasionally feed the fish I have now in the small pond on bread, but have never seen them since they were turned loose in the pond.

GROWTH.—When the ponds were dried up, in 1881, the one-year-old fish which I saved weighed about a pound apiece, and the younger ones about a quarter of a pound. One was taken a few months later with a hook, but replaced. It showed rapid growth. This spring one escaped during a freshet—one of the younger ones. We estimated that it would weigh at least 10 pounds. A week or two later one of the older ones, about 2½ years of age, was caught in the mill-wheel and killed, but as it was cut in several pieces, its weight could not be definitely ascertained. It was, however, considerably larger than the former one taken, and perhaps weighed 14 pounds.

124. *Statement of H. H. Cary, M. D., La Grange, Troup Co., Ga., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 11 carp in November, 1879, which I placed in a private pond ¼ of an acre in extent, with a muddy bottom. The inflow is 60 gallons per minute, and the temperature of the water in midsummer is above 90°.

PLANTS.—Bermuda grass and other wild grasses and water-lilies grow in the pond.

ENEMIES.—I try to keep all other fish out. Some frogs and turtles will get in. I have had great difficulty in keeping out the tadpoles. I am satisfied they destroy the eggs.

FOOD.—I give the carp refuse from the kitchen, corn, wheat, oats, and almost anything that pigs will eat.

GROWTH.—I have 7 of the original lot left; they average 10 pounds apiece. The young ones weigh from ¼ an ounce to 4 or 5 pounds.

A large pond was broken, in April last, in an adjoining county by a freshet. The carp were captured by the use of a seine. The small fry, weighing only a fraction of an ounce when put in, had been in it only 16 months. The aggregate weight of 3 of the fish when captured was 25 pounds—the largest growth for the time I ever knew of. I get this from reliable parties.

REPRODUCTION.—Several thousand young have been produced.

PERIOD OF INCUBATION OF EGGS.—I have been taking some pains for the past 2 years to ascertain the period of incubation of the eggs. A statement in the Fish Commissioner's report for 1875-'76 that they hatch in from 12 to 16 days was doubtless based on a lower temperature of water than prevails in this latitude during the hatching season. Last year, with the temperature of the water at about 69°, the eggs hatched in 5 to 6 days. The present year, with a higher temperature of water, a more carefully conducted experiment has demonstrated that the eggs hatch in from 48 to 72 hours. The eggs hatch finally in water at a temperature of 90°.

DISPOSITION OF YOUNG CARP.—I have stocked several ponds with young fish from mine.

MISCELLANEOUS.—Over 3,000 ponds in the state of Georgia have been stocked with carp, and this fish continues to more than maintain its high character as a valuable pond-fish.

125. *Statement of W. L. Benham, West Point, Troup Co., Ga., May 2, 1883.*

ENEMIES.—I find that the most destructive enemy of the carp is the cray or crawfish, found in low marshy lands. Last November I placed in a pond to themselves about 100 carp. One month ago I drew the water and found about 50 left, many of which had their tails and fins eaten off. There were numerous crawfish in the pond, which have undermined the dam and allowed the water to escape. I am somewhat discouraged in fish-culture.

126. *Statement of George W. H. Sisum, Gaddistown, Union Co., Ga., Feb. 1, 1884.*

GROWTH.—I have 32 carp that will be 3 years old this spring, and 25 yearlings which measure from 12 to 14 inches in length, and which I expect will spawn next summer.

127. *Statement of H. L. Spencer, Social Circle, Walton Co., Ga., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 6 carp about 4 years ago, and have received a few since then. I have kept them in different ponds—mill-ponds and fish-ponds—having various depths and kinds of bottom. Fair streams flow through the mill-ponds; but the water supply is very small in my fish-ponds.

PLANTS.—The ponds contain water-lilies, swamp flags, and some other growths not known to me.

ENEMIES.—They have rather a general assortment of fish, frogs, turtles, &c. They had been stocked with other varieties before I got carp.

FOOD.—I have not been able to feed the carp regularly with any particular kind of food.

GROWTH AND REPRODUCTION.—About 3½ pounds is the largest we have ever seen; there may be larger ones. Few, if any, of the original 6 are left. I fear that they have been caught and stolen. I am unable to tell how many young they have produced.

DIFFICULTIES.—Some of the carp caught in our fish-ponds this spring had sores on them, and something like hair or long mossy stuff adhering to their backs.

Since receiving carp we have been very busily engaged in other matters which have prevented us from looking after our fish interest; but we hope in the future to give the matter considerable attention, as we are, we think, in much the best shape of any one in this part of Georgia to do a good business in this line, and hope we may make it a success.

IDAHO.128. *Statement of A. B. Roberts, Boise City, Idaho, Nov. 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received yesterday, through the Pacific Express, one pail containing 18 carp. I took them out to my pond to-day and put them in, but not in the open pond. I constructed a box about 18 inches by 2 feet, and 6 inches deep, on this I nailed a frame of sufficient height to reach above the top or surface of the water, and around this frame a wire-cloth screen. I then filled the box with loam, which sunk the box to which the screen was attached.

FOOD.—I then put in the carp and fed them a little rye chop, about a tablespoonful, and about one-half as much crumbs of bread. I intend to give them a piece of boiled potato in a day or so, which I will slightly mash before putting in.

HABITS.—When the little fellows were put into the screen-tank they went to the bottom and took a survey of the condition of things there; then, in a few minutes, some of them were seen dodging around, and occasionally one would strike the surface as if catching some small insect that lay on the water.

ILLINOIS.129. *Statement of W. W. Robertson, Beverly, Adams Co., Ill., Sept. 20, 1882.*

GROWTH.—The carp put in my pond 1 year ago are doing finely and are growing fast, and seem to be adapted to our waters.

130. *Statement of J. H. Black, Clayton, Adams Co., Ill., Sept. 10, 1882.*

GROWTH.—The carp, not exceeding 3 inches in length when received last December, are now from 12 to 14 inches long. They can be seen on any clear day.

131. *Statement of Quincy Burgess, Clayton, Adams Co., Ill., Aug. 11, 1884.*

GROWTH.—The 10 carp, about 2½ inches long when received December 15, 1882, were on September 20, 1883, from 14 to 16 inches long.

EDIBLE QUALITIES.—The other day Mr. H. R. Matter and myself repaired to his pond with hook and line, determined to test the eating qualities of carp. After about a half hour's wait for a bite I succeeded in landing a very fine carp weighing 4½ pounds and about 20 inches in length. It was as beautiful a fish as you would wish to look at, it being one of the lot received in November, 1882. We had the fish prepared in good style and invited a few guests to pass judgment on its merits. Suffice it to say that the fish was pronounced by every one to be of as fine a flavor as any fish, far surpassing the buffalo, or even the much-sought-for catfish; and to my taste it was more palatable than even the salmon or halibut of the East. I am perfectly satisfied if this one was a fair specimen of the carp. I do not ask any better fish for my use, and this was the decision of all who partook of it.

132. *Statement of S. P. Bartlett, Quincy, Adams Co., Ill., Sept. 18, 1883.*

CARP IN THE RIVERS.—There have been a number of carp taken from the Mississippi with hook and line and by seine, several above Quincy, and a few days ago one near Hannibal in the Sue River. The latter weighed a little over 8½ pounds and was of the mirror variety. Mr. Abner Foster, of Beardstown, Ill., on the Illinois River, writes me as follows: "Have you at any time planted carp in the Illinois River? My reasons for asking is that one was taken from the river near here weighing about 8 pounds. I procured it alive and put it in my pond." As we value carp too highly to experiment with by putting them into the river, those taken must have escaped from live boxes or from ponds. It nevertheless demonstrates the practicability of eventually stocking our streams with this wonderful fish.

Three years ago Illinois secured some of the first carp distributed by the United States Fish Commission. Since that time there have been built, or arranged for their accommodation, nearly 2,000 ponds, a large number of them being stocked, and some already have produced their first increase; and if the large number of letters received by the Commissioners is to be regarded as evidence, very few of those applying for and receiving the fish have had any complaint to make. The almost universal testimony is that the fish have grown beyond the most sanguine expectations, and it seems to have mattered little whether they have been planted in northern or southern counties; they have as readily adapted themselves to the waters and at once made themselves at home.

A gentleman residing in Henry County writes:

"I received from the United States Fish Commission, in December, 1881, some German carp. I placed them in a large pond, used principally for making ice. During the rainy months the dam gave way, and I supposed my fish were all gone, but upon draining off the water left in small holes I found 3 of them, measuring from 16 to 18 inches long, weighing from 2½ to 4 pounds each."

Another letter from Adams County, under date of September 15, 1882, says: "The carp you sent me in December, 1881, when received were but from 2 to 2½ inches in length. Now they measure from 14 to 16 inches. They come to the surface whenever I go to feed them, and, in fact, I sometimes think they know my step. They eat almost anything of a vegetable nature. I would not part with my fish for any reasonable amount."

And still another, from Jackson County, dated October 15, 1882, says:

"The fish received from the State fish commission were placed in the pond, in good shape, December 15, 1881. I had not seen them, as I wrote you, up to September 1, not having fed them daily, but having, as you suggested, placed a sack containing shipstuf in pond, supposed they had sufficient food. Judge my surprise, upon making an examination of my pond by drawing a seine, to find that the carp were from 20 to 21 inches in length, beauties indeed, and to find all the old carp there and my pond full of what I suppose are young carp. As my pond was clear of other fish they must be such. Put me down as being no longer skeptical as regards big fish stories."

The fish noted in the above extracts are all now but little over a year old, none of them having been planted before December, 1881, and when it is taken into consideration that the fish, as a rule, do not grow during the winter months, it follows that this remarkable increase in size must have taken place in less than 9 months, showing an average growth of from 14½ to 15 inches in that length of time, even in the northern part of the State.

133. *Statement of the editor of the Quincy Whig, Quincy, Adams Co., Ill., Sept. 19, 1884.*

DISPOSITION OF CARP RECEIVED.—About 2 years ago 60 young carp were planted in the large pond at Highland Park, when none of them were over 5 inches long. This pond was dry a short time before the carp were deposited therein. It is only such a pond as any farmer can have.

GROWTH.—The pond was seined yesterday, and among the fish taken was a magnificent specimen of carp about 2 years old, and which measured 17 inches in length and weighed 9 pounds and 3 ounces. The others were returned to the water.

EDIBLE QUALITIES.—The officers of the Highland Park Association gave their first annual fish dinner yesterday, and after the chowder and fried fish had been discussed the carp was brought on. It was elegantly served, and every person who had the good fortune to be present pronounced it superior to any of the native fish prepared for the occasion. When taken from the water the gills were of a deep red color, differing materially from the color of any of our native fish, and the meat was of a rich gold shade, very hard and firm, being quite similar to the salmon.

134. *Statement of C. G. Cushing, Princeton, Bureau Co., Ill., Oct. 6, 1882.*

GROWTH.—The carp, which were placed in a pond from 5 to 6 feet deep and supplied by spring water, have grown to be from 10 to 12 inches long, and weigh about 1½ pounds each.

135. *Statement of W. G. Delashmutt, Martinsville, Clark Co., Ill., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 fish alive in May, 1881, and placed them in a pond covering 5 acres, with a muddy bottom; water from 2 to 15 feet deep.

ENEMIES.—The pond also contains catfish and sun-fish, but no plants. I have not fed the fish.

DIFFICULTIES.—The size of the pond and its depth has thus far prevented us from knowing how the fish are doing. The bottom of the pond being filled with stumps, we cannot use a seine.

136. *Statement of John Dean Caton, Chicago, Cook Co., Ill., Sept. 17, 1884.*

DISPOSITION OF CARP.—I placed the carp received 2 years ago in a pond 10 miles northwest of Joliet, Will Co., Ill. The pond is 300 feet in diameter, excavated to a depth of from 5 to 6 feet, in stony blue clay. It is supplied with water from an artesian well, from a depth of 148 feet, at a temperature of 67°. The supply of water must average from 80 to 90 gallons per minute, and is plainly impregnated with sulphur and iron, but is good for domestic use.

PLANTS.—There is no shade in the pond as yet.

FOOD.—The carp are fed with vegetable food, but I fear not always abundantly.

GROWTH.—But 2 of the carp have been taken, and they were found to weigh about 4 pounds.

REPRODUCTION.—The young fish seem to be abundant. They more frequently appear on the surface just after sunset, but disappear at the least alarm. They seem to work continually in the clay banks and bottom, so that the water is kept constantly discolored.

EDIBLE QUALITIES.—The 2 fish taken were found to be good on the table.

HOW TO CATCH CARP.—Carp are very shy and difficult to capture. One was taken on a hook and the other in a net. Quite a number were inclosed in the net, but all but the one jumped over the net and escaped. They seem to be very active.

137. *Statement of H. Hammerschmitt, Naperville, Du Page Co., Ill., Aug. 7, 1882.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 16 small scale carp and placed them in my pond the following spring. I also obtained a lot of mirror carp in the fall of 1881.

FOOD.—The carp come for their food every evening like chickens.

GROWTH.—This summer I found the mirror carp to be from 10 to 12 inches long and the scale fully 18 inches.

REPRODUCTION.—They also seem to have spawned, as a number of small ones have lately made their appearance.

DIFFICULTIES.—Prior to the receipt of the mirror carp 8 of the scale carp were found dead and all the rest kept out of sight.

138. *Statement of W. Thompson, Effingham, Effingham Co., Ill., Sept. 25, 1882.*

GROWTH.—I saw a number of my carp yesterday, and they seemed fat and plump and in excellent condition. When I received them last fall they were from 3 to 4 inches long; now they measure from 12 to 14 inches in length and weigh from 1½ to 2 pounds.

139. *Statement of Charles W. Davenport, Cambridge, Henry Co., Ill., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in 1880, and several subsequent shipments. I have 4 ponds, covering over 4 acres of water, the banks well lined with willows and other shade trees. The temperature of the water is from 70° to 80°. The pond in which I put the carp covers about three-fourths of an acre, from 1 foot to 6 feet deep, and contains no other fish, frogs, nor turtles.

FOOD.—I fed the carp on coarse baked meal, crackers, and liver.

GROWTH.—In draining my pond last fall I found 35, mostly leather carp, measuring from 16 to 21 inches in length. The heaviest weighed 4 pounds and 10 ounces. They attracted much attention and were regarded as a marvel of growth and beauty. They were of the shipment received in November, 1881, and November, 1882.

DIFFICULTIES.—I have had no difficulties except with floods and high water. These have been disastrous. I have lost all my fish thereby, but am not discouraged. Two of my ponds are stocked with native fish, but they develop very slowly and are destructive to one another. I am preparing to drain them, and shall use all my ponds for carp—the large ones for adult carp and the small ones as nurseries.

140. *Statement of Van Wilbanks, Mount Vernon, Jefferson Co., Ill., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 7 carp in June, 1880, and 10 in June, 1882. The bottom of my pond is a mixture of mud and sand. The water is of moderate temperature in summer, with about 6 inches of ice in winter. There are no plants except a few willows around the edges.

ENEMIES.—There are no enemies except an immense number of craw-fish.

FOOD.—We feed graham bread and meal.

GROWTH.—The old carp are about 2 feet long and weigh about 4 pounds each. There are 4 of these left. The second lot have attained the length of 12 inches in one year. They have not spawned yet. They have been no trouble to us.

DIFFICULTIES.—I find by seining the pond that there are no young. I know of no cause except the possibility of the immense number of crawfish having devoured the spawn.

141. *Statement of J. P. Dimmit, Decatur, Macon Co., Ill., June 1, 1882.*

GROWTH AND DIFFICULTIES.—Mr. L. L. Haworth had his pond overflowed by the Sangamon River and lost all except 2 of his carp, which, however, are 14 inches long and weigh 2 pounds each.

142. *Statement of D. T. Kyner, Macon, Macon Co., Ill., Aug. 24, 1883.*

GROWTH AND REPRODUCTION.—The 20 carp received last fall have grown finely and now average about 10 inches in length. I have an immense number of young, which are all covered with scales, while on the large carp there can be found very few.

143. *Statement of Samuel R. Thomas, Virden, Macoupin Co., Ill., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp in November, 1881, and put them in a small pond until May, 1883, when I transferred them to a large pond with a muddy bottom. The water is surface water from grass land.

PLANTS.—The pond contains a good many water plants. River moss is very thick in it.

ENEMIES.—The large pond has some croppery and bass. In the smaller one I keep only the carp and buffalo.

FOOD.—I feed them with wheat and stale bread.

GROWTH.—Their present length is from 14 to 16 inches, and they weigh about 2½ pounds each. They have not spawned yet. I intend to make small ponds for them to hatch their young in, so as to keep them separate the first year.

144. *Statement of George L. Zink, Litchfield, Montgomery Co., Ill., Aug. 26, 1882.*

GROWTH.—About the second week of last November a can containing 10 pairs of carp was received and placed in a private pond and fed during the winter. Recently I seined the pond to ascertain my success. I succeeded in landing 1 only, and upon measurement it showed a length of 11½ inches.

145. *Statement of J. C. Hart, Monticello, Piatt Co., Ill., Feb. 25, 1884.*

GROWTH AND REPRODUCTION.—The carp you sent me 2 years ago have grown well. I weighed 2 carp in June, 1882, which weighed $1\frac{1}{2}$ and $1\frac{1}{4}$ pounds, respectively. One in October, 1882, weighed 2 pounds, and 1 in September, 1883, weighed 4 pounds. There were some young hatched last summer; I do not know how many.

146. *Statement of Madison Miller, Percy, Randolph Co., Ill., Sept. 25, 1882.*

GROWTH.—One of the carp received last spring was caught this month and was found to be $17\frac{1}{2}$ inches long and to weigh 46 ounces.

147. *Statement of J. Keller, Steelville, Randolph Co., Ill., Aug. 1, 1882.*

GROWTH.—The German carp received last fall have done so remarkably well that I have commenced another pond on a larger scale. The largest are now about 13 to 14 inches long and weigh about $1\frac{1}{2}$ pounds, the most astonishing growth I ever beheld in a fish.

148. *Statement of E. H. Norwood, Olney, Richland Co., Ill., Aug. 6, 1884.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in the fall of 1882 and the 20 received in November, 1883, I placed in a pond 40 by 200. I have never seen the fish until last night, when I caught 2 with a net, one weighing 4 pounds and measuring $19\frac{1}{2}$ inches in length, and the other being 12 inches long.

149. *Statement of John Meyer, Addicksville, Washington Co., Ill., Oct. 4, 1882.*

GROWTH.—I saw 3 or 4 of my carp to-day, and was surprised to find them of such enormous size. About 10 months ago they were no more than 3 inches long, and they now measure 15 inches in length.

150. *Statement of A. H. Baker, Fairfield, Wayne Co., Ill., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago I received 20 carp and put them in a pond of half an acre, from 2 to 10 feet deep, of which from 2 to 8 inches is mud. The pond is composed of surface water, with no overflow, except after rains.

PLANTS AND ENEMIES.—The pond contains grasses and various kinds of weeds. There are some small catfish and sun-fish, but no frogs nor turtles.

FOOD.—I have fed them but very little. For a while I gave them cooked corn and meal.

GROWTH.—I still have all but a very few that got out when the pond overflowed, and should estimate that they would weigh 3 pounds each. They have given us but little care and no trouble.

151. *Statement of John Lowe, Johnsonville, Wayne Co., Ill., July 21; and Sept. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp November 26, 1880. My pond has a surface of about 100 square rods, with clayey or muddy bottom, and is 6 feet deep in the center. It is fed by the rain falling on about 2 acres. I have found it heated to 108° in summer, and ice 26 inches thick on it in winter.

PLANTS.—Red top and red clover line the edges, and occasionally a large-leaved water-grass.

ENEMIES.—It contains craw-fish, one small water tetrapin, a few frogs, but no other fish.

GROWTH.—I have seined my pond and find quite a quantity of last year's carp. They were about 7 inches long and weighed $\frac{1}{2}$ of a pound each. I took 3 of the old ones. One measured $22\frac{1}{2}$ inches in length and weighed $4\frac{1}{2}$ pounds. They were beauties, and looked like our common buffalo suckers.

REPRODUCTION.—They spawned June 2 and 8, 1882, but none hatched. I thought it was too cold— 42° . Again, on June 11, 1883, they spawned and none hatched; the water was 86° . I took several thousand spawn and tried to hatch them in buckets, but failed. I fear the carp are all females. I think I shall have a great plenty of young by next year, however. I have had a good many calls for stock.

EDIBLE QUALITIES.—We ate some of the young carp fried, and found them most excellent.

INDIANA.

152. *Statement of J. W. Bortsfeld, Selma, Delaware Co., Ind., Nov. 17, 1883.*

DISPOSITION OF CARP RECEIVED.—I first received 20 carp January 14, 1881, and subsequently another lot in November, 1882. My pond measures 75 square feet, is 6 feet deep, and has a muddy bottom. When I put the carp in the pond I had to cut the ice.

PLANTS.—Plants that are indigenous here grow in the pond.

ENEMIES.—This summer I found in the pond 1 catfish, measuring 5 inches in length. I found no carp in the pond. The catfish may have eaten them.

153.—*Statement of George T. Ager, Goshen, Elkhart Co., Ind., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—February 22, 1881, I received 15 pairs; April 14, 1881, I received 30 pairs; and March 17, 1882, I received 10 pairs. My lake covers 70½ acres, 65 of which is good water. It has a muck bottom and is covered with water grass. The deepest water is 15 feet, the average 5 feet. The temperature is 50° in spring and 70° in summer.

PLANTS.—The pond contains lilies, water-grass, alder brush, willows, and all such plants as are common to our creeks and lakes.

ENEMIES.—There are no other fish, but there are frogs and turtles. Dipper ducks and snappers have been very troublesome. I gave them no food whatever.

GROWTH.—Nine that I found before April 6, 1883, weighed from 8 to 15 pounds. The largest of these measured 27 inches in length, 9 inches in breadth, and 4 inches in thickness.

REPRODUCTION.—They have produced fully 75,000 young, that reached 2 pounds in weight last autumn. Those that I see daily are now from 10 to 17 inches long and weigh from 3 to 3½ pounds each.

MORTALITY.—Speeding horses and cutting ice on the lake, 1882-'83, killed not less than 60,000. But for this calamity I should have tons of carp on the market this fall. Although I have carp left, I do not know in what quantity. I think the originals were not all lost, as I could find 9 of the largest size. The two-pounders were as numerous as the pounders. Competent judges estimate the number of dead at 66,000, or 10 tons weight, which I think below the real number, as there were many hundreds on the bottom; the estimate having been made for those floating on the surface only. There were others larger, especially the mirror kind, laden with spawn. Such a growth and quantity I believe to be unprecedented in this country for such a time and place, and the sight has been viewed by hundreds of people.

154.—*Statement of John H. Baker, Goshen, Elkhart Co., Ind., Apr. 12, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago last fall the carp were placed in a pond covering about 80 acres, with a maximum depth of about 15 feet.

GROWTH.—The fish were thrifty, and when the winter came on they would average from 1 pound to 2½ pounds.

MORTALITY.—The winter has in some way killed them all. To-day I counted 176 dead carp on the margin of the pond. How they were destroyed I cannot tell.

155. *Statement of Charles H. Brown, Connersville, Fayette Co., Ind., March 1, 1883.*

GROWTH.—The carp received in the fall of 1881 have done splendidly. I think I have some that will weigh nearly 3 pounds. They did not spawn last season.

156. *Statement of John S. Coffman, Galena, Floyd Co., Ind., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp November 23, 1880. I have them in a pond covering 1 acre. It is fed by small springs, and very little water runs out. It stands at about 70°.

PLANTS AND ENEMIES.—The pond contains natural plants and grasses of the creeks and swamps here. There are no enemies except some green frogs, which we try to kill out.

FOOD.—We feed them with stale bread about every day.

GROWTH AND REPRODUCTION.—We have 8 of the original lot, and they are from 17 to 18 inches long. There may be some young ones, but I cannot tell certainly. There has been no difficulty with them.

157. *Statement of J. B. James, New Albany, Floyd Co., Ind., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in 1879 and 20 in 1881. The first lot was placed in a 5-acre pond, full of all sorts of fish, including bass, &c. The second lot was kept in a box 3 by 4 by 6 feet, and sunk in 5 feet of water. In the spring of 1882 there were 18 found in good condition, but the Ohio River flood soon after carried them all away.

158. *Statement of Samuel B. Emsminger, Danville, Hendricks Co., Ind., Sept. 6, 1883.*

VALUE.—Some of my neighbors have carp which you sent them, which they ask \$10 per pair for.

159. *Statement of Dr. Seth G. Bigelow, Silver Lake, Kosciusko Co., Ind., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 18 carp November '23, 1880, and twice subsequently. My pond is dug out of muck, from 1 foot to 5 feet deep, very soft and sticky. The water comes from a spring 3 rods away, and is not very cold.

PLANTS.—The pond contains sweet flags, piper grass, wild grass. It contains no other fish nor turtles—only frogs. There were formerly muskrats, but I cleared them out.

FOOD.—I feed them with bread from 1 time to 3 times per day, according to the number of visitors who want to see the fish eat.

GROWTH.—I still have the 18 which were received in 1880, 11 received later, and 15 which Joseph Penrad put in my pond. They will average about 4 pounds.

REPRODUCTION.—They have produced about 350 young, which are of all sizes and weights. By reason of an overflow some spawn was lost last year.

SALBS.—I sold 250 young, at \$10 per hundred, to stock other ponds with. This year I expect a great demand. I shall sell them at \$5 per hundred this fall.

160. *Statement of Robert McClaskey, La Grange, La Grange Co., Ind., Oct. 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in November, 1880, and 20 more in 1882. I have a pond covering not over a third of an acre, from 1 to 4 feet deep. It has a muddy bottom, and is fed by a spring. The spring yields water enough to keep the pond, but is not very cold. I put the first lot in a small division 1 rod square and 3 feet deep, but seeing nothing of them all last summer, I supposed them dead, and you kindly sent me 20 more last fall. The latter I put in a small inclosure, but they were swept away by a flood.

ENEMIES.—There are only a few frogs.

FOOD.—I have given them some table refuse.

GROWTH.—A few days ago I drew the water from the small pond and found 6 fish of the first lot, which were from 6 to 8 inches in length. In their close quarters I should suppose it impossible for them to grow, and wonder they are that size.

161. *Statement of Fred. Balweg, Indianapolis, Marion Co., Ind., May, 1883.*

DISPOSITION OF CARP RECEIVED.—My pond is situated 5 miles south of Indianapolis, on the Madison road, is constantly supplied with spring water, and is surrounded with beech and maple trees. I stocked the pond with 40 carp in January, 1881. These young fish were then from 2 to 3 inches long. I subsequently received 20 more, from 2 to 3 inches long, which I also put in the pond.

ENEMIES.—Recently I discovered that kingfishers dive into the pond and bring out young carp. Since then I seldom go to the pond without a double-barreled shot-gun. This month I have killed 5 of these birds.

FOOD.—So far I have not fed any of the fish. There is an abundance of food in the pond.

GROWTH.—I saw nothing of my first lot of fish until October, 1881, 10 months after they were placed in the pond, when I found 19 of the 40 carp. These 19 were from 12 to 14 inches long, and weighed 2 pounds each.

162. *Statement of the Agricultural Press, Indianapolis, Marion Co., Ind., May, 1883.*

GROWTH.—Several of the parties who received mirror carp from 2 to 2½ inches long, January, 1882, report that 9 months thereafter they were from 12 to 18 inches long.

MISCELLANEOUS.—The carp is undoubtedly the fish needed to supply the want of a food-fish adapted to the waters of any part of our Union. Experience has shown us that they grow and thrive anywhere beyond the anticipation of even the most sanguine.

Mr. Davis, of California, writes on pond culture, as follows:

"The pond should have plenty of water-cress, lily, and grass, or some aquatic vegetation in it, for several reasons. First, it gives shelter to the fish; second, there is a vast quantity of food derived from it and its accumulation; third, it is indispensable, for on it the fish deposit their spawn. The eggs are adhesive and stick or adhere to the sprigs or branches, and without this the eggs would fall to the bottom in the mud and be lost. A pond should be protected, and to do this it should have a good canal or ditch dug around it to carry all the surplus water away and not allow any overflow. This all done, we have a pond ready for the water, which may be warm or cold, fresh or salt; for the history of these fishes proves that they will adapt themselves to all waters. The warmer the water the better, even up to 100°, and the faster will be the growth of your fish. The water should be kept at or near a uniform depth. The flow of water is immaterial, so that there is plenty of life in it."

163. *Statement of William A. Sohofield, Indianapolis, Marion Co., Ind., Oct. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp, only 9 of which were alive. About March 1, 1883, I cut the ice on the pond and placed the carp therein. I saw no signs of them to May 28, 1883, though I was informed by two of my hands that they saw one on two different occasions. The maximum depth of the water is 6 feet.

ENEMIES.—My pond appears to be alive with bull-frogs and tadpoles. It also contains two mud turtles, which with the frogs and tadpoles I fear will destroy the carp.

GROWTH.—The 9 carp received in good condition last spring have grown finely.

164. *Statement of William Zook, Denver, Miami Co., Ind., Nov. 3, 1883.*

GROWTH.—I drained my pond this fall, and found 7 of the carp which you sent me 2 years ago, which are now from 16 to 17 inches in length. What became of the rest I do not know, unless the kingfishers speared them.

165. *Statement of Calvin Fletcher, Spencer, Owen Co., Ind., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I put 15 carp in a pond 33 by 80 feet and from 4 to 6 feet in depth. The bottom is composed of sand and mud, with some clay. About 600 gallons of water flow through it per hour. The summer temperature is 60° at the inlet and 80° at the outlet. In 1881 it reached 90°; in 1882, 75°.

PLANTS.—The pond contains horse-mint, white lily, and coarse border grass, hybiscus, cat-tails, and bulrush.

ENEMIES.—A few frogs will slip in. The sun-fish have escaped all our efforts at extermination.

FOOD.—From July to the 1st of October I give them boiled potatoes mashed, with one-eighth part of shorts or flour. I also feed stale bread and scraps in general.

GROWTH.—There are 4 left, which weigh from 10 to 12 pounds each. December 26, 1880, I estimated the weight of my 5 carp remaining at 2½ pounds, and the same 5, April 8, 1882, then fully 2 years old, weighed, respectively, 6½, 8, 8, 8½, and 8¾ pounds. They made their greatest growth the second year. They have produced no young, as all were females.

166. *Statement of Thomas M. Browne, Winchester, Randolph Co., Ind., Sept. 25, 1882.*

GROWTH.—The carp sent into this district are doing splendidly. Their growth astonishes everybody.

167. *Statement of John W. Nighbert, Elrod, Ripley Co., Ind., Sept. 25, 1882.*

GROWTH.—I received some young carp November 28, 1881, which are doing finely. There are plenty of them 1 foot long, and I think they will weigh 1 pound each.

168. *Statement of John Fisher, Liberty Mills, Wabash Co., Ind., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in the fall of 1879. The pond dried up and the fish all froze to death. In 1881 I received 30 more and put them in a pond containing 1½ acres, fed by springs with water from 1 to 7 feet in depth. The bottom is muck and gravel.

PLANTS AND ENEMIES.—The pond contains moss, wild rye, and wild grass, and also minnows and frogs.

FOOD.—I give them bread and unground wheat 2 or 3 times a week.

GROWTH.—I still have 29 of the 1881 lot which will average from 3 to 4 pounds.

REPRODUCTION.—The young carp are very plenty and will amount to thousands. They are from 1 to 6 inches in length. I have let 3 other men have some to stock ponds with. There has been no trouble except with my dam.

INDIAN TERRITORY.

169. *Statement of W. J. B. Lloyd, Caddo, Choctaw Nation, Ind. Ter., Dec. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I have several times enlarged my pond until it is now 90 feet wide and long and 4 feet deep in the center. I put the young carp in it but cannot tell how many lived. I have seen 5 or 6 of them at a time. They are playful and feed greedily, but I have as yet seen no young.

IOWA.

170. *Statement of S. W. Coffin, Fairfield, Jefferson Co., Iowa, May 29, 1884.*

DISPOSITION OF CARP RECEIVED.—June 17, 1882, I planted 3 small carp, 2 inches long and a little larger than a knitting needle.

FOOD.—The sound of my voice is sufficient to bring them to the surface of the water, and a whistle causes them to come for food. For this they scamper through the water like so many pigs. They disappear as suddenly at the voice of a stranger.

GROWTH.—They are now from 15 to 18 inches long, and will weigh from 5 to 6 pounds.

171. *Statement of Hon. James F. Wilson, Fairfield, Jefferson Co., Iowa, Apr. 19, 1884.*

DISPOSITION OF CARP RECEIVED.—In 1882 I placed 7 small carp in my pond, and also 20 more in the autumn of 1883. The pond is about 150 feet in length, by say 75 feet in extreme width, and has a depth of from a few inches up to 12 feet.

ENEMIES.—No other fish than carp are kept in the pond.

GROWTH.—During the breaking up of the ice this spring an original carp was found near the shore that measured 21 inches from head to tail, and weighed 5½ pounds. The smaller ones of the plant of 1883 were about 9 or 10 inches long. The growth of the carp would indicate that the pond is well adapted to them.

MORTALITY.—I think all of the carp are dead. Fifteen or sixteen dead carp were found near the shores where the ice melted away, but no live ones were seen. The cause of this mortality cannot be accounted for unless it be the severity of the past winter. Four of the original carp were found dead in the spring of 1883 at the breaking up of the ice.

MISCELLANEOUS.—Presuming that so great a body of water for so few fish would not require the cutting of air-holes in the ice, none were cut. I have another pond stocked with a variety of fish, and there are great numbers in it, and all do well. No openings were cut in the ice in this pond.

172. *Statement of B. F. Shaw, Anamosa, Jones Co., Iowa, Feb. 14, 1882.*

GROWTH.—Some of the carp received on July 1, 1880, for distribution were kept in cold spring water until about May 1, 1881, when they were removed to our carp ponds. While in the cold spring water they grew but little. They were from 10 to 14 inches long in November, 1881, six months after being removed from the cold water. They were fed entirely on purslane from the garden, the leaves of which they ate with great relish.

173. *Statement of G. O. Hilton, Keokuk, Lee Co., Iowa, Nov. 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp which I received last February I placed in the new pond. A few of them died soon after, but a dozen of the larger ones, about 3 inches long, lived, and have done finely.

FOOD.—During the latter part of the summer and the fall they were fed on green sweet-corn shaved from the cob. They relished this very much and became very tame.

GROWTH.—They appear to be over a foot in length now. We have been much interested in watching them and seeing them do so well.

174. *Statement of John Johnston, Lisbon, Linn Co., Iowa, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp about 3 years ago and put them in a pond 50 feet long, 20 feet wide, 3½ feet deep, with a bottom of muck. About 108 gallons of water per hour flow through it, of which the temperature at the inlet is 50°, and at the outlet from 65° to 70°.

PLANTS AND ENEMIES.—It contains moss and rushes; no fish, but plenty of small frogs. Soon after putting the fish in I discovered a mink, and caught him with a trap; also, a large snapping-turtle was shot.

FOOD.—When I first received them I fed them with cabbage, cracked corn, peas, and bread crumbs.

MISCELLANEOUS.—After a few days they disappeared, and I have not seen anything of them since.

175. *Statement of Capt. W. H. Kitterman, Ottumwa, Wapello Co., Iowa, Mar. 14, 1884.*

GROWTH.—On examining my pond lately I found the carp, which were about 3 inches long last spring, to measure from 12 to 15 inches in length.

176. *Statement of P. Thorson, Ossian, Winneshiek Co., Iowa, Oct. 24, 1882.*

REPRODUCTION.—I have a good supply of carp. In July there was a lot of young carp to be seen in the pond.

KANSAS.

177. *Statement of A. W. Crawford, Humboldt, Allen Co., Kans., Oct. 19, 1882.*

DIFFICULTIES.—During a heavy freshet my carp, and those of S. J. Stewart, were swept into a lake containing other varieties of fish.

178. *Statement of John Merkle, Atchison, Atchison Co., Kans., Oct. 18, 1882.*

DISPOSITION OF CARP RECEIVED.—I placed the carp in my pond, 20 by 40 yards, with an average of 4 feet deep, and a bottom of rock and gravel, and supplied by a strong living spring. I have watched patiently, but have been unable to see any of them.

PLANTS.—The pond is supplied with aquatic plants.

ENEMIES.—The fish in my ponds consists of buffalo, catfish, sun-fish, bass, and perch. I seined my pond July 4 last, and caught buffalo and catfish weighing 25 pounds.

179. *Statement of W. C. Rose, Uniontown, Bourbon Co., Kans., Feb. 11, 1884.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the fall of 1881, and my pond not being ready I kept them in a cistern until spring. May 20, 1882, I put the remaining 15 in a pond covering 9 acres. About 60 days later a flood carried away 5 more of my carp.

GROWTH.—I found one on the 24th of July which weighed a full pound. In March, 1883, I drained the pond and found 10 carp, 6 of which averaged 3 pounds in weight. The other 4 averaged 2½ pounds in weight.

DIFFICULTIES.—My pond not having been completed in the first place, the carp were kept in a cistern during the winter, and again from March to May, 1883, while I was completing the pond. During the latter time 6 more died, leaving but 4 of the original lot. Nevertheless, I procured some more in the fall of 1882. I have not seen any young carp.

180. *Statement of W. C. Rose, Uniontown, Bourbon Co., Kans., Aug. 13, 1884.*

GROWTH.—I procured some carp and placed them in my pond in December, 1880. On March 1, 1882, several of these carp weighed 3 pounds each, a growth of 3 pounds in one year. On May 1, 1884, the largest had attained a weight of 9 pounds, a growth of 6 pounds the second year. I have seen no young yet. I found below my pond July 24, 1882, one of the carp planted May 20, 1882, when it was about 3 inches long and ¾ of an inch broad. When found, it was 11 inches long and 3¼ inches broad, and weighed 1 pound. This growth was attained in 64 days.

181. *Statement of M. M. Edwards, Baxter Springs, Cherokee Co., Kans., Nov. 29, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received last December were placed in a small pond near my house. I have no means of knowing to what extent they have increased in size or quantity, not being able to catch any of them. I know of their being in the pond by frequently seeing them jumping to the surface.

182. *Statement of E. D. Lutz, Crestline, Cherokee Co., Kans., July 17, 1884.*

GROWTH.—On draining my pond to-day I found a carp that measured 10½ inches in length. The other carp escaped during a flood last January.

183. *Statement of Dr. George Wigg, Clay Centre, Clay Co., Kans., Mar. 27, 1882.*

VITALITY.—I have a German carp in my office that has been frozen stiff on sixteen different occasions in one month, and yet each time resuscitation has been produced after the lapse of 6 hours.

184. *Statement of E. A. Perry, Cherokee, Crawford Co., Kans., Nov. 6, 1882.*

DISPOSITION OF CARP RECEIVED.—I received of Hon. A. P. Riddle, of Girard, 20 carp November, 1881, and planted them in a lake 1 mile south of Cherokee, Crawford County. The lake covers from 35 to 40 acres, and is about 6 feet deep.

GROWTH.—The carp are doing well. I have not seen them in the last 10 days, but I should judge they were 12 inches long. These fish were from 1 inch to 2 inches long when planted.

185. *Statement of E. Z. Butcher, Solomon City, Dickinson Co., Kans., July 14, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880 I received 7 leather carp, which I lost in the fall. In 1881 I received 10 scale carp. My pond is 30 by 50 feet, 4 feet deep, with a muddy bottom, and is made by excavating the sides of a creek some 150 feet. I dammed the creek to get water to irrigate my garden, taking water from the top of the dam. Its temperature is always warmer than that of the creek. I have a large pond in which I am at present breeding buffalo.

PLANTS.—The pond contains algae, sagitaria, flag, and several varieties of rushes. I have collected water-cresses and all the water-plants I could find in other ponds and streams.

ENEMIES.—I have tried to keep out other fish, but sometimes a bull-head or a sun-fish gets in.

FOOD.—I have fed them regularly with the millet seed, corn, wheat, &c.

GROWTH.—Those received in 1881 were from 11 to 14 inches long when I lost them.

DIFFICULTIES.—My first fish were lost by the creek overflowing. This I remedied by making a bank around the pond. Three weeks ago my boys, to see and handle the carp, waded in the water, which was not over a foot deep, and so disturbed the muck and liberated so much gas that we found 9 out of the 10 dead. These would undoubtedly have produced thousands of young this year. These were the scale carp.

TO AVOID A SOFT OR MUDDY TASTE OF CARP.—We catch large buffalo-fish sometimes in summer, in hot weather, out of ponds with muddy bottoms. To prevent the muddy taste that some complain of in carp, I find this the best way: Kill the fish as soon as caught, clean directly, soak in ice water a few minutes, then sprinkle with salt slightly, and hang up to dry. The above will make them *firm, sweet, and good*. I know whereof I speak, as I have bought, dressed, and sold fish for 10 years; and those who complain of carp, if dressed and served as above, would not know them as the same fish.

186. *Statement of O. Edwards, Doniphan, Doniphan Co., Kans., Nov. 1, 1882.*

DISPOSITION OF CARP RECEIVED.—I deposited the carp received March 1, 1882, in a pond, supplied with a spring, on a high prairie. This pond can be drawn and cannot overflow, and is supplied by springs that never fail.

GROWTH.—I procured an old seine, 5 by 30 feet, and one haul of it developed the fact that the carp were still in the pond; for they went over and under the rotten seine like beetles through a spider's web. After repeated efforts, I succeeded in capturing one and in seeing some 4 or 5 more. This carp was about one inch long last winter; now it weighs 3 pounds and 2 ounces, and measures 17 inches. To all appearances they are all the same size.

187. *Statement of J. D. Griffith, Clear Creek, Ellsworth Co., Kans., Oct. 16, 1882.*

PLANTS.—The pond in which I placed 10 carp, in May, 1881, contains a fine growth of aquatic plants.

ENEMIES.—Turtles got into the pond, and I drained it to-day to get them out.

FOOD.—My carp have received no artificial food.

GROWTH.—The pond was seined September 10, 1882, and 7 of the original carp taken. In less than 4 months these fish have grown to be a trifle over 2 pounds. To grow from a little minnow of about 2 inches to a fish of 2 pounds' weight is remarkable. We caught several old carp to-day which weighed from $3\frac{1}{4}$ to 4 pounds.

REPRODUCTION.—This season my carp commenced spawning quite early, the first spawn being discovered about the middle of April. I found it to consist of a glutinous substance sticking to some brush in the water. Upon holding it so that the light would pass through the mass, I discovered that it contained living objects. I placed the substance in a tumbler of water, and in a short time I had 9 as sprightly little fish as are to be seen. My pond during the early part of the summer seemed alive with small carp, and we could dip them up in buckets when after water. As soon as they attained some size they disappeared, since which time they have not been seen until to-day, when we caught 200 at one haul of a seine.

DISPOSITION OF YOUNG.—I have distributed to several of my neighbors about 100 young carp to stock their ponds, and can furnish some for the purpose of stocking streams.

188. *Statement of D. B. Long, Ellsworth, Ellsworth Co., Kans., Sept. 10, 1882.*

GROWTH.—About the first week in May I put the 8 carp in a pond. They were about 3 inches long at that time. To-day I captured 7 of them, averaging 16 inches in length and $4\frac{1}{4}$ inches in depth. I believe they would average 2 pounds in weight.

189. *Statement of Benjamin Shaffer, Ellsworth, Ellsworth Co., Kans., Oct. 15, 1882.*

GROWTH.—I caught 3 carp this fall in Smoky Hill River that weighed about 2 pounds each and measured 16 inches. They had escaped from the State ponds.

190. *Statement of T. S. Hanway, Lane, Franklin Co., Kans., Oct. 10, 1882.*

DISPOSITION OF CARP RECEIVED.—I placed my carp received December 3, 1881, in a pond 75 by 80 feet, constructed by the side of a spring branch and fed by two pipes. It was so constructed that I could admit the water into it at will. The surplus water passes out, and the pond does not fill up and the water run over as when dammed. I built a second pond this summer, which is 75 by 150 feet, and when full will be 6 feet deep. It is also at the side of the branch connected like the first. I saw the carp for the first time about the middle of last May.

ENEMIES.—Cranes and coons caught some of the carp.

FOOD.—My little boy, 10 years old, now feeds them every day, and has them so tame that they will come like pigs when he calls and eat out of his hand; fine sport for boys. I give the carp corn, apples, potatoes, and the refuse of the kitchen. They are enormous eaters.

GROWTH.—I have 20 fine-looking carp, some of which I caught the 10th of last August. They measured 13 inches in length and $3\frac{1}{4}$ in depth, and weighed 2 pounds.

191. *Statement of A. A. Moore, Dennis, Labette Co., Kans., Aug. 10, 1884.*

GROWTH AND PRODUCTION.—I placed 20 carp in my pond in December, 1883, and on drawing off the water yesterday I found only 2 old carp, which, however, weighed over 1 pound each. There were also in the pond 137 young 2 inches long. My carp had no care at all, and I was surprised to find any in my pond, as it froze almost solid last winter.

192. *Statement of Chas. A. Dow, Hartford, Lyon Co., Kans., Nov. 16, 1882.*

DISPOSITION OF CARP RECEIVED. I received 20 carp last December in good condition. I made a pond by damming a small ravine. About 10 rods above the first dam I made another, to turn the surplus water into a ditch running around one side of the pond and emptying into a ravine below. When full, the maximum depth of the pond is about 6 feet. In September I had to put the carp into a small creek flowing into the Neosho River.

GROWTH.—In September, 15 of the carp averaged fully 10 inches in length.

DIFFICULTIES.—The water leaked out of the pond beneath the dam. The dryness of the summer compelled me to remove the carp to the creek.

193. *Statement of John Pickering, Fontana, Miami Co., Kans., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880, and 20 more in November, 1882. My pond covers $1\frac{1}{4}$ acres with depth of 2 to 11 feet, with a bottom of mud and clay. It is entirely dependent on surface water from a 40-acre

pasture lot. The water gets quite warm during the summer, but is always cold at the bottom.

PLANTS.—I sowed wild rice in it, but the stock having access to it kept it clear of all vegetation.

ENEMIES.—There are perch, frogs, turtles, crayfish, and muskrats in the pond, and it is impossible to keep them out, as the pond cannot be drained. I cannot get clear of them, but I intend to make a pond that can be emptied and put another lot of fish in it.

FOOD.—I have fed the carp with bread, soaked corn, and vegetables, both raw and cooked. I generally feed them every night at sundown.

GROWTH.—I counted 5 of the original lot the other day. One of them got washed out last June which weighed 8½ pounds. I have not seen any young yet.

DIFFICULTIES.—The great difficulty, as stated above, is to get rid of enemies. The second supply of fish was put in a new pond, from which musk-rats let the water out during the winter, and the carp froze to death.

194. *Statement of O. S. Munsell, Council Grove, Morris Co., Kans., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp about three years ago. My pond was 30 by 200 feet, with a maximum depth of 6 feet. It was supplied with water from what was supposed to be an unfailing spring.

GROWTH.—The fish did well and grow rapidly.

DIFFICULTIES.—The cray-fish undermined the dam in spite of all we could do, and we lost the carp; the spring also failed after a protracted drought. I have faith in carp, and would try it again had I an unfailing water supply.

195. *Statement of A. Oberndorf, jr., Centralia, Nemaha Co., Kans., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 30 carp in 1880, and put them in a pond made of a slough about 25 by 30 feet and from 3 to 6 feet deep. The wall of the pond caved in the spring after I received the carp, and I suppose if any were left they fell a prey to the catfish, which are numerous in the slough. The experiment has been too expensive to repeat it. I fed them with mush, as directed.

196. *Statement of Thomas B. Sears, Churchill, Ottawa Co., Kans., Oct. 14, 1882.*

CARP IN SALINE RIVER.—The heavy rains of last spring washed out my pond, and I suppose my carp are now in Saline River.

197. *Statement of L. Defenbaugh, Arlington, Reno Co., Kans., Oct. 24, 1882.*

DISPOSITION OF FISH RECEIVED.—I shall change my carp into another pool in the spring, as there are thousands of other fish with them. I have two ponds, and intend to build a third.

GROWTH.—On draining the pond a few days ago I found 19 carp, as pretty fish as I ever saw. Some were 16 inches long, weighing about 2 pounds each. They have not spawned this year.

198. *Statement of Charles Reynolds, Arlington, Reno Co., Kans., Oct. 16, 1882.*

GROWTH.—I received the fish last fall. I am greatly surprised now to find that carp 2 or 3 inches long should in so short a time grow to their present size of from 16 to 18 inches in length. They were received last fall.

REPRODUCTION.—I have seen a lot of small ones of this summer's spawning, all of which are doing well.

199. *Statement of G. R. Jones, Hutchinson, Reno Co., Kans., Oct. 12, 1882.*

GROWTH AND REPRODUCTION.—The carp received one year ago will average from 15 to 18 inches long. There is a fine lot of young.

200. *Statement of A. Clark, Nickerson, Reno Co., Kans., July 1, 1884.*

GROWTH AND REPRODUCTION.—November 25, 1882, I received 20 carp, which are now from 16 to 18 inches long. They have not spawned yet, but I have placed some limbs of box-elder with leaves and seed on them in the pond, hoping to catch the spawn.

201. *Statement of editor of Industrialist, Manhattan, Riley Co., Kans., Sept. 23, 1882.*

DISPOSITION OF CARP RECEIVED.—We have 2 ponds, in one of which we placed our carp, April 22, 1882.

ENEMIES.—Perhaps the cray-fish, which are numerous, consumed the eggs of the young fish, though the carp are only a year and a half old.

GROWTH.—Under the influence of hot and dry weather the pond became very shallow, scarcely a foot in depth. We availed ourselves of the unusually good opportunity for drawing the pond and inquiring into the condition of our carp. On Thursday we found the carp had developed into magnificent specimens, some averaging 16 inches in length and weighing, by actual test, from 2½ to 3 pounds. To show how rapidly the carp gained, we will remark that these fish, with the most ordinary care, or for the most part no care at all, have doubled in weight since last April.

202. *Statement of E. L. Patek, Manhattan, Riley Co., Kans., Nov. 15, 1882.*

DISPOSITION OF CARP RECEIVED.—I put the carp in a large tub 4 feet deep by 6 feet across the top. In this tub I put stones and some dirt, allowing ½ inch stream of water to run in it. The cold weather killed all but 4, which I subsequently placed in Eureka Lake. I am satisfied that carp will do well if cared for.

203. *Statement of E. M. Shelton, Manhattan, Riley Co., Kans., Oct. 11, 1882.*

FOOD.—I sometimes feed the carp once a week. I find they can be raised with much less trouble and expense than chickens.

GROWTH.—The carp were 2 inches long when received, April 18, 1881. Last April I seined the pond and captured 10 carp weighing 1½ pounds each and measuring 13 inches in length. They have fully doubled in weight during the past 6 months, and at this writing they will turn the scales at 3 pounds.

DIFFICULTIES.—I have never known of the death of but 1 of my carp, and that happened shortly after the fry were received.

204. *Statement of J. F. Buck, M. D., North Topeka, Shawnee Co., Kans., Feb. 5, 1884.*

DISPOSITION OF CARP RECEIVED.—The 21 carp I received in October, 1879, were then from 2 to 2½ inches in length, and having been kept in the cellar until the next May, were placed in a pond of the Fairmount Children's Home, near Alliance, Ohio. The pond is 150 by 400 feet, has a muddy bottom, and is very well supplied with spring water.

PLANTS.—The pond was very full of water-grasses and weeds.

ENEMIES.—The pond was cleaned out about May, 1882, as it became infested with turtles. A part of the fish were taken during the first season by thieves.

GROWTH.—In October, 1882, Mr. J. K. Neisz, my successor, told me one of the carp weighed 5 pounds, and that 5 others weighed 20 pounds. They were then 2 years old.

MISCELLANEOUS.—When the pond was drained some of the fish passed down the spring brook. With anything like ordinary care they would have been a grand success.

205. *Statement of Rev. D. H. Welch, Macksville, Stafford Co., Kans., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp about June, 1879, and some more last fall. My pond, when full, covers from 1½ to 2 acres, and has a muddy bottom. It only gets filled up when there is a freshet. It contains no special kinds of plants.

ENEMIES.—It contains frogs and common water turtles.

DIFFICULTIES.—The first lot froze to death in the winter of 1879-'80, at which time they weighed about 2½ pounds each. The greatest difficulty has been to keep water enough in the pond and keep it open in winter. I do not know what the last lot is doing, and am satisfied they will prove a grand success if well taken care of.

206. *Statement of Henry A. Troeger, Levy, Sumner Co., Kans., Dec. 9, 1882.*

GROWTH.—We received a can of carp nearly a year ago. We saw nothing of them all summer and concluded that they had all died from effects of their journey. Our dam at the lower end of the pond did not seem high enough for us during our continued rainy weather last spring, so we dug an outlet at one side through our meadow, and a few fresh fish found their way up into our pond in spite of the wire screen which we had put in to keep them out. When the water got low last fall we seined out 3 nice carp 15 inches long. How many more there may be in the last mentioned portion of the pond we do not know.

207. *Statement of John W. Chandler, Wellington, Sumner Co., Kans., Nov. 20, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received in November and December last were placed in a pond covering 3 acres, which was formed by running a race from the mill dam into it.

GROWTH.—These carp are now from 14 to 17 inches in length, are fat and plump, and will weigh $3\frac{1}{2}$ pounds. We have seen no evidence of their spawning. We can raise carp cheaper than we can beef or pork.

208. *Statement of Geo. F. Nealley, M. D., Collyer, Trego Co., Kans., Oct. 23, 1882.*

DISPOSITION OF CARP RECEIVED.—The twenty carp received a little less than a year ago I placed in a pond 1 rod square, supplied by a spring of cold water. This fall I transferred the carp to a larger and more shallow stream near the smaller one, and allowed the water to stand a while and run from the former into the latter.

GROWTH.—On draining the small pond this fall I found the entire original number of carp, but they had not increased in size, which fact I attribute to the cold water. In the larger pond, in which I lately placed them, I anticipate more favorable results. At the date of the transfer, it was estimated that their weight was a half-pound each, and their length about 8 inches.

KENTUCKY.

209. *Statement of James M. Bell, Lawrenceburg, Anderson Co., Ky., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 24 carp in November, 1881. My pond covers $\frac{1}{2}$ of an acre, is from 10 to 12 feet in the deepest part, and has a muddy bottom. It is fed by springs.

PLANTS AND ENEMIES.—A grass with a broad stem grows about its edges. It also contains catfish, turtles, and frogs.

GROWTH.—I have seen about 7 or 8 of them and should think they would weigh from 7 to 8 pounds apiece, but I never saw anything of them until about one month ago. They appear to be about 18 inches in length.

MISCELLANEOUS.—I have never fed them. I supposed they spawned last spring. I have never taken any care of them, and flatter myself that by next summer I shall have some nice fish to eat.

210. *Statement of O. A. Gilman, Paris, Bourbon Co., Ky., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 5 carp of one kind and 7 of another in November, 1881. My pond is nearly round, averages 150 feet wide and 4 feet deep. The bottom is of yellow clay and limestone rock. The water is derived entirely from rains. It is situated in the rear of the barn and much of the wash of the yard runs into it.

PLANTS.—It contains no water plants. Willows grow around it.

ENEMIES.—By mistake some perch got into the pond, but I do not think they will be deleterious to the carp.

FOOD.—We have been giving them bran and meal mixed in balls often. They are also fond of vegetable matter.

GROWTH.—I think there are 3 or 4 of the scale carp and 2 or 3 of the mirror carp. I caught 5 in May last, 2 of which weighed, before being dressed, $5\frac{1}{2}$ and 7 pounds, respectively. These were 3 years old. The 3 others were about a year old and weighed about 2 pounds each. The yearlings now weigh from 2 to $2\frac{1}{2}$ pounds each.

REPRODUCTION.—I cannot tell how many, but there look to be quite a large number of young, from 2 to 3 inches long. I have supplied some of my neighbors with young. I have also stocked another pond with some of the yearlings.

HOW TO CATCH CARP.—They bite readily at small hooks baited with worms, the same as the suckers do.

211. *Statement of J. G. Stephens, Holt, Breckenridge, Co., Ky., Aug. 5, 1881.*

DISPOSITION OF CARP RECEIVED.—I received the 20 carp last April, when they were from 3 to 5 inches long, and the largest not exceeding $1\frac{1}{2}$ ounces in weight. Before placing them in the pond 2 died. I still have 6 leather and 10 scale carp.

PLANTS AND FOOD.—The pond is devoid of vegetable matter. I fed the carp only 2 or 3 times.

GROWTH.—I measured the largest, a leather carp, this morning, and found it to be 12 inches long. It would have weighed $1\frac{1}{2}$ pounds, this extraordinary growth being attained without any extra attention on my part.

MISCELLANEOUS.—I do not see why carp cannot be raised as cheaply as chickens and ducks.

212. *Statement of C. T. Allen, Princeton, Caldwell Co., Ky., Aug. 26, 1881.*

DISPOSITION OF CARP RECEIVED.—The 20 carp, received in good order December 15, 1880, I placed in an excellent pond of good water. The pond is a deep one, and from 30 to 40 yards in diameter.

FOOD.—I did not feed the carp.

GROWTH.—I seined the pond day before yesterday, and caught a carp which measured by the rule 14½ inches in length and weighed from 1½ to 2 pounds. I caught only 1, but am confident the remainder are alive and doing well.

213. *Statement of J. H. Ritchey, Burkesville, Cumberland Co., Ky., Jan. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—About this time last year I received a can of carp. My pond was dug in a marshy place, with a bottom composed of a stiff blue clay, 8 or 10 inches deep, which became soft after being under water since last April. The pond is fed by a spring, is about 4 feet deep and 40 feet wide by 100 feet long. The stream at this time will furnish 500 gallons of water in 24 hours, and the water is running over the dam. The pond in which I now keep them is a new one with stiff yellow-clay bottom and sides.

FOOD.—During the warm weather they were fed regularly on bread, wheat, and corn, for which they came to the top of the water. Since the 1st of October I have not seen any of them, but I still continued to give them about one-fifth as much feed as they had previously. It seems they had not eaten any of it, and I suppose there was about ½ bushel of food in the pond.

GROWTH.—Three of my carp weighed 2½ pounds each; others are much larger, one weighing 4 pounds.

DIFFICULTIES.—A few days ago I discovered a few of them sick, floating on the water. I caught them and placed them in another pond, and in a few hours they seemed to be well. Others were discovered to be sick during the day. I then drained the pond as rapidly as I could, and at the close of the second day had the water all out, but by this time all my fish were sick and three of them had died. I cut open the dead ones, but failed to find anything wrong. They were entirely empty, not one particle of food or mud being in them. Could it be possible that the decayed food in the pond poisoned them, or was the poison generated in this blue mud in the pond?

214. *Statement of Alex. Jaffrey, Lexington, Fayette Co., Ky., Sept. 20, 1883.*

DIFFICULTIES.—Musk-rats destroyed my dam, leaving so little water that the heron and minks gobbled the young carp before they were 2 inches long.

215. *Statement of James H. Mulligan, Lexington, Fayette Co., Ky., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received 30 carp, and in the autumn of 1882, 10 more. My pond is circular in form, 100 feet in diameter, 30 inches in depth, and has a rocky bottom with a deposit of from 4 to 6 inches of soft mud. The water is from limestone and is hard. It comes from a spring 50 feet distant at the rate of from 40 to 60 gallons per minute. Its temperature in summer is from 40° to 45°.

PLANTS.—It contains no plants, except green moss growing from the bottom and the fine roots of willows which stand on the banks.

ENEMIES.—It contains some frogs, some white and black perch, which it seems impossible to exclude.

FOOD.—At very irregular intervals in summer I feed them on vegetable scraps, boiled corn, &c.

GROWTH.—I still have 11 of the first lot, which will weigh from 6 to 8 pounds each. Those of the second lot are from 6 to 8 inches in length.

DIFFICULTIES.—I am afraid that the eggs, like those of the trout which I had previously tried, would not fecundate in the cold limestone water.

216. *Statement of William Warfield, Lexington, Fayette Co., Ky., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 carp in June, 1880, and 21 in November, 1880. My ponds are 150 yards long by 40 feet wide and 16 feet deep, with a muddy bottom. The ponds are fed by a constant stream of water from 4 to 24 inches, according to the season. They contain no plants.

ENEMIES.—They contain the ordinary perch and croppery. Common mud-turtles and frogs are occasionally found in them.

GROWTH.—I have caught with a seine several of the old ones. They grow very fast and weigh from 12 to 15 pounds each. I have seen no young ones.

217. *Statement of Robert D. Allen, Farmdale, Franklin Co., Ky., Oct. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp in the fall of 1881 and have received 20 since. My pond has a muddy bottom and is fed by springs as well as the drainage from 50 acres of land. It is not very cold.

ENEMIES.—It contains new lights (a game fish), sun-fish, catfish, frogs, turtles, &c.

GROWTH.—One of the old ones which was handled this summer weighed 10 pounds and was 2½ feet long.

REPRODUCTION.—They have produced many, very many, young. We can see hundreds.

218. *Statement of A. W. Overton, Frankfort, Franklin Co., Ky., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 carp about a year and a half ago. I have kept them in a pond about 3 feet deep, fed by a spring. The water from the spring runs in a moderate stream and is of the usual temperature of spring water.

ENEMIES.—The pond contains no fish, frogs, nor turtles.

GROWTH.—I still have the 30 carp, one of which, taken 2 months ago, measured 22 inches in length. I have given them very little if any food. They have produced no young. They have given me no trouble.

MISCELLANEOUS.—Col. R. D. Allen, superintendent of the Kentucky Military Institute at Farmdale, Franklin County, has had carp from 2 to 3 years and has the finest pond in the county. The carp he first received are increasing very rapidly; so fast, indeed, that he thinks of trying to check the increase. His largest carp weighs 10 pounds and he is delighted with their food qualities.

219. *Statement of John Richards, Nolin, Hardin Co., Ky., Apr. 15, 1882.*

GROWTH.—A leather carp weighing 5½ pounds and a scale carp weighing 4 pounds from my pond were exhibited to the members of the legislature a few days ago. These fish were planted in my pond April 17, 1881.

220. *Statement of T. J. Megibben, Cynthiana, Harrison Co., Ky., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp in 1881, and the dry summer of that year dried up the pond, and the fish perished.

221. *Statement of Garnett Burks, Hardynville, Hart Co., Ky., Aug. 16, 1883.*

DISPOSITION OF CARP RECEIVED.—April 10, 1881, I received 3 scale carp and 2 leather carp; they were then 3 to 4 inches long. November 9, 1881, I received 16 more leather carp.

GROWTH.—In August, 1881, a boy killed one of the first lot, which was 16 inches long, 11½ inches around the body, and weighed 1½ pounds. August 3, 1881, I transferred the other 4 to another pond; they were equally as large as the one killed. To-day I caught a leather carp and measured it. It was 24 inches in length and 17½ inches around the dorsal fin and weighed 10 pounds. The weighing and measuring were witnessed and certified to by S. G. Renfro, William McCaulley, and S. W. White, citizens of Hardynville.

222. *Statement of E. S. Edwards, Horse Cave, Hart Co., Ky., May 20, 1883.*

GROWTH.—The 3 carp placed in my ponds 14 months ago now average 6 pounds in weight.

223. *Statement of C. J. Walton, M. D., Munfordville, Hart Co., Ky., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in 1880 and again in 1881, which I distributed to the farmers for their ponds, called basins or sink-holes. These are from 3 to 15 feet deep, have muddy bottoms, and contain lilies, flags, &c.

ENEMIES.—They also contain catfish, sunfish, toads, and frogs.

GROWTH AND REPRODUCTION.—These carp now weigh from 5 to 7 pounds, and there has been a large increase. They are eagerly sought after and now take precedence of all other fish.

DIFFICULTIES.—In one pond located in a horse lot all the carp died.

MISCELLANEOUS.—Our county is almost wild with the carp excitement, and the demand is so heavy that we cannot by any means supply it. There are lots of large basins, "sink-holes," and carp-raising in them is bound to thrive.

224. *Statement of J. L. Woolfolk, Madisonville, Hopkins Co., Ky., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 43 carp in September, 1880, and put them in a small pond 25 feet square with 3 feet of water. One-half of it is stone bottom and the other half muddy bottom. I can turn in the water at pleasure, and, having filled the pond, cut it off.

PLANTS AND ENEMIES.—It contains grass and dock and a few sun-perch.

FOOD.—I sometimes fed them with liver and baked bread.

GROWTH.—I had 33 of the carp when I drained my small pond, which measured from 6 to 8 inches in length. I have found no young ones. I think the boys have caught a few of the carp.

MISCELLANEOUS.—Last fall I went to Florida and there was but little care taken of them. After the small pond was drained I threw the carp into the big pond with the other fish.

225. *Statement of L. Washburn, Lyndon, Jefferson Co., Ky., Aug. 20, 1881.*

GROWTH.—When I placed the carp in my pond, April 9, 1881, they were from 2 to 4 inches long. August 10, 1881, just 4 months after planting them, they were 13½ inches long and weighed 34 ounces. I fed the carp.

226. *Statement of Geo. K. Speed, Louisville, Jefferson Co., Ky., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the spring of 1881, and 20 since. My pond covers 4 acres, and averages 4 feet deep, and is fed by several springs. It contains no grasses.

ENEMIES.—The pond contains bachelor-perch, sun-fish, catfish, and frogs.

GROWTH.—In the summer of 1882, there were 2 washed over the dam during the freshet, which weighed 7 pounds each and were full of eggs. I have never fed them. I do not know how many are left or how many young there are.

DIFFICULTIES.—The only difficulty has been to keep off the poachers. The laws are good enough, but they cannot be executed.

227. *Statement of T. Jeff. Phelps, Covington, Kenton Co., Ky., April 8, 1882.*

GROWTH.—I can produce for inspection scale carp that have attained a weight of from 4 to 5 pounds, and leather carp a weight of 7 pounds, within 5 months after being placed in the pond.

228. *Statement of Thos. W. Roane, M. D., Covington, Kenton Co., Ky., Oct. 9, 1882.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp last November and placed them in a pond dug in rich alluvial ground and fed by springs.

ENEMIES.—On the 6th instant my pond was bored into by craw-fish, and when the stream of water was noticed an immense number of very small fish, measuring from ½ to ¾ inch long, with large heads, were observed coming out in it.

FOOD.—The carp feed most greedily and devour anything I give them, such as corn, wheat, bread, potatoes, fruit, &c.

GROWTH.—The carp have grown exceedingly. One I took with hook and line, to my astonishment, weighed 3 pounds, and I am sure it was not the largest.

REPRODUCTION.—I am delighted to be assured of the carp breeding so young and in such a quantity. There must be thousands of them in my pond.

229. *Statement of A. Shinkle, Covington, Kenton Co., Ky., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1881, and some more two or three times since. I have two ponds, one 250 yards long and 100 feet wide and 18 feet deep, with clayey bottom; and another pond, not so large, exclusively for carp. It is 8 feet deep, with a bottom of clay and grass. The water is quite cool and overflows 6 months in the year.

PLANTS.—The pond contains a heavy wild grass, with blue grass surrounding it.

ENEMIES.—The large pond contains black bass, white perch, new light, sun-perch, rock-bass, and pickerel.

FOOD.—I fed the carp with stale bread and vegetables. They are so well fed that they will not bite at a hook.

GROWTH AND REPRODUCTION.—I think some of the old ones would weigh 10 or more pounds. There are young, but I do not know how many. I keep them in the pond and cannot catch them. They are the liveliest I have ever seen; more so than the black bass. They will not bite hooks baited with bread or worms.

220. *Statement of J. B. Briggs, Russellville, Logan Co., Ky., July 28, 1881.*

DISPOSITION OF CARP RECEIVED.—I received a lot of carp, 2 inches long, last winter, and placed them in my pond at once. In consequence of low water, I removed them to another pond the other day.

GROWTH.—When I transferred my carp they were 14 inches long and weighed 24½ ounces.

231. *Statement of W. Van Antwerp, Mount Sterling, Montgomery Co., Ky., Oct., 31, 1882.*

DISPOSITION OF CARP RECEIVED.—I went personally and planted the carp, two years ago the 19th of this coming December, in shallow water lying fair to the sun, with brush, stumps, and old roots in it to make places for spawning.

PLANTS.—I have sown rice and transplanted water-lilies, &c., to make shade and concealment for them.

GROWTH AND REPRODUCTION.—To-day I can go to my ponds and catch carp of 7 pounds weight. Several ponds have young fry in them to the amount of many hundred thousand each.

EDIBLE QUALITIES.—We have caught quite a number to test their edible qualities, which all pronounce not excelled by any of our indigenous fishes. I always instruct the cook to clean them nicely, then wrap the fish in a linen towel, have a large kettle of water boiling, coil the fish neatly in the kettle and boil fifteen minutes, then turn off the water, remove to a baking pan without marring, and put in the oven, bake, and then baste with butter gravy. A nice dressing could occupy the interior of the fish and the space around the sides. If properly done it makes a dish fit for a king, or a hungry fisherman.

232. *Statement of R. Payne, Georgetown, Scott Co., Ky., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in the fall of 1880. They have been kept in a pond of 1 acre, with a muddy bottom and water from 1 foot to 8 feet deep. It is fed by a medium spring.

PLANTS AND ENEMIES.—Its margin is covered with moss, and it contains perch, frogs, and turtles.

GROWTH.—Last year they weighed from 7 to 9 pounds each. I have not seen them since and there are no signs of any young. I have never fed them or paid them any attention.

233. *Statement of T. M. Hifner, Mortonsville, Woodford Co., Ky., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 22 carp in December, 1881, but my pond overflowed and they escaped. I have since placed a screen in it. Last May I received 25 more from a neighbor. I have them in a pond about 200 feet in diameter and 4 feet deep, with a muddy bottom. It is fed by the rains and is of the temperature of the atmosphere.

ENEMIES.—The pond contains nothing else but frogs.

GROWTH AND REPRODUCTION.—Mr. J. H. Jesse, of Versailles, who placed some in his pond, in December, 1881, caught one last year which weighed 6 pounds. My second lot were from 2 to 4 inches long. Those that are 2 or more years old about here are said to weigh from 10 to 12 pounds, and their minnows are very numerous.

234. *Statement of George M. Emack, Versailles, Woodford Co., Ky., July 18, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 6 carp in December, 1880, and some more last November. My pond covers about 1 acre, and has a muddy bottom, and is 4 feet deep. It is fed by rains only.

ENEMIES.—It contains a few sun-perch. I do not think there are any turtles in the pond.

FOOD.—I give them barley, corn, and sometimes ground oats and rye.

GROWTH.—I think there are about 3 of the first lot remaining. I took 1 out this spring which weighed 14 pounds. Those received last November now weigh about 1 pound each. I have given them no care whatever.

235. *Statement of M. S. O'Neil and C. G. Arnold, Versailles, Woodford Co., Ky., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 12 carp in March, 1881. Our pond covers 1 acre, has a muddy bottom, and is from 3 to 10 feet deep. A stream runs into it the year round, but not enough to overflow the banks.

PLANTS.—It is surrounded by blue grass and white clover, which the fish feed on when the water is high.

ENEMIES.—It contains no other fish, but there are small frogs, and but few, if any, turtles in it.

FOOD.—We feed them seldom, but sometimes on cabbage and young corn.

GROWTH.—We still have 9 of the old ones. We see them occasionally feeding close to shore, and think they will weigh from 15 to 20 pounds each.

REPRODUCTION.—It is impossible to tell how many young they have produced, but we would think millions. The first hatching will weigh from 5 to 7 pounds each. The next will weigh about a pound each. There are a great many from 1½ to 3 inches in length.

DISPOSITION OF YOUNG.—We have given our friends over 1,000 to stock their ponds.

DIFFICULTIES.—The greatest difficulty is to kill off the birds that catch the young carp, such as kingfishers.

HOW TO CATCH CARP.—They bite well at worms on the hook. We caught one with a small piece of cabbage yesterday, which weighed 5 pounds. We suppose we have caught over a thousand with hook and line. At times they bite just as well as other fish.

236. *Statement of P. G. Powell, Versailles, Woodford Co., Ky., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp in December, 1880, and put them in a pond 60 by 150 feet, with a muddy bottom. It is fed from a spring with a moderate amount of water. It contains no plants.

ENEMIES.—It contains a very few white perch, a few broom, a few mud-turtles, and some frogs.

GROWTH.—I think I have 5 of the old ones which will weigh 10 pounds apiece. I have never fed them.

REPRODUCTION.—The pond is well stocked with young, the largest of which weighed from 1½ to 2 pounds last April. We have had so many that we have eaten some and given a few to a neighbor.

EDIBLE QUALITIES.—The small ones, split open and fried, are excellent. The opinion of every one is that they never ate better fish. I expect to have fish every day during the season.

DIFFICULTIES.—I shall have difficulty in keeping them from becoming too numerous.

LOUISIANA.

237. *Statement of R. T. Carr, Mansfield, De Soto Parish, La., April 3, 1882.*

GROWTH.—The carp received about 2 months ago I placed in a pond known as Johnson's pond. When received they were about 2 inches long and scarcely an inch wide, and now they have attained a length of about 6 inches and a width of about 2½ inches.

238. *Statement of J. Ernest Breda, Natchitoches, Natchitoches Parish, La., Feb. 23, 1884.*

GROWTH.—Of the carp received I have now fine specimens varying from 18 to 24 inches in length. I have raised none from them on account of other fish entering, by an accident to my dam. I am preparing another pond, in order to drain the first and destroy the other fish, and then I am certain that I will make carp-culture not only a pleasure but a source of considerable profit. But for the accident to my pond I would have had for next fall over 100,000 fish over 12 inches in length.

239. *Statement of J. A. Ivy, No. 163 Camp Street, New Orleans, La., May 26, 1883.*

GROWTH.—The carp received January 1, 1883, are growing and doing well. From their appearance in the water, I think they weigh from 2 to 3 pounds.

240. *Statement of R. H. Yale, New Orleans, Orleans Parish, La., July 17, 1883.*

DIFFICULTIES.—The carp you furnished were all destroyed by snakes and black trout.

241. *Statement of S. V. Martin, St. Martinville, St. Martin's Parish, La., Nov. 17, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 carp in December, 1880, and 30 more in December, 1882. My pond covers 2 acres, is from 1 foot to 10 feet deep, and has a sandy bottom. It is supplied with rain water in large quantities, and when full the water flows through an iron frame into the Teche River.

PLANTS.—Sea-rush, green turf, Bermuda grass, and other grasses grow in the pond.

ENEMIES.—The pond is inhabited by almost all the fish and turtles indigenous here.

FOOD.—I feed my carp on corn and vegetables. They thrive on any kind of food.

GROWTH.—The first lot of carp escaped into the Teche River. I have about 15 of the second lot, which weigh about 15 pounds each.

REPRODUCTION.—Many young passed through the iron frame into the Teche River. Some of the young will weigh 5 pounds.

EDIBLE QUALITIES.—I have eaten several carp served in different styles. With the exception of the red-fish and gaspereau, the carp cannot be surpassed.

DIFFICULTIES.—The iron frame between my pond and the river is not so constructed as to admit of the passage of the water and still prevent the escape of the fry.

242. *Statement of J. C. Loye, Minden, Webster Parish, La., July 21, 1882.*

GROWTH.—I saw nothing of the 20 carp received on January 9, 1882, until, when making some improvements in my pond last week, preparatory to stocking it with native perch, 3 large carp floated to the surface, killed by the muddiness of the water. By actual weight 2 of these carp weighed each $2\frac{1}{2}$ pounds, and the other weighed $2\frac{1}{2}$ pounds. This extraordinary growth demonstrates that the climate and waters of the South are so adapted to the carp that they will even reach greater proportions than in their native streams in Germany. These fish are easily raised, and make a most excellent dish. Since these 3 were killed, other carp have been discovered in the pond.

MAINE.

243. *Statement of S. H. Chandler, New Gloucester, Cumberland Co., Me., July 16, 1883.*

DISPOSITION OF THE CARP RECEIVED.—I should have put the carp into a pond immediately after receiving them. I received them Saturday, and kept them till Monday in the can in which they came from Washington, and in that time they nearly all died. Either through my ignorance of the proper method of managing them, or for other reasons, it was a complete failure.

[By changing the water every few hours he could have kept the carp in the same can over Sunday.—EDITOR.]

244. *Statement of Geo. H. M. Barrett, Rockport, Knox Co., Me., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp November 19, 1880, 2 inches long. The place I put them in was frozen over with ice 2 inches thick, and it was so cold I think the fish were chilled, though they were all alive when I put them in.

DIFFICULTIES.—I never saw anything of them afterwards, and do not think there was any chance for them to live, as they were so small and it was so cold. I would like to try it again.

MARYLAND.

245. *Statement of Thomas G. McCulloh, Frostburg, Alleghany Co. Md., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—In April, 1880, a friend gave me 2 scale carp, 3 inches long, which I placed in my pond. In October of the same year I received 40 leather carp. In October, 1881, I received 100 more of the same variety. The pond covers $\frac{1}{2}$ of an acre, is 6 feet deep, and is certainly suited to the raising of carp.

ENEMIES.—The pond is infested with turtles, snakes, frogs, and kingfishers; formerly also with chubs and other small fish common in our waters.

GROWTH.—When I drained the pond for the purpose of improving it, I caught one of the first pair, which was 15 inches in length and weighed $2\frac{1}{2}$ pounds. In October, 1882, I drew off the pond again and found thousands of chubs and other small fishes, all of which I turned out. I did not drain it to the bottom, but did so sufficiently to discover the carp swimming upon the surface singly and in pairs. One which I caught, supposed to be one of the last lot received, was 15 inches long. I saw larger ones, but as I did not wish to disturb them too much, I turned on the water and filled the pond.

REPRODUCTION.—We have not discovered any little ones, and feel at a loss to know why.

246. *Statement of N. J. Watkins, in behalf of James A. Iglehart, Davidsonville, Anne Arundel Co., Md., July 29, 1881.*

DISPOSITION OF CARP RECEIVED.—The carp received in November, 1879, I placed in a pond covering about $\frac{1}{2}$ of an acre.

FOOD.—The green scum on the surface of the pond and the large quantity of vegetable matter therein afford the carp a sufficient quantity of food.

GROWTH.—Nothing was seen of the carp until February, 1881, when, on cutting ice, several large carp, averaging 15 inches in length, were stirred up from the bottom of the pond.

REPRODUCTION.—Carp 6 inches long were also stirred up from the bottom of the pond while cutting ice, and supposed to be the young of the original carp. Thousands of very small fish, which have proved to be carp, made their appearance in schools upon the surface of the water in July, 1881.

MISCELLANEOUS.—The old carp have not been seen since February, 1881, but it has been suggested that the muddiness of the pond indicates their presence.

247. *Statement of Adolph J. Gall, Jessup's, Anne Arundel Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—On May, 1880, I received 12 leather carp 3 inches long, and May 25, 1880, 20 scale carp from 2 to 3 inches long. The leather carp have been kept in an ice pond covering $\frac{1}{2}$ of an acre, with an average depth of 4 feet, and a muddy bottom. The scale carp have been kept in an ice pond $\frac{1}{4}$ of an acre in extent, with a depth of 2 feet, and a muddy bottom. The water supply is derived from 4 or 5 never-failing springs.

ENEMIES.—There are no water-plants and no other large fish in the ponds. There are bull-frogs in them, but I kill them whenever they appear. My most serious difficulty has been to keep off a certain bird, the so-called "kingfisher."

FOOD.—I feed the carp with bread, boiled hominy, boiled potatoes, fine-cut cabbage leaves, and lettuce leaves when in season. They are fed 3 or 4 times per week in spring, summer, and fall.

GROWTH AND REPRODUCTION.—I have 7 of the original carp left, and 10 of the scale carp. They weigh from 2 to 4 pounds. They have produced thousands of young, which vary from the size of a cucumber-seed to about $\frac{1}{4}$ of a pound. In my opinion the scale carp is far superior to the leather carp in regard to multiplying, although the latter outgrew the former by one-fourth at least, under the same care.

DISPOSITION OF YOUNG.—I have given some of the young to my neighbors, and have stocked the stream.

248. *Statement of Samuel Anderson, Rutland, Anne Arundel Co., Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received my carp in December, 1879, and put them into my mill-pond, which covers about 2 acres, and is 10 feet deep at its deepest point, gradually becoming shallow towards the upper end. The bottom is composed of soft mud. By storing it up at night, the water passing through the pond is sufficient to run a 10-horse-power wheel during the day. The temperature of the water at this time is about 60° Fahr.

PLANTS.—Quite a variety of marsh-grasses grow along shallow parts, and also water-lilies. There is grass upon the banks, which is in and out of water alternately as the pond is full or not, and upon which I have seen the carp feeding.

ENEMIES.—There are catfish in it, and a variety of very small branch-fish, snapping-turtles, and small terrapins. I fear the snapping-turtles have destroyed many carp.

FOOD.—I have very seldom fed my carp. I have placed corn-bread and other waste from the kitchen in the pond a few times, but do not know whether they fed on it or not.

GROWTH.—I do not know how many old ones I have left. About 14 months ago I caught one which had gotten out of the pond, the weight of which was 3 pounds and 6 ounces. I occasionally see one which I suppose would weigh 4 or 5 pounds. Such of the young as I have seen this summer would hardly weigh a pound.

REPRODUCTION.—I do not know how many young have been hatched. The first were seen about 15 months ago, when they appeared in the mill-race, and small ones passed through the turbine-wheel and were killed. I have seen many this summer feeding along the banks. A few have since become entangled in the obstruction which I have placed in the mill-race and been eaten by my miller. My trouble now is to know how to catch them.

249. *Statement of Marcus C. Barclay, Baltimore, Baltimore County, Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received 20 carp, and put them in a pond of 250 acres, with a muddy bottom, 4 feet deep, and fed by springs.

PLANTS AND ENEMIES.—The pond contains lilies and rushes, catfish and goldfish.

DIFFICULTIES.—The next day after we put them in we found them all dead, floating upon the surface of the pond, and were not able to account for it. They looked as if they had been hurt.

250. *Statement of J. A. Edmondson, No. 48 South Calvert street, Baltimore, Md., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I have received two shipments, in 1880 and 1881 respectively. I have kept my carp in a pond $1\frac{1}{4}$ acres in size and from 4 to 6 feet deep, with a muddy bottom. Considerable water flows through it, mostly spring water; it is rather warm at this season.

PLANTS AND ENEMIES.—There is grass on the margin, but nothing shows above the surface of the water. There are a few varieties of small fish in the pond, a great many snappers, and some smaller kinds of turtles.

FOOD.—I give the carp garbage occasionally. I did not feed them at all before the present summer.

GROWTH.—I cannot tell how many I have left or whether they have produced any young, as they keep the water muddy so that we cannot see them. The largest which we have noticed were from 3 to 4 pounds in weight.

251. *Statement of L. Keidel, Baltimore, Baltimore Co., Md., May 13, 1882.*

GROWTH.—In 1880 I stocked a pond with 50 carp about 2 inches long, of which 20 still survive. They now measure from 15 to 18 inches each. Feeling encouraged by this success I had another pond constructed, and am anxious to secure a lot of leather carp for it.

252. *Statement of John R. Long, Baltimore, Baltimore Co., Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years since I received about 50 carp. Unfortunately the dam leaked, and I lost all my fish. I would be very glad to get another supply.

253. *Statement of Felix McCurley, 733 West Baltimore street, Baltimore, Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—January 29, 1880, I received 19 carp, and November 4, 1880, I received 50 more, which I placed in a pond with a muddy bottom, covering perhaps 2 acres. My pond is situated on the Patapsco River, 5 miles from Baltimore. A small stream constantly flows through it into the Patapsco River.

PLANTS.—It contains grass, cat-tails, and calamus.

ENEMIES.—It also contains turtles, frogs, sun-fish, catfish, several other kinds of small fish, and musk-rats. Fish-hawks come to the pond and prey upon the fish.

FOOD.—I have not fed the carp or taken any trouble with them, and do not know whether they have spawned. I have never caught one, and it is impossible to tell how many I have.

254. *Statement of J. Randolph Mordecai, Baltimore, Baltimore Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the carp which I received into a pond covering about $\frac{1}{4}$ of an acre, with a depth of from 2 to 3 feet and a bottom of mud.

PLANTS AND ENEMIES.—It contains various water-grasses and quite a number of frogs.

GROWTH AND REPRODUCTION.—The old carp are now about 18 inches long, and their young appear to be about 3 inches long.

MISCELLANEOUS.—This fish is admirably adapted to the uses of the farmer, easily and economically raised, and apparently free from disease.

255. *Statement of William Shirley, Baltimore, Baltimore Co., Md., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—About 3 years ago I got 20 carp, and have received some twice since. I have kept them in a pond about 45 by 90 feet, and about 3 feet deep. The bottom is muddy. It is supplied by 3 or 4 moderate-sized springs, and surface drainage, which in severe storms would fill a 12-inch pipe. The temperature of the water varies according to the season; it is now about 78°.

PLANTS.—There are a few water-lilies in the pond.

ENEMIES AND FOOD.—There are no other fish in it and no turtles, but there are a few frogs. I have caught many musk-rats, but do not know if they disturb the carp or not. I give them boiled corn once a week.

GROWTH.—They now weigh, on an average, 2 pounds; some are much larger. There are about 4 of the first lot left.

REPRODUCTION.—They have produced several hundred young, which are now of all sizes, from 2 inches up. We see a great many small ones swimming about when the water is clear. Some of them have washed over into an adjoining pond. I think that we have all the fish our pond can support.

256. *Statement of Michael Willax, Baltimore, Baltimore Co., Md., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I first received carp some 3 years ago; they were 40 in number. Subsequently I received 125. The pond in which I have kept them is $\frac{1}{2}$ of an acre in size and from 4 to 8 feet deep. The upper part is sandy, the lower part muddy. I could not exactly state how much water flows through it, as it is fed by 3 or 4 springs. The water is not very cold.

PLANTS AND ENEMIES.—It contains any quantity of grasses and plants. There are also very nice shade trees about its upper portion. I have seen eels and green frogs in the pond.

FOOD.—I give the carp bread, corn-meal cakes, wheat, and rye. I feed them about twice a week.

GROWTH.—There are 38 left out of the first lot that I received. I could not state as to the others, as I have not drained the pond. They weigh from 5 to 8 pounds, and from $1\frac{1}{2}$ to 3 pounds.

REPRODUCTION.—They have produced thousands of young; the pond was literally lined with them last year. The young ones weigh from $\frac{1}{4}$ pound to $1\frac{1}{2}$ pounds. There are also smaller ones and young spawn in the pond.

257. *Statement of R. H. Woolen, Brooklandville, Baltimore Co., Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—About 2 years ago I received 12 carp and put them in a pond covering $\frac{1}{2}$ of an acre. About 2 days afterward a heavy rain washed both pond and carp away.

258. *Statement of E. A. Welch, Catonsville, Baltimore Co., Md., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 50 carp in April, I think, 1881. I have kept them in a small pond 20 yards square, with a sandy bottom, and only about 3 feet deep. A very small branch flows through it, which is dry usually from August to October.

PLANTS.—There are cat-tails, smart-weed, &c., in the pond. I intend to sow water-cress.

ENEMIES.—It contains no fish, but it contains bull-frogs, branch-frogs, and an occasional snapping-turtle. I have not fed the carp.

GROWTH.—I have about a dozen of the original lot left. They are about 14 inches long.

REPRODUCTION.—I have only found 20 or 30 young ones in all; but the pond has washed away twice. Those which I have found are about as large as my hand.

DIFFICULTIES.—My only difficulty has been the smallness of the pond, which I hope to remedy.

259. *Statement of M. Gillet Gill, Florence, Baltimore Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880 I received 20 carp. I put them in a pond, with a muddy bottom, 20 feet square. The pond has an inflow of half a gallon per minute, and contains ordinary vegetation, but no other fish, frogs, or turtles.

FOOD.—I fed them with corn and occasional refuse from the table.

DIFFICULTIES.—They were washed out by a flood. When I have a more suitable place I will try it again.

260. *Statement of Charles J. Riddle, Forks, Baltimore Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—November, 1879, I received 20 carp, and have since obtained 40 more. I have kept them in an ice pond from 2 to 4 feet deep, with a muddy bottom. A small stream of spring water flows through it, which is clear and good, except when it rains; then it overflows and muddies the pond.

PLANTS.—There are no plants nor grasses in the pond, and the stock eats the grass on the banks, so we have to feed the fish. I obtained some water-grass and planted it, but it did not live.

ENEMIES.—The pond had bull-frogs and turtles in it. We shot the latter, as we were afraid they would eat the fish. The frogs are still there.

FOOD.—We feed the carp irregularly with bread, corn, and sometimes cabbage.

GROWTH.—I have no old ones left. We ate them last spring, as we thought there were enough young ones to do well. They were then nearly 2 pounds in weight. What we have did not seem to grow last year as they did at first.

REPRODUCTION.—There are a goodly number of young ones, of various sizes.

MISCELLANEOUS.—My principal difficulty has been that they are hard to catch. We have to let the water out of the pond, and go in the mud and catch them by hand; as they do not bite the hook. We tried to catch them with a seine but failed.

261. *Statement of James Burton, Greenwood, Baltimore Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—In February, 1881, I received 20 carp, but I had not finished my pond and so lost most of them. Afterwards I received 98. The pond is perfectly round, measures 80 feet across, and is 4 feet deep. The bottom is of clay, with sandy spots in it, and is fed by a strong running spring. The water is cold in the milk-house, but when it empties into the pond it gains heat and becomes much warmer than the streams. I want to make another pond to put the large carp in this fall. They are a splendid fish.

PLANTS.—Plantain and blue grass grow on the edges of the bank. The water is too deep for any grass to grow in it. There are no other fish but carp in it. We shoot all the frogs we find. No turtles can get there.

FOOD.—We boil potatoes for them, and give them stale bread and refuse from the table. We feed them every 3 or 4 days.

GROWTH AND REPRODUCTION.—I do not know how many of the original lot I have left, as the water is stirred up during the spawning season. I caught one last fall 14½ inches long and 8¼ inches around. Some of them grow faster than others. There are some young; they go in schools. The spawn of last season were from 3 to 4 inches long in the fall.

262. *Statement of W. H. Shirley, Harrisonville, Baltimore Co., Md., Aug. 19, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 55 carp in November, 1880. I have kept them in a pond of running spring water, which is 70 feet long, 25 feet wide, and 4 feet deep, with a sandy and muddy bottom. Enough water flows through it to fill a 4-inch pipe. A part of the pond 50 feet long was made 5 years ago, and I have added 20 feet since.

ENEMIES.—It does not contain any other kind of fish, but it contains ordinary frogs.

FOOD.—We gave the carp corn and corn dough once a day.

GROWTH.—Last fall, when I lost them, there were some that would have weighed over a pound. I believe that I had over a hundred altogether then.

EDIBLE QUALITIES.—The next day we had some fried, and they were the nicest fish I ever tasted. I would not have taken \$25 for the lot I had, for I prized them very highly. The carp is as fine a fish as I want to raise or eat.

DIFFICULTIES.—At the time of the Oriole last fall, while my wife and I were in Baltimore, the man whom I had employed to work on the enlargement of my pond, not knowing that the fish were in it, cut a ditch and turned all the water and carp out. He discovered some of them, and, being scared, brought them to the house, and then left before I got home, although if he had put them back in the pond he could have saved them.

263. *Statement of Andrew Reese, Lutherville, Baltimore Co., Md., July 20, 1883.*

DISPOSITION OF CARP RECEIVED.—About 3 years ago I received about 50 young carp 2 inches in length, and placed them in a pond of fresh water supplied from a spring and emptying into Roland Run. This pond is about 30 by 60 feet, with a shelving ing shore and a muddy bottom. Its greatest depth is 4 feet. It is about 11 miles from the city of Baltimore and about 3 miles above Lake Roland, which supplies Baltimore with water. It was early in the winter that I stocked the pond, it having previously been cleaned of all impurities. Unfortunately a heavy freshet broke down the embankment of the lower end of the pond and washed all the fish into Lake Roland. Again, a second time, after fixing the pond, as I thought, more securely, I stocked it with about 60 young scale carp, and they too went down the stream into the lake. If I had a suitable pond I would not part with my carp.

PLANTS AND ENEMIES.—The water was kept free from grasses, as it was an ice pond. There were no other fish, and no frogs, turtles, nor other reptiles in it.

FOOD.—I fed the carp once a week with water-crackers, and occasionally with worms.

GROWTH.—I was surprised to find that the first lot of fish, in 6 months after they had been planted in the pond, had grown to the length of 7 inches.

LAKE ROLAND STOCKED.—Lake Roland must by this time be pretty well stocked, as I have lately seen some fine specimens that were taken from it.

264. *Statement of Thomas V. Richardson, Phoenix, Baltimore Co., Md., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In the autumn of 1880 I received 50 carp. I have kept them in a pond about 200 feet long and 35 feet wide, with an average depth of 3 feet and a muddy bottom. The pond is supplied with water from several springs situated from 50 to 200 yards distant, which yield about 3,000 or 4,000 gallons daily.

PLANTS AND ENEMIES.—There are no plants nor grasses in it, but there are some around the banks. No other fish and no turtles inhabit it, but it contains frogs.

FOOD.—I did not feed the carp any the first year, and never feed them in winter. In summer I give them corn-meal and scraps from the kitchen once a day.

GROWTH.—I cannot tell how many I have left of the original lot, as they keep the water always muddy, but I have seen half of them, at least. I caught 2 last spring, the larger of which measured 16 inches and weighed 2½ pounds.

REPRODUCTION.—I have seen quite a number of young ones, probably 200 or 300 at one time. They appear to be from 4 to 8 inches in length.

265. *Statement of T. J. Myer, Pikesville, Baltimore Co., Md., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received one dozen very small carp about 2 years ago. I put them into a pond about 200 feet long, 50 feet wide, and 5 feet deep, with a very muddy bottom. It is supplied by a small stream of water, which has a temperature of about 60°.

PLANTS AND ENEMIES.—It contains pond-lilies, and there are in it goldfish, silver-fish, sun-fish, frogs, and a few pond-turtles. I do not know that any carp are left. They are supposed to have been destroyed by other fish.

266. *Statement of C. Trump, Rossville, Baltimore Co., Md., Nov. 3, 1880.*

GROWTH.—The 20 carp received last spring are doing well and have grown finely. From all appearances they must be 10 inches long.

267. *Statement of S. Van Trump, Shane, Baltimore Co., Md., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—In January, 1881, I received 20 carp. The pond in which I have kept them is 90 feet long, 30 feet wide, and from 3 to 4 feet deep, and has a muddy bottom. About 120 gallons per hour of spring water flow through it.

PLANTS.—Water-lilies and swamp-grass grow in the pond.

ENEMIES.—It contains sun-fish, minnows, bull-frogs, snapping-turtles, &c.

FOOD.—I give the carp bread and a little corn in grain once a day.

GROWTH AND REPRODUCTION.—I have 10 of the carp left, now weighing from 1½ to 3 pounds. They have not produced many young, if any at all.

268. *Statement of E. Herman, jr., Towson, Baltimore Co., Md., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 carp in December, 1880, and have kept them in a pond 50 by 150 feet, with a depth of 2 feet. The bottom is composed of very soft black mud or loam. About 20 barrels of water per day pass through it, about as cold as spring water generally is after running 300 yards from the spring. I intended to enlarge the pond in the fall.

PLANTS.—A few wild grasses and lilies grow in it, and there is plenty of grass around the edges.

ENEMIES.—It contains frogs and tadpoles in great numbers.

FOOD.—I don't feed the carp. They live on the grass around the pond and on tadpoles, and are fat.

GROWTH.—I have about 30 of the original carp left. They weigh from 7 to 8½ pounds each, and are from 20 to 24 inches long. The young ones are from 1 inch to 16 inches long.

REPRODUCTION.—There have been more than a thousand young produced.

MISCELLANEOUS.—I think the carp is the best fish for our ponds. I have tried other fish. The carp is the only one that does well.

269. *Statement of C. Bohn Slingluff, Towson, Baltimore Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp first in 1881. There were 50 of them, I believe. In the autumn of 1882 I had 50 more. I have kept them in a pond covering about ¼ of an acre, with a muddy bottom and a depth of from 18 inches to 6 feet. The water is supplied by surface drainage and by springs in the bottom of the pond.

PLANTS AND ENEMIES.—There are several grasses in the pond. I find bull-frogs spring-frogs, snapping-turtles, and another kind of turtle in it.

FOOD.—I have not fed the carp systematically.

DIFFICULTIES.—The first lot was washed away by a flood. I have not seen the ones received in 1882 since they were put in. The water is generally discolored, and I have not let it out.

270. *Statement of J. W. Shemwell, Prince Frederick, Calvert Co., Md., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—In March, 1881, I received 50 carp. I put them in an ice pond covering about 450 square yards, with an average depth of $2\frac{1}{2}$ feet, with a maximum depth of 5 feet. Its bottom is composed of soft mud. One medium-sized spring supplies the pond.

PLANTS AND ENEMIES.—It contains swamp-collard (a kind of cabbage) and other water-grasses. It also contains minnows, frogs in abundance, and eels.

FOOD.—I give the carp corn-meal dough and all kinds of vegetables. I feed them irregularly; usually once or twice a week.

GROWTH.—They were 12 inches long last October. The 2 that I now have are, I suppose, about 15 inches in length.

REPRODUCTION.—There must have been several thousand small carp hatched in the spring of 1882. I caught one before the pond broke in the fall which was about 4 inches long.

DIFFICULTIES.—In October, 1882, we had the greatest fall of rain which has occurred in this section of the country for many years. It swept the banks of earth away at the deepest part of the pond and carried every fish in it into the Chesapeake Bay. I caught two of the large fish down the branch with a hand net. They were then 12 inches long. After I had had the pond repaired, I put them back in it, but have seen no young ones since.

271. *Statement of James E. Hignutt, Denton, Caroline Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—May, 1881, I received 10 scale carp, and in December, 1881, 40 leather carp. November, 1882, I received 20 scale carp, and in March, 1883, 40 more. I kept them in a pond of $1\frac{1}{2}$ acres. Most of the bottom is muddy. There is not a large flow of water, as I have turned the larger part of the surface water down the sides of the pond.

PLANTS AND ENEMIES.—The pond contains rushes and long marsh-grasses. There may be a few small pike and turtles in it, but not many.

FOOD.—I feed the carp on bread and cabbage, about twice a week.

GROWTH.—The 40 scale carp that I received March, 1883, are now from 4 to 7 inches long, and will weigh from 7 to 12 ounces.

DIFFICULTIES.—All of the three previous lots were lost by the breaking of the dam. I am satisfied that the dam should be made a year before the fish are planted.

272. *Statement of J. W. Kerr, Denton, Caroline Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—About 2 years ago I received 40 carp. I kept them in a pond covering $\frac{1}{2}$ of an acre, with a muddy bottom, but lost them, within a short time after putting them in, by a heavy freshet, which broke the dam, and carried them all into the Choptank River. There is usually a very light flow of water. After heavy rains there is too much. The water is quite warm in summer.

PLANTS AND ENEMIES.—There are few plants in the pond except green frog-moss. It contains bull-frogs and some little minnows.

273. *Statement of I. R. M. Nash, Fowling Creek, Caroline Co., Md., April 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp December 18, 1882. The ice was fully $\frac{1}{2}$ of an inch thick in the kettle when I arrived home. It was broken up, and the fish appeared sore from their ride over the frozen ground. I cut through pond ice an inch in thickness and deposited the carp in the pond.

FOOD.—I have given the carp scalded meal once a week, but did not see the fish until about a week ago.

GROWTH.—This week I have seen as many as 7 or 8 at one time and found them to be as large again as when I placed them in the pond.

274. *Statement of Richard H. Comegys, Greensborough, Caroline Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 52 carp in November, 1879, and 40 little ones in April last. My pond covers about an acre and a good constant stream of water flows through it.

PLANTS AND ENEMIES.—It contains wild oats, flag, and water-grass; there are frogs in it, but no other fish nor turtles.

FOOD.—I feed the carp occasionally on bread and vegetables.

GROWTH.—My dam was washed out during the last season (1882) and I lost all I then had. At the time of losing them I measured one of the old stock that was 18 inches in length and 5 inches broad. The young were about 6 inches long.

REPRODUCTION.—They produced thousands of young ones, which were lost when the dam broke.

MISCELLANEOUS.—I consider carp valuable, being easily raised by any one who can have a pond.

275. *Statement of W. H. Comegys, Greensborough, Caroline Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in November, 1880, and some since then. I have kept them in a pond made by damming up a running stream. It is irregular in shape, its extreme width being 30 feet. Its depth is 6 feet, and it has a muddy bottom. About 5 gallons of spring water per minute usually flow through it.

PLANTS AND ENEMIES.—It contains but little grass of any kind, and no other fish. There are some bull-frogs in it.

FOOD.—I feed the carp occasionally with bread.

GROWTH.—One year ago the dam was washed away and only 6 of the original lot were saved. They are now supposed to weigh as much as 8 pounds.

REPRODUCTION.—A great many young ones were washed out, varying in size up to 6 or 8 inches in length. There have been a number hatched this season from the 6 that were saved.

MISCELLANEOUS.—My experience and observation are of the most satisfactory character. They are hardy, rapid in growth, and prolific, making them not only desirable but valuable to those who have the advantage of a pond.

276. *Statement of William Arbaugh, Carrollton, Carroll Co., Md., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 100 three years ago last winter. I kept them in a pond 40 feet long, 20 feet broad, and some 2 feet deep at the deepest point, with a somewhat clayey bottom. The water flowed into it through a $1\frac{1}{2}$ inch anger-hole from a spring, and some came from a small stream. It was not very cold. I took out the fish in the spring of 1882, and ate the largest of them and gave some few away.

PLANTS.—The pond contained some of what we call "sour grass." It is not worth much for food for anything.

FOOD.—I fed the fish with thick milk, hominy-screenings, and some worms.

GROWTH.—I had about 30 left when I took them out and disposed of them. Some of them were about 12 inches long, and some 7 or 8 inches.

DIFFICULTIES.—I think the rest died on account of the want of water and the small size of the pond. If I had plenty of water and space for another pond I would like to raise them, as I think they would pay.

277. *Statement of G. W. Armacost, Finksburgh, Carroll Co., Md., Sept. 6, 1883.*

DIFFICULTIES.—I received 50 carp December, 1879. The following summer we had a heavy rain, and my pond broke, and let the carp into Beaver Run.

278. *Statement of S. P. Weaver, Frizellburgh, Carroll Co., Md., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 100 carp in November, 1881. I have kept them in a pond 50 by 70 feet in dimension and from 2 to 4 feet in depth. The bottom is partly of very soft clay; there is some gravel at one end. Very little water flows through it at this time of the year. The temperature varies with the weather.

PLANTS AND ENEMIES.—Grasses of different kinds, and weeds, grow around the edge. There are no other fish in the pond, but there are a great many frogs in it and some terrapins.

FOOD.—I feed the carp with vegetables—scalded corn meal, boiled potatoes, &c.

GROWTH.—The old ones are from 12 to 15 inches long. I cannot tell how many are left, as I cannot draw off the water.

REPRODUCTION.—They have been very prolific. Some persons estimated the number of young last fall at several thousand. The latter are from 1 inch to 6 or more inches in length.

DISPOSITION OF YOUNG.—I have eaten a very few, and have stocked a neighbor's pond with 30.

279. *Statement of Frederick Zahn, Frizellburgh, Carroll Co., Md., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1881 I got 60, and in the fall of 1882 about 40. I kept them in a pond 70 feet long, 10 feet wide, and from 1 to 3 feet deep, with a muddy bottom. About a 2-inch pipe full of cold spring water flows through it.

PLANTS AND ENEMIES.—Considerable wild grass grows all around and through the pond. There are no enemies except a few frogs.

FOOD.—I give the carp thick milk and bread nearly every day.

GROWTH.—I have about 37 of the first lot left. I caught some yesterday, and the largest measured 13 inches and weighed about $1\frac{1}{2}$ pounds.

REPRODUCTION.—They have had no young yet. I thought there was plenty of spawn on the water last spring, but I had no young fish.

280. *Statement of Lewis Barlow, Sykesville, Carroll Co., Md., Sept. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—May 18, 1880, I received 20 scale carp; October 22, 1880, 20 leather carp; and November 12, 1880, 50 scale carp. I have kept them in a pond 30 yards long, 13 yards wide, and 3 feet deep. The bottom is muddy and soft. The water is supplied by a spring, which is not strong enough to cause it to overflow.

ENEMIES.—It contains no plants or grasses, but plenty of bull-frogs. I caught two mud-turtles, which were playing havoc among the carp.

FOOD.—I give the fish boiled corn twice a week, and wheat-bread occasionally.

GROWTH.—As near as I can tell, there are about 30 of the old fish left. They are from $2\frac{1}{2}$ to 3 pounds in weight.

REPRODUCTION.—They have produced a great many young, which measure from 2 to 8 inches. I think that every one who could raise carp should do so.

281. *Statement of Abram E. Null, Union Bridge, Carroll Co., Md., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, I received 50 carp. The pond in which I have kept them is 50 feet square and 3 feet deep, gradually diminishing in depth. It has a yellow-clay bottom, and is fed by a spring.

PLANTS AND ENEMIES.—Various pond-grasses grow in it. It also contains catfish, bull-frogs, spotted turtles, and one snapping-turtle.

FOOD.—I feed the carp twice a week with shelled corn.

GROWTH.—I have about 20 of the original lot left. Of 2 recently caught, one weighed $1\frac{1}{2}$ and the other $1\frac{1}{2}$ pounds. The largest young ones weighed $\frac{1}{2}$ pound.

REPRODUCTION.—Quite a number of young have been produced; I don't know how many.

282. *Statement of James W. Ogle, Union Bridge, Carroll Co., Md., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp in 1879, and have kept them in a pond covering $\frac{1}{2}$ acre, with a depth of from 2 to 5 feet, and a muddy bottom. From 10 to 15 gallons of water flow through it per minute. The temperature is from 70° to 75°.

PLANTS.—I know of nothing growing in the pond but some meadow-grass and some weeds.

ENEMIES.—There are no other fish in it that I know of; but there are some water-terrapins and frogs. The terrapins eat the feed from the fish.

FOOD.—I feed the carp $\frac{1}{4}$ peck of corn mush each week, and all the vegetable refuse from the kitchen.

GROWTH.—I think I have still about 25 of the original lot. They would weigh from 3 to 5 pounds. The young ones are from 3 to 5 inches long.

REPRODUCTION.—By the looks of the young ones in the water there must be 2,000 of them.

283. *Statement of Solomon Shepherd, Union Bridge, Carroll Co., Md., Aug. 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 250 carp in January, 1881. I have kept them in a pond 120 feet long and 30 feet wide, and from $1\frac{1}{2}$ to $3\frac{1}{2}$ feet deep, with a bottom of earth or mud. The water passes into the pond through a $1\frac{1}{2}$ -inch pipe, but the flow does not always fill the pipe. It is discharged through a 2-inch pipe. There have been several weeks at a time when there was no water passing through the pond. The temperature of the water varies at different seasons, from 32° to 85°.

PLANTS AND ENEMIES.—It contains no plants or grasses and no other fish; one fall-fish lived with them for a time, but was caught with a hook and line a few days since, when he measured $8\frac{1}{2}$ inches. There are some frogs and turtles in it.

FOOD.—I have given them a little corn-mush and wheat-bread, but very irregularly, and not enough to facilitate their growth-much. I expect to feed them more in the future than in the past.

GROWTH.—I lost most of my fish in June of last year. Some measured at that time 16 inches and some 12 inches. I do not know that I have any of the original carp left. A few days ago I caught 2, each of which was 16 inches long. I have come to

the conclusion that if they will grow to be 16 inches long in 8 months, as they have done in my pond, with so little care and feed, almost every person who has a spring or branch on his place, even though it be a weak one, can raise carp to advantage.

REPRODUCTION.—On the 21st of August, 1883, I let the water out of the pond and caught 2 old ones and 251 young. The latter were from 4½ inches to 9 inches long. There are now in the pond 239 carp.

EDIBLE QUALITIES.—We have eaten 12 of the young ones. They were fried, and the opinion was that their edible qualities are very good—first rate.

DIFFICULTIES.—In the early part of June, 1882, the banks of my fish-pond were washed away by a flood of water, and I think most of the fish escaped into the waters of Little Pike Creek. In 2 or 3 weeks from that time I caught 6 of the old carp, and subsequently, as noted above, found many young ones. I believe my pond has, also, been robbed of fish, and I think that that will be the principal difficulty in raising carp.

284. *Statement of Pemberton Wood, Union Bridge, Carroll Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 250 carp in January, 1881. I have kept them in a pond 60 feet long and 25 feet wide and 3 feet deep, with a muddy bottom. I suppose from 15 to 20 gallons of water per minute flow through the pond. The spring just above the pond has a temperature of 54°.

PLANTS AND ENEMIES.—What we call swamp-grass grows on one edge of the pond. There are a few frogs in it.

FOOD.—I have not fed the carp since the first few months.

DIFFICULTIES.—I have not seen them this summer, and do not know whether they are still alive or have produced any young. My attempt at raising carp is a failure, owing, I believe, to the low temperature of the water.

285. *Statement of John T. Dittenbaugh, Westminster, Carroll Co., Md., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 in November, 1881, and have kept them in a pond covering about ¼ of an acre, about 3 feet deep, and muddy at the bottom. Water flows into it through a 2½-inch pipe. The temperature of the water varies with the weather.

PLANTS AND ENEMIES.—The pond contains no water-plants, nor grasses, nor other fish, but there are a few frogs in it.

FOOD.—I feed them with corn, screenings, and boiled potatoes, about once a week.

GROWTH.—I cannot tell how many I still have, as I have never taken them out of the pond. I suppose they are about 9 inches long, and would weigh about half a pound. I do not know that they have produced any young.

286. *Statement of Samuel Roop, Westminster, Carroll Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 250 carp, and in November, 1881, I received 200. I have kept them in 2 small ponds, with about ¼ of an acre in each. They are about 3½ feet deep in the deepest places. Their bottoms were at first composed of gravel, but have become very muddy. About a 2-inch pipe full of water flows through them; it gets very warm in summer, especially in the lower pond.

PLANTS AND ENEMIES.—There are no water plants nor grasses in the ponds. I tried to grow some, but did not succeed. There are no other fish, but some few frogs.

FOOD.—I do not feed them much. About once a week in summer I give them boiled corn, or screenings, or potatoes.

GROWTH.—About 175 of the 1880 lot are still left. Last fall the largest weighed 1½ pounds, and measured 15 inches. They grew much more the first summer than last summer. The second lot did not do so well. As I only draw off the water every fall, I cannot tell how the others are doing.

REPRODUCTION.—Last season I caught about 500 young ones, and I can see very many of this summer's hatching.

DISPOSITION OF YOUNG.—I have put some in the meadow brook, and have given some to neighbors.

287. *Statement of J. T. Wilhide, York Road, Carroll Co., Md., Oct. 22, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 21 carp December 15, 1882, and put them in a spring pond until we could make a larger one. We lost all but one of them, which was put in the large pond last spring.

GROWTH.—To-day we drained it and found the carp a perfect beauty, weighing 1½ pounds, and measuring 12 inches in length. It is a scale carp.

283. *Statement of A. J. Michener, Colora, Cecil Co., Md., Aug. 1, 1883.*

DISTRIBUTION OF CARP RECEIVED.—November 11, 1880, I received 38 carp. I have kept them in a pond covering $\frac{1}{4}$ of an acre, and 5 feet deep in its deepest part. The bottom is quite loamy. The main water supply is from a cool and very strong spring situated some 300 or 400 yards distant.

PLANTS.—The pond contains the plants and grasses usually found in ponds.

ENEMIES.—It has no other fish in it that I know of, but it has a few small frogs and speckle-backed turtles.

FOOD.—I give the carp scraps from the kitchen, and those but seldom.

GROWTH.—I do not know how many of the original lot I have, but there appear to be several, although still quite small. The largest I have taken were 9 inches in length. I have only taken four.

REPRODUCTION.—I cannot say how many young they have produced, although there seem to be quite a number in the pond, ranging from $1\frac{1}{2}$ to 4 inches.

289. *Statement of A. W. Mitchell, Elkton, Cecil Co., Md., May 30, 1882.*

GROWTH.—A leather carp, weighing $2\frac{2}{5}$ pounds, and measuring 17 inches in length, was caught in a hauling-seine on Monday last at Crother's fishing-shore, at the mouth of the Susquehanna River. How it came in the waters of the northeast is a mystery, but it is supposed to have escaped from some pond. The fish was supposed to be about 2 years old.

290. *Statement of David Scott, Elkton, Cecil Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—November 22, 1880, I received 40 very small carp. The weather was very cold. I kept them in the house several days until a few died. In November, 1881, I received 100. I have kept them in a pond covering $\frac{1}{6}$ of an acre, which I expect to enlarge this season to double the present size. Its depth ranges from 1 inch to 5 feet. The bottom consists mostly of mud. In the driest season there is always a stream flowing from the pond of perhaps 5 gallons per minute. On the 20th of July, when the mercury stood at 60° in the air, it marked 70° in the pond.

PLANTS.—There are several kinds of plants in it. The principal one resembles mint, and in some places covers a considerable part of the surface of the pond. The carp feed on its white roots, and hide under its foliage.

ENEMIES.—There are no other fish in the pond, but plenty of frogs. Last season there were a good many small turtles, most of which I shot. There is only one small one there now.

FOOD.—I feed the carp 2 or 3 times a week, or oftener, giving them bread, principally. Often I give them corn, potatoes, and other vegetables, usually boiled, but not in great quantities. All I ever see are in fine condition, eat their food eagerly, and shoot through the water like an arrow.

GROWTH.—I do not know how many of the first lot are left, for all were put into the same pond. Some may have got away by an overflow of the dam which occurred in 1881. I never weighed any of the carp, but they look, in the water, to be from 11 to 15 inches long, and quite broad for the length. They are over an inch between the eyes.

REPRODUCTION.—They have produced no young that I know of, but I am expecting an increase this season. I don't think they have been troubled with any disease.

DIFFICULTIES.—I have had no difficulty with the carp, except that the winter after I got the first 40 the melting of the snow caused an overflow of the dam, and probably some escaped. I have since surrounded my pond with a ditch, which will prevent another overflow. I regard carp culture as certain as that of poultry, or as stock-raising of any kind.

291. *Statement of F. S. Everist, Port Deposit, Cecil Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 carp in the spring of 1881, which I have kept in a pond of running water, about $\frac{1}{4}$ acre in size, and 5 feet deep, with a clay bottom. Considerable water passes through it, coming from 2 springs about 400 yards away.

PLANTS.—Plenty of grass grows near it which the fish feed upon.

ENEMIES.—I have some trout in the same stream; also frogs.

GROWTH.—I do not know how many of the original carp are still left or how many young they have produced, as I have not fished much for them. I caught 2 last summer, one weighing 1 pound and the other 2 pounds.

292. *Statement of Edwin H. Reynolds, Rising Sun, Cecil Co., Md., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 150 carp in April, 1880. I have kept them in a pond covering a $\frac{1}{2}$ of an acre. The average depth of half the pond is 4 feet; of the balance, 18 inches. Its bottom is composed of heavy yellow clay, containing some iron; there is but little alluvial soil. The pond is fed by a spring, 300 yards distant, at the rate of 200 gallons per hour. The temperature of the water, at the surface, has been as high as 80°.

PLANTS.—It does not contain as many plants as I desire. I have transplanted into it the common lily, but this grows slowly.

ENEMIES.—There are no other fish in it, but many frogs. Turtles are scarce, as the life of one of them is at stake when its presence is known.

FOOD.—I have been feeding them daily, since April, with a peck of dough composed of two parts of corn meal and one part of wheat middlings stirred up in sour milk. The young now eat from my hand.

GROWTH.—I had 33 of the original lot this spring. In the first week of April they were from 16 to 18 $\frac{1}{2}$ inches long, and weighed from 1 $\frac{1}{4}$ to 2 $\frac{1}{4}$ pounds. This year's spawning are from $\frac{1}{2}$ inch to 3 inches in length. I regret to say that the pond, to my certain knowledge, has been netted twice by poachers, but I do not think that this can very well happen hereafter.

REPRODUCTION.—It is impossible to state how many young have been produced. A net 1 yard square can now dip up from 50 to 80, from $\frac{1}{2}$ inch to 3 inches long, at any point around the pond.

DISPOSITION OF YOUNG.—I have placed 2,000 in Stone Run, distributed 250 in lots of from 20 to 40 free; and sold 380 at \$5 per hundred.

DIFFICULTIES.—The most serious difficulty has been the depredations of the night-fishers and the turtles. So far, justice has been dealt to the former, and death to the latter, when they have been found out.

MISCELLANEOUS.—The introduction of carp fills a blank long felt in agricultural pursuits. I am fully convinced that their culture is not a mere fancy to be indulged in by the wealthy, but is within the reach of thousands of land-owners, in many places, who have land unfit for agricultural purposes, but which could, with little expense, be made to return a profit treble what could be made from grain or hay, by devoting it to the growth of carp. One can transform a bog-mire into a pond teeming with this valuable food-fish. I would not give up the product of the quarter-acre pond for that from any 2 acres of my farm, and I do raise 2 $\frac{1}{2}$ tons of hay, 30 bushels of wheat, and 65 bushels of corn to the acre.

293. *Statement of S. L. Webster, East New Market, Dorchester Co., Md., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1881 I received about 30 carp 3 inches long. I have kept them in a pond about 100 yards long, from 30 to 40 yards wide, and from 2 to 4 feet deep, with a muddy bottom. About 60 gallons of spring water per hour flow through the pond, ordinarily.

PLANTS.—It has rushes and other grasses such as are common on low lands.

ENEMIES.—There are catfish, sun-perch, and mullet, in it; also spring-frogs and common turtle.

FOOD.—At first we fed the carp on different kinds of bread, and refuse from the kitchen, but we have not paid much attention to them of late.

GROWTH.—I caught one this spring about 10 inches long. I suppose it would weigh 1 $\frac{1}{4}$ pounds. I put it back in the pond, and have not seen it since. Until this one was caught, this spring, I had concluded that they had all gotten out during heavy rains when the water was running in a thick stream over the dam.

REPRODUCTION.—There are plenty of young fish in the pond. I do not know whether they are carp or not.

DIFFICULTIES.—The principal difficulty is that they keep near the bottom and stir up the water so that we do not see them often.

294. *Statement of R. R. Buckey, Johnsville, Frederick Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 in 1880, and 100 in December, 1881. I have kept them in a pond covering $\frac{1}{2}$ of an acre, 4 feet deep, and having a soft, muddy bottom. The water is very cold and is supplied by 2 large springs.

PLANTS AND ENEMIES.—The bottom is clean; grass grows only along the banks. There are no frogs nor turtles in the pond; and no other fish except suckers. My most serious difficulty has been the destroying of the carp by geese.

FOOD.—I give the carp boiled corn and potatoes, twice a week.

GROWTH AND REPRODUCTION.—I am not able to say how many are left nor how many young they have produced. They are about 18 inches in length now, and 5 pounds in weight. I am well pleased with the German carp.

295. *Statement of George Souder, Lander, Frederick Co., Md., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 180 carp, November, 1880. I have kept them in a small pond of about $\frac{1}{4}$ of an acre. The depth of the water is from 3 to 5 feet. The bottom is very muddy. Enough water flows through it, of the temperature of ordinary springs, to fill a 2-inch pipe.

PLANTS.—It does not contain much grass, nor plants of any kind.

ENEMIES.—There are no other fish in it, but plenty of frogs.

FOOD.—I have not fed them much.

GROWTH AND REPRODUCTION.—The old carp are from 10 to 18 inches long. I do not know how many there are, or how many young they have produced.

296. *Statement of J. W. Downey, M. D., New Market, Frederick Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in 1880, and put them in a natural pond, where there was formerly a limestone quarry, with an average of 4 feet of water, and a muddy bottom, with an average temperature in summer of about 50°.

ENEMIES.—It contains no plants nor grasses, but does contain catfish, frogs, and a few snappers and terrapins.

FOOD.—I feed the carp twice a week with corn-meal.

GROWTH.—The largest carp I have seen is 22 inches long. I did not weigh it.

REPRODUCTION.—I do not know how many of the original lot are left or how many young they have produced, but there are thousands.

HOW TO CATCH CARP.—I find carp will bite at a hook baited with the common earth-worm.

297. *Statement of William Downey, New Market, Frederick Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—About four years ago I got 40 carp. The pond in which I keep them is about 100 feet square. It is a limestone quarry with several springs in it, and 5 feet deep. I have kept them on a muddy bottom.

PLANTS AND ENEMIES.—It contains plenty of grass. It is free from frogs, turtles, and other fish.

FOOD.—I give them boiled corn, bread, and scraps from the table.

REPRODUCTION.—I cannot tell the number of young that have been produced. The carp breed very fast. The pond is alive with them.

298. *Statement of B. Moffett, Point of Rocks, Frederick Co., Md., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In the winter of 1880 I received 75 scale carp, which I have kept in a pond 40 by 130 feet, from 6 inches to 4 feet in depth, with a muddy bottom. A moderately cool stream of water about an inch in diameter passes through it continually.

PLANTS AND ENEMIES.—The pond has calamus and other grasses growing in it, and also suckers, bull-frogs, and sliders. I have never seen any turtles. My principal difficulty has been with blue cranes and muskrats.

FOOD.—I give the carp corn and corn-meal dough at rare intervals.

GROWTH.—The original carp weigh from 5 to 7 pounds and appear to be from 20 to 30 inches long. Their young are from 2 to 3 inches long.

REPRODUCTION.—Last May was the first time we ever saw any young carp. I do not know how many have been produced.

299. *Statement of William G. Wilson, Unionville, Frederick Co., Md., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 48 carp in June, 1881. I have kept them in a triangular pond from 2 $\frac{1}{2}$ to 4 $\frac{1}{2}$ feet deep. The 2 longest sides measure 150 feet each, and the short side measures 75 feet. A constant stream of water coming from 7 springs, 800 yards away, enters the pond through a 2-inch pipe.

PLANTS AND ENEMIES.—The pond contains the grasses usually found on a farm. It has in it frogs, snakes, terrapins, goldfish, and salmon. The latter have been in it about three years, but never thrived. My principal difficulty has been from muskrats.

FOOD.—I feed the carp once a week with cabbage, bread, corn, cheese, offal of chickens, &c.

GROWTH.—I have about 15 left. Their weights must be from 6 to 12 pounds. I found a single scale to measure an inch and a half the longest way.

REPRODUCTION.—I cannot see any young yet. On Sunday, May 24, the carp were seen following each other in bunches of 3 and 4 around the edge of the pond, sometimes pushing each other out of water. I have never noticed anything like it since. I think they must have been mating.

300. *Statement of William N. Todd, Walkerville, Frederick Co., Md., Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—December 22, 1880, I received 20 carp for myself, and 20 for my step-son, M. C. Neidig. We put them all in his pond, which is 100 feet by 300 feet, from 3 to 4 feet deep, and has a muddy bottom. It is fed by spring water, the springs being $\frac{1}{4}$ of a mile distant. The outlet is into the Monocacy River.

PLANTS.—It contains calamus, wild celery, and other plants.

ENEMIES.—There are no enemies but frogs.

FOOD.—When they were young we fed them on boiled corn-meal.

GROWTH.—One caught a year ago weighed $3\frac{1}{2}$ pounds.

STREAM STOCKED.—A tributary, Israel Creek, is a fine stream, from 20 to 60 feet wide and 5 or 6 feet deep, containing only mullet and sun-fish. I put 17 carp into this creek to stock it.

DIFFICULTIES.—Three that I put in a spring I fed, but they did not grow larger than sun-fish, and died when a year and a half old.

MISCELLANEOUS.—We do not get to the pond very often, and have never caught but 1. They must be very large by this time, but they may have got out in the Monocacy River.

301. *Statement of John S. Dallam, Bel Air, Harford Co., Md., Aug. 1883.*

DISPOSITION OF CARP RECEIVED.—I received 130 carp 3 years ago (May 7, 1880), and 20 leather carp last March. The pond in which I keep them covers nearly 1 acre, and is from 2 to 6 feet deep, and its bottom is composed of alluvial mud. It has a fine spring in it, and there is a continual flow of 2 or 3 square inches of water, sometimes increased by rains to 2 or 3 square feet.

PLANTS.—It has such plants and grasses as usually grow about springs or along small branches in this part of the country. We have tried to get wild rice to plant in our pond, but have not been able to procure it. I wrote to several seedsmen who advertise it, but they reported that they were just out.

ENEMIES.—There are water-terrapins, frogs, eels, and some small fish in the pond.

FOOD.—I give no food except occasionally when I cast into the pond a few pieces of bread to see the carp come up and fight for it.

GROWTH.—I caught some of my carp October 11, 1880, and found them to average 2 or more pounds and to measure over 15 inches in length. One of them weighed $2\frac{1}{2}$ pounds. I do not know how many of the old ones are left now. The largest which I have taken out weighed $4\frac{1}{2}$ pounds, and the longest one I have seen measured 21 inches. The young ones weigh from 1 ounce to $2\frac{1}{2}$ pounds.

REPRODUCTION.—I do not know how many young have been produced, but I know I have 6 different sizes, and perhaps more.

DIFFICULTIES.—I have had no difficulty except to protect the surface water from overflowing the pond and washing out the young fish. We have now a wire sieve 6 feet square for the surface water to pass through, and it answers very well.

HOW TO CATCH CARP.—We catch the fish by baiting a hook with a piece of bread about $\frac{1}{4}$ inch square and dropping it to the bottom of the pond. The fish swallow the bread and hook. We use no other bait. We have not caught any since last fall, except a few for amusement. None of the old ones have been taken out this season.

302. *Statement of Alexander M. Tulford, Bel Air, Harford Co., Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 100, probably in 1880. I placed them in a pond 2 acres in extent, a small part of which is 7 feet deep. A strong spring branch flows through it. The water is warm in the pond.

PLANTS.—It contains bushes and grass, but no plants naturally adapted to the water.

ENEMIES.—There are in it a few small fish and frogs, such as are generally found in this section; they are not of much account.

GROWTH.—Four months after the carp were put in the pond I found 2 of them to be each fully 8 inches long and large in proportion. Having at that time never seen a carp of any size, I could scarcely believe that they were carp that had grown so fast.

STREAMS STOCKED.—I placed those which were left in the branch; and Byrum's Run, to which it leads, should be well stocked by this time from those lost by my pond, though I have made no inquiry about the matter.

DIFFICULTIES.—The 2 which I measured then were all that I had left, as during a heavy rain, in consequence of the wires at the outflow opening being obstructed with trash, the water washed under the water-gate and all the rest got out. Some of them were saved and eaten by the farm hands before I knew anything of the circumstance. I have never fixed up my pond, knowing its liability to the same trouble.

MISCELLANEOUS.—I know of a pond near here where the carp have done well

and are much liked. I consider your work a very important one for the farmers and the country, and I always advise my friends to build and stock fish-ponds. I would fix mine up if I had a more suitable place, and may do so anyway.

303. *Statement of R. Emory, M. D., Taylor, Harford Co., Md., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1878 I received 5 carp; in 1879, 20; in 1880, 100; and in 1881, 100. I have kept them in a pond about 150 feet long, 75 feet broad, and 5 feet deep, with a bottom of soft mud formed by sediment. It is fed from a branch through a 5-inch pipe.

PLANTS.—It contains no plants except wild grass which usually grows along streams in this locality.

ENEMIES.—Suckers, bull-frogs, turtles, and terrapins abound and are a great detriment.

FOOD.—I feed them on boiled corn or corn-dough, at irregular intervals.

GROWTH.—The first 5 are still there, but only about 100 of those subsequently put in remain, although I have never seen a dead fish, or one in the least sick. They are about 16 inches long and about 3 pounds in weight.

REPRODUCTION.—They spawned one season, 1880, but I have seen no spawn since. I drew off the water this spring, but saw no fish of that age. I think the frogs and turtles eat up the young before they are old enough to get out of their way. I don't think my fish spawned at all this fall.

304. *Statement of Joseph Hayghe, Upper Cross Roads, Harford Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 20 carp about 3 years ago, and 40 subsequently. The pond in which they have been kept is 36 feet across in one direction and 33 in the other, and is $3\frac{1}{2}$ feet deep at the deepest part. A stream of water about 1 inch in diameter passes through the pond; its temperature is from 75° to 85°.

PLANTS.—It contains the principal wild grasses; I cannot give the names. It has in it frogs, a few turtles, and a few eels, which we are trying to check.

FOOD AND GROWTH.—We do not feed them any, except at some chance times on wheat-bread. I suppose they are 12 or 15 inches long.

305. *Statement of James Harban, Dayton, Howard Co., Md., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp May 7, 1880, and 50 more November 10. The pond in which I keep them was intended for ice. It covers about $\frac{1}{2}$ of an acre, and has a depth of from 3 to 4 feet. Its bottom is quite muddy. I have it so arranged that the supply can be controlled and the water kept at about the temperature of our common streams.

PLANTS.—Grasses and rushes grow around the margin and around a central island.

ENEMIES.—I have it so arranged as to prevent the ingress or egress of any fish. I have caught 2 snapping-turtles and lots of frogs.

FOOD.—I give them boiled corn, corn-bread, cabbage, potatoes, and, in fact, most scraps from the kitchen. I have been very remiss in feeding.

GROWTH AND REPRODUCTION.—I caught old carp last summer $17\frac{1}{2}$ inches long, and one about the same size this spring, but suppose there must necessarily be some larger by this time. The pond seems to have a goodly number of fish of all sizes in it. I cannot tell how many have been produced, as I have no way of ascertaining. I have no seine, and they do not seem to take to the bait very well. I see quantities of them not more than an inch in length.

306. *Statement of J. D. McGuire, Ellicott City, Howard Co., Md., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received 15 carp, and 2 years ago 100. The pond in which I put them is about 90 feet long, and has an average width of 30 feet. The bottom is composed of mud. There is 1 small spring in the pond, and several streamlets enter it from other springs.

PLANTS AND ENEMIES.—There are no water-plants in the pond, but common blue grass grows down to the water's edge. It has no fish except carp, but plenty of frogs and some snapping-turtles.

MISCELLANEOUS.—Since putting them in the pond I have never seen one, either dead or alive, although I have fished for them with worms.

307. *Statement of William A. Ridgely, Glenwood, Howard Co., Md., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 100 carp 2 years ago last April, 80 of which lived and were put into the pond. My pond is 20 by 50 yards in size and about 3 feet deep, and has a muddy bottom. It is supplied with water from several springs about 100 and 150 yards above it.

PLANTS AND ENEMIES.—It contains bulrushes and wild grass. There are no other fish in it, but there are a few frogs and small turtles.

FOOD.—I feed the carp with boiled potatoes about every 2 weeks. Have heard that boiled corn-meal is good for them.

GROWTH.—Nearly all of the original lot remain, last week being the first time I caught any, when I took 5. They weigh a pound and over.

REPRODUCTION.—The water is so muddy that I have not been able to see any young. I have been told that there are no young ones for 3 years.

308. *Statement of Benjamin G. Cissel, Highland, Howard Co., Md., July 20, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 50 scale carp about 2 inches in length. The pond in which I kept them is $\frac{1}{4}$ of an acre in size and from 3 to 4 feet deep, with a northern exposure. The bottom is composed of fuller's earth. It is fed from a spring 20 yards distant. The volume of water flowing constantly would fill a $\frac{1}{4}$ -inch pipe. The water in the pond is warm in summer and the balance of the year cold.

PLANTS.—Bulrushes, wire grass, red top, and timothy grass grow around the water's edge. There are none growing in the pond proper. The fish seem to feed mostly on the roots of red top.

ENEMIES.—There are no fish in the pond except the carp, but there are plenty of frogs and tadpoles, and I catch a turtle occasionally.

FOOD.—I give them corn-meal once a week. They are very fond of bread crumbs, especially those of corn-bread. Sometimes I also give them wheat-bran, which causes the young fish to feed at the surface in schools. The large size are fond of refuse from the kitchen—swill, with bonny-clabber.

GROWTH.—In April, 1882, I let the water out of the pond, and found 14 carp left, 12 inches long. They are now 12, 14, and 16 inches long. I don't think they are as large as they should be, owing to the want of aquatic plants, the coldness of the water, or faults in the construction of the pond. The young are from 1 inch to 7 inches long. Those that hatched out a year ago last May are 7 inches long, and are a very nice, sweet fish for eating. There are a great many 3, 4, and 5 inches long.

REPRODUCTION.—Last year my carp produced from 3,000 to 4,000 young. I can't see a great many of this year's hatching as yet.

DISPOSITION OF YOUNG.—Beside those which we have used for the table, I gave 30 of the second size to one of my neighbors.

MISCELLANEOUS.—I have had no difficulty in their care, but, on the other hand, they have furnished a delightful pastime for my leisure moments.

309. *Statement of Samuel Hopkins, Highland, Howard Co., Md., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1880 I received 8 scale carp, and in 1882 I received 220 carp from Druid Hill, Baltimore. My pond covers one-fourth of an acre, has a muddy bottom, and is from 6 inches to 6 feet in depth. It is supplied with water from a spring and gets warm in summer.

PLANTS.—It contains grass and some aquatic plants, but no other fish, turtles, &c.

FOOD.—I have sometimes fed the carp on corn bread, but only seldom.

GROWTH.—Eighteen months ago 5 of the original ones averaged 5 pounds in weight and were 17 inches long. They did not breed any that summer; I do not know whether they have yet spawned.

MISCELLANEOUS.—I have disposed of none except a few to eat. They will be more appreciated as time goes on. The culture of fish in our State has undoubtedly been of great advantage.

310. *Statement of John T. Roston, West Friendship, Howard Co., Md., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 50 young carp. The pond covers $\frac{1}{4}$ of an acre and is now being extended to $\frac{1}{2}$ of an acre. Its depth is being increased from 2 to 4 feet. The bottom is partly mud and partly gravel and sand. An inch and a half stream of cold spring water flows into the pond. In the middle of the pond the water is warm, as it is situated in a very warm place.

PLANTS.—Some rushes, herd's-grass, and a variety of wild grasses which I do not know the names of grow along the banks of the pond.

ENEMIES.—There are no other fish, but there are plenty of frogs, some turtles, and some snakes.

FOOD.—I give the carp corn-bread, potatoes, and beans once a day. They are fond of corn-bread, and so are the tadpoles. The turtles like it very well.

GROWTH.—There were about 40 of the original carp left in February last, and I think there are that many yet. They are from 10 to 12 inches long, 3 to 4 inches wide, and $1\frac{1}{2}$ to 2 inches thick.

REPRODUCTION.—About 100 young ones were produced last summer; but I don't know how many there are this summer, as I have not seen many yet. The largest of the young ones are 5 inches long and 2 inches wide. They have grown faster than the original lot did.

DIFFICULTIES.—My most serious difficulty has been that the frogs and turtles eat the food from the fish. I am of the opinion that the tadpoles eat the fish spawn in my pond. They devour a piece of bread or a potato by the time it touches the bottom.

MYSTERIOUS APPEARANCE OF GOLDFISH (?).—In my pond is a red fish, red as scarlet all over. Some say it is a goldfish. It is the same size and shape as the carp. When my carp were a year old I let the water out of the pond, and caught the fish one at a time by hand, and cleaned the pond out. There was no red fish in the pond then. Where did it come from? That is what puzzles me. There are no red fish about here, for if there were they could not get into my pond. It must be a carp turned red.

311. *Statement of John R. Brown, Woodstock, Howard Co., Md., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—We received about 150 carp on the 9th of April, 1881. They have been kept in an ice pond 60 yards long, about 20 yards wide, and between $3\frac{1}{2}$ and 4 feet deep. The water comes from a spring.

PLANTS AND ENEMIES.—It contains no water-plants, but has ordinary grass and weeds growing on its banks. No other fish were put in; a good many little minnows, however, have gotten into it.

FOOD.—Have fed the " on boiled hominy, only a few times.

GROWTH AND REPRODUCTION.—I cannot tell how many of the original lot are left, or how many young they have produced, as they keep the pond muddy; although in winter we cut as clear ice as we ever did. We have only lost 2 that I know of. The largest caught measured 13 inches and weighed 20 ounces.

312. *Statement of George R. Parrott, Still Pond, Kent Co., Md., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp in 1880 and 100 in 1881. I have kept them in an ice pond 1 acre in size and 5 feet deep in the deepest part. Its bottom is composed of sand and mud. It is fed by springs and rains.

PLANTS.—Rushes and flags grow in it. It also contains catfish, frogs, snakes, and turtles.

FOOD.—I feed the carp with corn.

GROWTH AND REPRODUCTION.—I have caught some weighing 3 pounds. They are of all lengths, from 5 inches to 20 inches. How many there are I have not been able to tell, as the place they are in is just a common pond, made for ice in the first place.

313. *Statement of Samuel J. Hopkins, Colesville, Montgomery Co., Md., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 25 carp in May, 1880, and put them in a pond located by the side of a small branch. I sold the farm shortly afterward, and through neglect the stream washed the banks away, and the fish went out into the Northwest Branch.

314. *Statement of John Heeter, Hunting Hill, Montgomery Co., Md., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 big scale carp in January, 1882, and 20 more scale carp in 1883, from you. I have kept them in a pond 40 yards long and 50 wide, and from 3 to 4 feet deep, with a muddy bottom. It is supplied with water from 2 springs.

PLANTS AND ENEMIES.—It contains bulrushes and different varieties of weeds. It has the common water frogs in it, but no fish.

FOOD.—I give the carp bread from my table, soft corn, boiled potatoes, and turnips about twice a week.

GROWTH.—I think I have from 15 to 20 of the old carp left. They are from 18 to 20 inches long. The young ones are from 1 inch to 6 inches long.

REPRODUCTION.—I do not know how many young have been produced, but there seem to be great many.

315. *Statement of E. L. Tschiffely, Hunting Hill, Montgomery Co., Md., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I received 18 carp. In 1880 I received 38 in good condition. I have kept them in a pond 55 yards long, 15 yards wide, and $4\frac{1}{2}$ feet deep in the middle, tapering off to shallow water on the banks. Its bottom is composed of mud. A stream of cold spring water 1 inch in diameter

flows through it. Last fall I made an additional pond just below this one, the same size, and in all respects like it except that the water runs in from the first pond instead of directly from the spring. I put 1,200 in this pond in April.

PLANTS AND ENEMIES.—Grasses grow in small quantities around the edges of the pond, of which I do not know the names. There are no frogs nor turtles and no other fish.

FOOD.—I give the carp baked corn bread and boiled corn (shelled) 2 or 3 times a week.

GROWTH.—The old ones weighed from 2 to 3½ pounds in April, 1883. I have 16 carp left of the original lot. (See under DIFFICULTY.)

REPRODUCTION.—I had about 3,000 young carp in April, which weighed from 2 to 3½ pounds. The old ones have spawned since.

DISPOSITION OF YOUNG.—I have eaten about a dozen and gave 3 persons some to stock ponds with. I have also stocked another pond of my own.

DIFFICULTIES.—I have had no trouble with them, but have been disappointed in the slow growth they have made. I drained the new pond which I stocked last April, a few days ago, and was surprised to find the fish about the same size as when I put them in, although one of them had roe in it. The only objection I have to them is that they do not grow.

316. *Statement of Robert M. Mackall, Olney, Montgomery Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—About the 1st of November, 1880, I received 50 carp. I have kept them in a pond that I made for ice, about ¼ of an acre in extent and from 2 to 6 feet deep. One-third of the bottom is gravel; the balance clay. About 40 gallons of water per minute flow through it.

PLANTS AND ENEMIES.—Clover and timothy grow around the banks of the pond. There are no fish in it except carp, but there are a few frogs, and occasionally an eel gets in. Snakes also infest the vicinity. The only turtle which I have seen this year I shot. I think nearly all of the original lot were killed by negroes and turtles.

FOOD.—I give the carp boiled corn, potatoes, cabbage, and bread, feeding them once or twice a week.

GROWTH AND REPRODUCTION.—The old ones are now from 15 to 24 inches long and weigh from 2 to 4 pounds. The young ones are from ¼ inch to 6 inches long. I drew the water from the pond last spring, and found 2 or 3 barrels of large fish in it, and many small ones. I did not eat any, as it was about spawning time.

DIFFICULTIES.—My pond is at some distance from my house and out of sight of it, so that parties can fish in it without much fear of detection. I believe it will pay any one to make a pond for carp if in sight of the house.

317. *Statement of Capt. John T. Fletchall, Poolesville, Montgomery Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp in November, 1880, and 23 leather carp in April, 1881. I have kept them in a pond about ¼ of an acre in size, with a depth ranging from 2 to 4 feet. The bottom is composed of loam mixed with clay. There is a spring at the head which supplies the pond. The water has a temperature of 70° in summer and freezes over in winter. The quantity of water I do not know.

PLANTS.—There are in the pond rushes, wild grass, and other growths usually found on marshy or low lands.

ENEMIES.—It contains quite a lot of water terrapins, which I destroy, and all kinds of water frogs. Have noticed 1 turtle.

FOOD.—I feed the carp with wheat, corn, bread, and sometimes scraps of vegetable parings. I have no regular time for feeding them; probably do so, on an average, once a week.

GROWTH AND REPRODUCTION.—I do not know how many of the original lot I have, as the water has never been drawn from the pond. The ones I caught last spring (1883) weighed from 1 to 2 pounds; I think, however, that I can see larger ones swimming about. I cannot tell how many young they have produced, but I can see different sizes when feeding them. I can see them ranging from, say, ½ an inch to 4 or 5 inches in length.

318. *Statement of William N. Young, Poolesville, Montgomery Co., Md., Sept. 28, 1883.*

GROWTH.—I thought that all of my carp were dead, until June 1, 1882, when I saw indications of them, and, on fishing with a net, raised out of the water 5 or 6 as broad as my hand.

REPRODUCTION.—The carp you sent me 3 years ago are doing well, and I have a fine lot of young.

319. *Statement of Benj. D. Palmer, Sandy Spring, Montgomery Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 50 scale carp and 20 leather carp. The pond is supplied with spring water at an average rate of 6 gallons per minute. At noon of this date its temperature is 88° Fahr. at surface and 70° at the bottom. The area of the pond is $\frac{1}{4}$ of an acre, and its depth from 6 inches to 7 feet. The bottom is muddy.

PLANTS.—It has in it cat-tails and marsh lilies, also a border of marsh grasses.

ENEMIES.—There are no other fish, but there are plenty of frogs, and a few turtles recently arrived.

FOOD.—I feed the carp as often as convenient with bread and vegetable scraps from the table, boiled corn and wheat, and also wheat screenings.

GROWTH.—There ought to be 23 old carp left, as I have used 47 of the original 70. They are about 18 inches long, and from 2 $\frac{1}{2}$ to 4 pounds in weight. Some may be larger than this. The leather carp are larger than the others. The young are from $\frac{1}{2}$ inch to 9 inches in length.

REPRODUCTION.—Carp appear to spawn from May to October. Mine first spawned in the summer of 1882, at 2 years of age; and they spawned again this summer. They reproduced by thousands and thousands, so that the young fry are too thick to thrive; and I am giving the latter to all who will come for them. My pond has been eminently successful.

DISPOSITION OF YOUNG.—I have used 47 of the old ones, and find the scale variety first-rate eating. I have stocked my neighbors' ponds, and let the boys fish in mine. I have also put some of the young carp in the Northwest Branch.

DIFFICULTIES.—My principal difficulty has been to get rid of the excess of young.

320. *Statement of Edward Stabler, Sandy Spring, Montgomery Co., Md., Sept. 26, 1882.*

ENEMIES.—I found it difficult to get an ice pond to hold water, owing to the depredations of muskrats, honeycombing the banks. My last pond had to be lined inside with boards set on end and below the depth of the water, probably 100 or more yards around the pond. A few muskrats were caught in steel traps, but that did not abate the nuisance. We caught more feet than rats, for they would gnaw off the feet, leaving them in the trap, and escape. I subsequently destroyed them by the use of sulphur and saltpeter, finely pulverized, used together as an explosive.

There are three other drawbacks to fish-culture, but of easy remedy, namely: the turtle, the kingfisher, and the water-snake. For the destruction of these I use explosive shells of my own construction in a breech-loading rifle, but which are not safe to load in a muzzle-loader. They explode into fragments on striking, even on the water. These explosive shells are admirably adapted to the purpose of extermination for these pests, and also to destroy snakes in their dens. It is not safe to use solid balls, except in very isolated situations, as they glance on striking the water, and may go half a mile or more beyond. I know this is often the case in shooting deer while swimming, or other objects in the water. We have destroyed a score of turtles in this way. I am satisfied they feed on the spawn and very young fish. The kingfisher is an arrant poacher. A neighbor tells me that he has killed from 10 to 12 at his pond, and that they were stuffed with young carp.

FOOD.—My carp were occasionally fed in the past two months, some three or four times a week, on scraps of wheat and corn-bread, soft corn, boiled potatoes, fruit parings, &c.,

GROWTH.—I received my carp 2 years ago last April. They are now about the size of herring, from 9 to 10 inches long. I caught 1 recently which measured fully 17 inches in length, 5 inches in width, and 2 $\frac{1}{2}$ inches across the back, and weighed 3 pounds. This carp is as large as the ordinary shad, and yet not 2 $\frac{1}{2}$ years old from the spawn. The rapid growth of carp is wonderful, far exceeding either trout or bass. They are strict vegetarians, and rarely, if at all, feed on animal food. They never feed on their own fry, as the bass does indiscriminately on other small fish. There are well authenticated accounts of carp in European ponds, covering from 10 to 2,000 acres, living to a great age and attaining a weight of from 60 to 80 pounds, and raised for market like other products of the farm.

HOW TO CATCH CARP.—With the proper kind of bait, and in the hands of an expert, carp is readily taken, and is as gamy a fish as I ever caught with fly or bait. I recently caught one, a fair sample of the lot, with a barbed hook.

MISCELLANEOUS.—That carp will pay well without labor or capital expended, I am fully satisfied. Any one who has an ice pond may in 2 or 3 years have an abundant supply of fresh fish for the table, not to speak of the good sport which they may enjoy. The carp appears to be exactly suited to our ice ponds, where the water becomes very warm in summer and where in winter they can seek protection by hibernating in the mud at the bottom.

321. *Statement of Edward Stabler, Sandy Springs, Montgomery Co., Md., June 30, 1883.*

DISPOSITION OF CARP RECEIVED.—My pond contains some $\frac{1}{4}$ of an acre. The supply of water passes through a 4-inch pipe, which near the outlet or draining trough connects with a perpendicular iron pipe, at the top of which the water is discharged. During floods the water is conducted around the pond. The pond is lined with boards for 100 yards or more, making it proof against rats and craw-fish. The carp weighed from $\frac{1}{4}$ to $\frac{1}{2}$ of a pound when they were received, April 1, 1882.

ENEMIES.—I now have plenty of sport shooting, in cutting off turtles' heads with explosive shells. I have killed several dozen in this way, and some very large ones, say 12 inches in diameter. I learned from an acquaintance, who has some large carp, that in draining his pond he found the tails of some of his large fish bitten off, no doubt by large turtles, which were seen there. On account of my frequent shooting at the pond, the remaining turtles have become almost as wild as wild turkeys, scarcely showing more than the nose above the water, and for a moment only; but it is enough if I can see the head a few seconds, as the shell explodes on striking the water, kills them, and in about 36 hours they float on the surface and can be taken out.

I was much surprised recently when, in setting a hook with meat-bait to catch the turtles—they are frequently taken in this way—I caught several eels of about 2 or more feet in length. They could only have entered through the ingress pipe 3 or four years ago, when of a finger's length, and through wire gauze having a $\frac{1}{4}$ inch mesh. They have grown almost as rapidly as the carp. As soon as my fish have done spawning I will let off the water and clean out turtles, eels, snakes, and all. Now that I have the fish and am keeping them so successfully, I do not intend that predators shall have the benefit.

FOOD.—I fed them pretty regularly last summer, and they now come up of themselves to be fed.

GROWTH.—Last September I took 3 or 4, weighing quite 3 pounds apiece, which I returned to the water; and a few days ago, June 28, 1883, I took out a 5-pounder, but did not kill this one either. It was 20 inches long and 8 inches broad, and appeared to have from a gill to $\frac{1}{2}$ pint of spawn in it. I have seen no young fish as yet.

322. *Statement of Asa M. Stabler, Spencerville, Montgomery Co., Md., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 in April, 1882. The pond in which I have kept them is about 50 by 120 feet in size, and would average $2\frac{1}{4}$ feet deep. It has a hard clay bottom. The water comes, at the rate of about 2 gallons a minute, from a marsh which abounds with springs. The temperature of the water is about 40° at this season of the year.

PLANTS AND ENEMIES.—The pond contains no other fish, and very little vegetation.

FOOD.—I give the carp bread occasionally. They have been neglected, in consequence of the pond being too far from the house.

GROWTH.—I suppose that there are 30 or 40 of the original lot left. They are about 12 inches long.

DIFFICULTIES.—I think that the hard clay bottom and the scarcity of water plants have been the greatest difficulty. I expect to make a more suitable pond, and would like to get young carp to stock it.

323. *Statement of Robert M. Stabler, Spencerville, Montgomery Co., Md., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 carp about $2\frac{1}{4}$ years since. I have kept them in a pond about 60 by 70 feet large, with a depth of from 4 inches to $2\frac{1}{2}$ feet. The bottom is composed mostly of mud. Water flows into it from two good springs 200 yards distant.

PLANTS.—There is no vegetation in it except the grass which is common in wet ground.

ENEMIES.—It contains no other fish. One turtle has been killed, and also several water-snakes.

FOOD.—I give the carp bread and corn, but not as often as they should have it, owing to the pond being so far from the house.

GROWTH.—I think I now have about 30 of the original lot. They are very small—will not weigh over one-half a pound.

REPRODUCTION.—I have not seen any young ones in my pond. My brother's pond, which is close by, and which contains carp of the same age as mine, has a great many young in it.

DIFFICULTIES.—My principal difficulty has been the great distance which the pond is from the house. I do not think the raising of carp will amount to much about here, unless we have good large ponds near the house so that they may be properly attended to.

324. *Statement of Admiral D. Ammen, Beltsville, Prince George's Co., Md., Nov. 15, 1883.*

DISPOSITION OF CARP RECEIVED.—On July 12, 1880, I received 53 carp. Four of the carp averaged 2 pounds in weight, 15 measured 4 inches in length, and 34 measured 1 inch in length. The carp are kept in 3 ponds. The surface of the first pond covers 10,500 square feet, the second 2,500 square feet, and the third 12,000 square feet. A 5-inch pipe supplies the ponds with water, the average flow of which is probably that of a 4-inch pipe at the rate of 3 miles per hour. The water is taken from a stream and has the temperature of the atmosphere. The ponds vary in depth from 6 inches to 4½ feet, and have soft, muddy bottoms.

PLANTS.—Japanese water-lilies grow in the pond.

ENEMIES.—The ponds contain eels, suckers, small turtles, bull-frogs, and probably minnows and others. The bull-frogs are not numerous. Snapping-turtles are occasionally seen. Eight large and many small eels have been killed. No doubt many eels remain in that part of the upper pond which is covered with only 6 inches of water. As the pond has not overflowed, the sunfish and sucker spawn, found in the ponds, must have entered through a trap wire-cloth, one-sixteenth-inch screen. Muskrats bore holes in the banks of the ponds. These holes are probably occupied by minnows. Within two miles of my ponds there is a stream, known as "Beaver Dam," having an extensive border swamp, a resort of otters, which probably breed there. Three of my breeding carp have been destroyed by minnows or otters. From the size of the fish that have been destroyed, it is not improbable that otters have come up the stream to my ponds. Eels get into the ponds either through the wire screen or through the discharge pipes of the surplus water.

FOOD.—The first year I fed the carp on bread, corn-meal, and mush.

GROWTH.—In the upper pond only 2 carp were found where 10 were put 2 years ago. Of the 4 which weighed 2 pounds I have 3. I have 10 or more of the 4-inch carp. On November 10, 1883, the largest carp weighed 6 pounds and 5 others averaged 4½ pounds.

REPRODUCTION.—The young are in the pond by the thousand. I am unable to state the exact number, as I could not draw off all the water from the upper pond. About 90 carp averaged 1½ pounds, while 30 others averaged ½ pound. The young spawned in July, 1880, and approximate in size all of the original lot, except the 4 two-pound carp.

DISPOSITION OF YOUNG.—To the Christian Brothers, living near me, I gave 31 young carp, weighing from ¼ to 1½ pounds, and to a gentleman in Virginia I gave 12.

EDIBLE QUALITIES.—We have eaten leather carp boiled and fried. The larger carp I consider a fair table dish. Small ones are indifferent.

325. *Statement of J. E. Bailey, Centreville, Queen Anne Co., Md., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1881, I received 40 leather carp. My pond is about ½ of an acre, with a bed of black sandy loam. It is fed by several springs, the water of which is of a medium temperature, but the situation of the pond is warm. The carp were in a sickly condition when received, and did not live.

GROWTH.—I have a friend, Mr. R. Holiday, whose fish are doing finely and are making rapid growth.

326. *Statement of J. M. Collins, Centreville, Queen Anne Co., Md., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—Soon after I placed in my pond the fish which I received the dam broke, and they were all lost. I intend to try again if I can get the dam to stand.

327. *Statement of Samuel T. Earle, Centreville, Queen Anne Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 common scale carp in 1879, and 20 more in November, 1880. Last November I got from a neighbor 15 leather carp and 85 scale carp. I now have some in a mill pond and 2 other ponds.

The first lot were put into a couple of mill ponds with muddy bottoms, each about half a mile long and about 200 yards wide, one above the other. Both dams broke last September, but carp were afterward seen in the race of the lower mill, and the millers tell me that the lower pond is now full of them. The mill pond is 4 miles from me, and I have never seen the carp in it myself.

The 20 received in 1880 I put in a large covered spring, with a small embankment in front, say 4 by 10 feet of water, so that they could come out and return at pleasure, intending to remove them to a pond the following summer. The water was very cold but did not freeze when the thermometer marked zero. They were all alive the next spring, and I fed them up to June, when I could see but 3 or 4, which had

made not a particle of growth, or but very little. I then abandoned them as a failure. The little dam washed away, leaving them in this covered spring, overhung with shade trees. Last fall I put up a tenant's house near by, and the carpenter's little son discovered 23 fish in the spring, large and small. There was apparently nothing in the spring (it being very pure water) for them to feed on, and they were there without food for at least 18 months. I speak of this to show how hardy they must be. I transferred the 23 to a pond, where 22 of them still are.

The hundred fish which I obtained from Mr. Hollyday last fall I put into a small pond about 3 feet deep. I have lost but one of them that I know of. I saw about 50 of them at one time last April, and have never seen one since, although I am satisfied they are there.

PLANTS.—The mill ponds contain lilies and common water grass. One of my own ponds—the one with 22 carp in it—has a heavy growth of grass, etc.

ENEMIES.—The mill ponds have a few pike in them, and a great many black catfish; also common snapping-turtles and small red-bellied terrapins.

FOOD.—The carp in the mill ponds and my grassy pond are not fed. I feed those in my other pond with hominy, corn meal, dough, and wheat.

GROWTH AND REPRODUCTION.—Three or four of the 23 fish found in the spring last fall were 4 inches long. These were the survivors of the 1880 lot. The remaining 19 or 20 were young produced by them, and were about an inch long. The carp in the mill pond have, from all accounts, produced a great many young.

HARDIHOOD.—In November, 1880, I obtained 20 carp for Dr. Finley, who lives near Church Hill, in our county. He put them into a pond in his field which it is impossible to run off, but which very rarely dries up. In the summer of 1881 it became very low, and the cattle standing in it every day kept it so stirred up that one would have expected any kind of fish but catfish to have died. When at its lowest he dragged an old net through it and caught 15 carp in the one haul, with an average length of about 15 inches. Several of these were eaten by himself and neighbors and pronounced very excellent fish.

I heard of an instance in Harford County, Maryland, where a man's dam gave way and let out all the water from his pond, in which he had put carp some time before, except what was held by a small hole in its bed. The next summer he let off this water with the view of repairing and restocking pond, when, to his astonishment, the old stock was there, in good health. [See another instance above.]

CARP IN SALT WATER.—I heard of a scale carp which got out of Thomas Hughlett's pond on Miles River, in Talbot County, Maryland, and was caught in the stream at Pott's Mill, head of Miles River, and weighed 8 pounds. Miles River is salt water.

This shows that they will live and thrive in salt water as well as fresh, although I feel sure they will make for fresh water, since this fish was caught at a place where the water is but little brackish.

328. *Statement of Richard Hollyday, Centreville, Queen Anne Co., Md., Oct. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 80 scale carp in 1879 and 40 leather carp in November, 1880. I keep them in 2 separate ponds of about $\frac{1}{2}$ of an acre each. The water is 5 feet deep, but shallow at the edges. It contains from 1 to 1 $\frac{1}{2}$ feet of mud in the center, and has sandy shores. It is supplied by a small stream from never-failing springs. There is but little waste except after a freshet. It is of medium temperature.

PLANTS.—The scale carp pond contains two varieties of pond lily. The other has a common flag or cat-tail.

ENEMIES.—They contain a few sun-fish, bull-frogs in great numbers, a few snapping-turtles, and numerous snakes.

FOOD.—I have fed them but seldom this season, sometimes giving them pure clabber, of which they are very fond; but I usually feed them with kitchen refuse.

GROWTH.—I think I can account for every one of those received. I let Commissioner Hughlett have 32 of the scale carp in 1881. I find that the leather carp grow much more rapidly than the others. I sold a pair to a neighbor in April, 1882, measuring 15 inches and weighing 3 $\frac{1}{2}$ pounds. He told me, not long since, that one of them measured 22 inches and weighed 8 pounds in July last. My leather carp have outgrown the other kind, though one year younger. I am inclined to the belief that the water being warmer in that pond suits them better.

REPRODUCTION.—They produced about 3,000 scale carp and 300 leather carp last year. I cannot yet estimate the number for this year.

DISPOSITION OF YOUNG.—I let Commissioner Hughlett have 2,500 and have sold 400 to neighbors.

EDIBLE QUALITIES.—Those that I have eaten I had corned over night and broiled for breakfast. I have invited a number of persons to eat them and all pronounce them delicious.

DIFFICULTIES.—The most serious difficulty has been the depredations by snakes and fish-hawks. I killed a snake this spring with 3 fish 14 inches long in it.

MISCELLANEOUS.—Mr. S. T. Earle has 20 scale carp that he kept in a large covered spring and that have not grown 1 inch in 3 years.

329. *Statement of John McFadden, Sudlersville, Queen Anne Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp in December, 1880, and 35 in 1881. I put them into a pond 20 feet square and 2 feet deep, with a muddy bottom. A very good stream of spring water flows through it regularly. Last year a freshet carried away all the old carp, but thousands of young ones are left, which I intend to move into a large, natural pond, about 100 yards long by 20 wide, where I cannot lose them by freshets, as it has no inlet, and will be fed only by springs.

PLANTS.—It contains water-lilies and all grasses that grow in low lands.

ENEMIES.—There are catfish, frogs, and turtles in it.

FOOD.—I feed the carp about once a week with a gallon or more at a time of ship-feed or middlings. I find it the best food I can give them.

GROWTH AND REPRODUCTION.—I presume that 10,000 young were produced by my original fish. They are from 1 inch to 10 inches long.

330. *Statement of W. H. Neal, Sudlersville, Queen Anne Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 40 carp in December, 1880, which I lost by a break in my dam. I received about 40 more in the autumn or winter of 1881, and placed them in a pond of $\frac{1}{4}$ of an acre, with a muddy bottom and a depth of from 1 to 4 feet. I cut a ditch around the pond to prevent overflow, and arranged a set of gates to hold water when needed; but the ponds are supplied largely by rain-water, and the temperature is moderately warm.

ENEMIES.—The pond contains catfish, eels, sun-fish, a few small pike, and some terrapins, known as red-bellies.

FOOD.—I am sure I can grow carp in this pond without regularly feeding them, and I think without ever feeding them at all. I have thus far fed them irregularly on scalded meal, scalded corn, corn and bran and meal uncooked, corn-bread, wheat-bread, and a little wheat-bread with soda in it.

GROWTH.—I have probably 1 or 2 dozen of the lot left, but no young. They are from 10 to 15 inches long. I am fully satisfied with my success thus far.

DIFFICULTIES.—I name the soda especially, because soon after giving them that kind of bread, but nothing else unusual, my carp, together with the catfish, eels, and sun-fish, sickened, and many of them died. My pond was a miniature Dead Sea for about a week. The rains came, however, renewing the water, and restored the appearance of life. The few fish I have left are healthy and apparently all right. Is soda a fish poison? My greatest difficulty was to make the dams secure, so as to hold the needed quantity of water and discharge the surplus without losing the fish.

331. *Statement of F. I. Wiley, Charlotte Hall, St. Mary's Co., Md., Sept. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 150 carp 2 years ago. The pond in which they have been kept is $\frac{1}{4}$ of a mile long, 300 yards wide, and from 3 to 20 feet deep. Its bottom is composed half of mud and half of gravel and sand. Enough water flows through it to turn a mill; it is fed by springs, and is never very warm, about 50°.

PLANTS.—Yellow lilies, reeds, and wild rice grow in the pond, and I have never given the carp any other food.

ENEMIES.—It is infested with catfish, sun-fish, yellow perch, frogs, and snakes.

GROWTH.—I have no means of telling how many carp there now are, as the water is too deep. I have only caught a few; these weighed from 1 to 1 $\frac{1}{2}$ pounds. I cannot find any bait which they are very fond of.

REPRODUCTION.—I do not know how many young they have produced. I have caught a few, say 6 or 7, about 4 inches long.

332. *Statement of Levin L. Waters, Princess Anne, Somerset Co., Md., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received about 40 scale carp, which I turned loose in the headwaters of the Manokin River, and have never seen nor heard of them since.

333. *Statement of Thomas Hughlett, Easton, Talbot Co., Md., Jan., 1882.*

GROWTH AND REPRODUCTION.—In December, 1880, I deposited some leather carp in my pond near Easton. In February, 1881, this pond broke during a freshet, and some of the carp escaped to Miles River. In the following September some of them were

caught in a seine, and it was found that they hatched last year and some had grown to be 14 and others 19 inches in length, and weighed from $1\frac{1}{4}$ to 2 pounds. The fish deposited in the pond in 1879 spawned this year, and from the 35 placed therein I took out this fall more than 1,000 young, measuring from 2 to 6 inches in length.

DISPOSITION OF YOUNG.—I distributed the 1,000 young to applicants.

HOW TO CATCH CARP.—Some of the carp that measured from 14 to 19 inches in length caught with a hook and line.

334. *Statement of Thomas Hughlett, Easton, Talbot Co., Md., Jan., 1883.*

GROWTH.—The growth of carp is even more remarkable than was at first supposed. A few days ago Dr. Geo. R. Dennis drew off his pond in which he placed some carp just one year ago and found that 6 averaged a little more than 3 pounds each. About a month ago a carp was caught which escaped from the pond of Dr. I. L. Adkins, and which was placed there 2 years ago, that carried the scales down at 6 pounds, although it was not more than an inch long when deposited in the pond. Numberless cases could be cited in which the growth has been from 12 to 15 inches in a year, and the weight from comparatively nothing to 3 pounds in the same length of time.

REPRODUCTION.—I had 5 ponds constructed which cover about 3 acres of land. These ponds have actually produced 12,000 carp, and I have no hesitation in saying that but for the heavy freshets in September, which overflowed the ponds, the number would have been not less than 20,000. This is the second year that these fish have spawned.

EDIBLE QUALITIES.—Many carp have been caught near Easton and eaten by the citizens of that community, and in every instance the carp was pronounced a fine food-fish.

MISCELLANEOUS.—Not only has it been satisfactorily shown that carp will not only thrive in our rivers, but that its growth is even more rapid than in ponds, but it has been demonstrated that it thrives in salt as well as fresh water. On comparison, I find the carp caught in Miles River to exceed in size that attained in the same length of time in ponds.

335. *Statement of Thomas Hughlett, Easton, Talbot Co., Md., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—There were 18 carp in the first shipment sent to me, and there have been others since. I have kept my carp in still ponds varying in size from $\frac{1}{4}$ to $\frac{1}{2}$ of an acre and from 6 inches to 12 feet in depth, with bottoms composed of mud or black loam. The temperature of the water varies from 20° to 80° Fahr.

PLANTS.—The ponds contain water-lilies, water-cress, &c.

ENEMIES.—There are some spring frogs in them. My principal difficulty has been to protect the fish from frogs, snakes, kingfishers, and fish-hawks.

FOOD.—In winter I feed the carp once a week, and from April to December once a day. I give them meal, clabber, potatoes, cabbage, boiled wheat, blood, &c.

GROWTH.—I have 85 old ones, which now weigh from $1\frac{1}{2}$ to 8 pounds, and are from 1 to 2 feet long. The young weigh from 1 to 16 ounces and measure from $1\frac{1}{2}$ inches to 1 foot.

REPRODUCTION.—About 35,000 young have been produced.

DISPOSITION OF YOUNG.—I have distributed most of them in ponds and rivers throughout Maryland.

CARP IN STREAMS AND SALT WATER.—I would recommend general distribution. I have discovered from the breakings of my pond that carp thrive quite as well in salt water as in fresh. Their growth is more rapid in our streams than in ponds.

336. *Statement of James T. Bartlett, Trappe, Talbot Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 8, 1879, I received 16 carp, from $1\frac{1}{2}$ to 2 inches long. I placed them in a pond covering 2 acres, with 8 feet as its greatest depth, and a bottom composed mostly of gravel, but having plenty of mud in the deepest part. It never dries up; it is fed by a fine stream of spring water, which runs over a space of 7 feet, about 1 inch deep, nearly all the year. We put some brook trout in the pond, but have never seen any of them. I believe it is not suited to them, but think it is to the carp.

PLANTS.—It contains pond-lilies, and, where the depth does not exceed 3 or 4 feet, a kind of long grass grows from the bottom and floats on the surface.

ENEMIES.—Bullfrogs and skink, or yellow-bellied turtles, live in it; also catfish, pickerel, mullet, and many other fresh-water fish.

GROWTH AND REPRODUCTION.—In the spring of 1882 we set a net to catch other fish, and caught 6 of the scale carp from 8 to 10 inches long. Two of them were

injured, so we cooked and ate them and found them very good. The 4 we let go again. They were full of spawn.

STREAMS STOCKED.—In September, 1883, our dam was washed out and we lost all our fish. We found many young in the stream after the washing away of the dam. The stream from our pond runs into the Great Choptank, about 2 miles distant.

337. *Statement of W. W. Tunis & Bro., Tunis' Mills, Talbot Co., Md., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 80 carp in the fall of 1881, and 100 more in the fall of 1882, 60 of which we let go in the river. We have kept the others in a pond which covers $\frac{1}{4}$ of an acre, is 2 feet deep in the middle, and has a very soft bottom. A small amount of spring water flows through it, and, in heavy rains, a large amount of rain water.

PLANTS.—Various plants and weeds, such as grow in this section, are found in the pond.

ENEMIES.—There are no other fish in it. The carp have driven out the frogs, we presume by eating the eggs.

FOOD.—We give them no food whatever. We think they eat the eggs or young. They bite at worms for bait.

GROWTH AND REPRODUCTION.—The first lot are now from 15 to 18 inches long; those put in last fall are from 8 to 10 inches. There were 37 of the original ones last fall. We have not seen them since except as they jump out of the water. We don't think they have grown much. They produced no young last year. We have not examined this year, but we do not believe they will have any young ones, as we do not feed them or give them any care.

HOW TO CATCH CARP.—Yesterday our boys caught 3 with hooks, in a few minutes, 9 inches long. They could have caught more, as the fish were biting fast.

338. *Statement of John R. Hopkins, Wye Mills, Talbot Co., Md., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—About a year ago 18 carp were put into our mill-pond, but since then the dam broke. The pond is over a mile long and from 100 to 200 yards wide, with a sandy and muddy bottom. Enough water flows through it to drive a large grist-mill. The temperature varies with the season.

PLANTS.—There are plenty of all kinds of grasses around its shores.

ENEMIES.—The pond contained catfish, bull-frogs, snapping-turtles, and terrapin, all of which were lost when our dam broke, leaving now a good clear pond for fish-culture. We would like to have some more carp.

339. *Statement of Jacob Dick, Beaver Creek, Washington Co., Md., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 carp in March, 1881. I put them in a pond 25 feet wide, 35 feet long, and 4 feet deep, with a muddy bottom. There is about water enough to keep it at that depth, or deeper if I want it.

PLANTS AND ENEMIES.—It contains peppermint and water-cresses. There are no other fish, frogs, or turtles in it. The snakes and kingfishers, however, destroyed all the carp except one during the first summer.

FOOD.—When I got the carp I fed them twice a week with corn-meal and worms.

MISCELLANEOUS.—I will send after some more. I think they will do well if I can get them started.

340. *Statement of D. H. Newcomer, Benerola, Washington Co., Md., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 75 leather carp two years ago and 90 scale carp a year ago. I have kept them in a pond 80 feet long, 14 feet wide, and 4 feet deep, gradually diminishing to 6 inches deep at the head or spring. The shallow part is gravelly and the deep part loamy. From 50 to 100 barrels of very cold limestone water flow through it in a day. I think soft spring water would be better adapted to the growth of the fish. I intend to enlarge my pond, which will put it farther from the head spring. I think they will then do better.

PLANTS.—I put into the pond some water-cress, which grows winter and summer and forms a good protection to the fish. It grows on top and the roots do not extend to the bottom.

ENEMIES.—There are some few common suckers in the pond and some frogs, which I do not think will be of any injury. I have much trouble in keeping out musk-rats.

FOOD.—I feed them with bread, but not at regular times; once a week, upon an average. I know that they would not eat much more if they had it.

GROWTH.—About 40 of the first lot are still left. They are not uniform in size, but the largest are about the size of ordinary shad. The one-year olds are 4 inches long. The last young are very small. I think my carp would grow faster in soft water.

REPRODUCTION.—The scale carp produced young a year ago, which, I think, will do well. A few days since I noticed a small drove of quite young ones.

DIFFICULTIES.—I notice that some of the carp get white specks on them. Perhaps this is caused by their running against stones.

341. *Statement of John D. Wsherd, Benevola, Washington Co., Md., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago last March I received 50 carp. I have kept them in a pond 90 feet long and 30 feet wide, with a depth of 3 feet at one end and becoming quite shallow at the other. The bottom is marshy. The pond is fed by a strong never-failing limestone spring. The temperature of the water is 56°.

PLANTS.—It contains water-cress, grasses, and a green moss with a peculiar musk-like scent.

ENEMIES.—It has a few spring-water suckers in it and a few small frogs, but no turtles. Snakes and kingfishers have made me much trouble.

FOOD.—I feed the carp occasionally with corn-meal and skimmed milk.

GROWTH.—It is impossible for me to say how many of the original ones are left, owing to the thickness of the moss. We have caught but one; that weighed about 3 pounds.

REPRODUCTION.—The young are innumerable, and are of different sizes and weights.

MISCELLANEOUS.—My pond was only for an experiment. I can enlarge it to about the size of an acre if I find it profitable. I think fall is the best time to put carp in a pond, as by spring they will be too large for the snakes to manage.

342. *Statement of Emanuel H. Frantz, Clear Spring, Washington Co., Md., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 50 carp 3 inches long, and this June I received 12 more. I constructed a pond for them 25 by 50 feet, and 3½ feet deep, on an average. Its bottom is composed of mud and gravel and rotten leaves. It is fed through an inch iron pipe out of a mill-race. The water is cold mountain spring-water, and is brought by the mill-race from a dam in a gorge of the first spurs of North Mountain.

PLANTS.—The pond contains some water-lilies and common green plantain. A large sycamore free shades it on the southwest.

ENEMIES.—There are small frogs in it, and I am also troubled a great deal with small fresh-water crabs, which make holes in the dam so that the water leaks out.

FOOD.—The first year I fed the carp principally with water crackers and refuse from the kitchen; since then with various vegetables, bread, &c.

GROWTH.—They are now 8 or 9 inches long, and weigh 2 pounds or over.

MORTALITY.—They did all right until this spring, when all at once they came to the top as though perishing for fresh air, and died in 12 hours, all except 3. I cannot account for the loss, unless it was caused by poison or snake-bites. After they had commenced to die I let the pond off and had it well cleaned out, but found nothing but one small water-snake, and crabs and tadpoles. I had just constructed a new dam lower down, so as to make a pond 80 yards long, 50 yards wide and 5 feet deep, and intended to plank it up tight, when I lost all my labor in a single week.

MISCELLANEOUS.—I would like to get a start again. I have well boarded up my new dam, and it will make a splendid place for the carp.

343. *Statement of Rev. Daniel Wolf, Fair Play, Washington Co., Md., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 75 carp December 21, 1880. I have kept them in a pond, which is triangle-shaped, each side being 160 feet in extent. Its depth is 2 feet, and it has a bottom composed of very hard, white marl; but black loam washes in continually. The water comes from 2 strong springs about 500 yards apart; that from each enters at a different corner of the triangle, but there is only one outlet.

PLANTS.—Water-cresses and lettuce grow along the branches and about the spring, to which the carp have access.

ENEMIES.—There are some frogs, and the small turtles that are common to ponds. Water-snakes, musk-rats, and cranes prove enemies to the carp, and I believe that geese and ducks destroy them. [See also under GROWTH, below.]

FOOD.—The carp are so shy and disposed to conceal themselves that we never attempted to feed them. One or two of them have been detected on several occasions in picking up particles of starch dropped in the water on wash days.

GROWTH.—There are no old carp left that I can discover. The same night when they were first put in, the ponds and the spring froze over thick with ice, and remained so all winter. I did not see any of the fish until the following September. Then I saw some 14, which seemed to be about 7 inches long; and at that time I discovered a shoal of young black bass about the size of a half-bushel.

REPRODUCTION.—There must have been several thousand young ones. After they get to be from 5 to 6 inches in length we cannot see them any more. I have never weighed any of them.

DIFFICULTIES.—My pond is surrounded by low lands which once a year, or oftener when there are very heavy rains, get flooded over to the depth of 18 inches or more; consequently, the fish can be, and I have no doubt are, carried to the Antietam Creek, and are lost to me.

344. *Statement of H. C. Loose, Hagerstown, Washington Co., Md., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—May 13, 1881, I received 50 scale carp, but the weather was so very warm that only 34 were living. I received 99 more, December 5, 1881, all living.

I have kept them in a pond $\frac{1}{2}$ of an acre in extent, with a depth of from an inch to 4 or 4 $\frac{1}{2}$ feet, sloping to the under drain corner, after Rudolph Hessel. It has a marly bottom, with no rock. The amount of water flowing through it is usually about an inch, but I can run from $\frac{1}{2}$ an inch to 10 inches of it through the sieves in a trough 14 inches wide. The water is slightly cooler than river or creek water, coming from a stream fed by springs, of which the most remote is 10 miles away, and the nearest is within half a mile.

PLANTS.—The pond contains no water plants nor grasses, except one water-lily, *Nelumbium speciosum*. Other *Nymphæa* were planted, but failed to grow.

ENEMIES.—It contains some suckers, whose eggs must have washed through the screens; also a few "skill-pots," and, possibly, a few frogs. I am troubled with muskrats, and, occasionally, a large fish-hawk. I don't know whether "skill-pots" hurt, but try to kill all I can. There are no snapping-turtles.

FOOD.—We feed the carp about twice a week during the growing season, say from May to November; principally with cracked corn, unsoaked, but also with stale bread and any vegetables that are left over from the table, such as green corn, cabbage, potatoes, &c. Occasionally we give them screenings.

GROWTH.—I have 23 that I know of left from the first lot; the largest are 19 inches long and 11 inches in girth, and weigh 2 pounds and 13 ounces; some are 18 $\frac{1}{2}$ inches long, 11 $\frac{1}{2}$ inches in girth, and 2 pounds and 13 ounces in weight; and others weigh 2 pounds and 12 ounces. I can't say how many of the second lot I have, but a goodly number. Some of these are 12 $\frac{1}{2}$ inches long, and weigh 1 pound; some are 11 $\frac{1}{2}$ inches long, and weigh 11 ounces; and some measure 11 $\frac{1}{2}$ inches, and weigh 11 ounces. The young ones are from 2 to 7 inches long. My large carp do not weigh $\frac{1}{2}$ ounce more than they did July 26, 1882, and are only half an inch longer. The second lot are larger than in July, 1882, but not very much; I did not measure them then, so I can't tell exactly. Only the smaller ones (my own hatching) appear to grow. Are they only rapid growers when small?

REPRODUCTION.—Last year some few were spawned by the first lot, and this season both lots spawned. I have hundreds of young ones now; it is impossible to number them; would guess that there are from 200 to 400 or 500.

EDIBLE QUALITIES.—I have just given away 3 of the first lot (not the largest) and 3 of the second. These were all used for the table, and, together with several eaten in my own family, were pronounced by all to be very fine eating.

HOW TO CATCH CARP.—One time I kept the water supply out of the pond for some days, getting it quite low (without opening my underdrain). I then put in 2 good-sized stir-nets, but could not catch a fish. Then I tried a dip-net, but still could not catch any. I did not like to use hook and line, as I did not wish to injure any, and might possibly catch one I did not want. So any one having a pond which he is not able to drain may have plenty of carp, although he finds it almost impossible to catch any.

The day I inspected the pond I put into it, near the shore, in order to avoid the above difficulty, a live-box, 12 feet long, 2 $\frac{1}{2}$ feet wide, and 2 $\frac{1}{2}$ feet high, substantially framed with 4 by 4 white oak, and stout slats 1 $\frac{1}{2}$ inches by 1 $\frac{1}{2}$, having a board bottom and slat sides and ends, and being provided with two slat lids, both of which I have under lock and key. I sunk the box in the mud below the 4 by 4 cross sills, and also put some 3 or 4 inches of mud on the board bottom. Into this pen I put 3 carp of the first lot (not the very largest) and 9 of the second lot, so that I shall be able to get them with a scoop-net when wanted either for the table or to satisfy visitors' curiosity.

345. *Statement of Jonas Bell, Williamsport, Washington Co., Md., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp a year ago last fall. I have a large spring, and I put them in a store-box through which the water passed. Last August I gave them green corn. The ducks got in and eat all of them. When they were killed they were 3 inches long. Will try again.

346. *Statement of Randolph Humphreys, Salisbury, Wicomico Co., Md., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The young carp that you sent Gen. Humphrey Humphreys were placed in a small area, inclosed by a wire guard. He was unfortunate enough to have the wire broken, about 5 months after they were put in, and since then the carp have not been seen. It is supposed that they were devoured by the numerous large pike that abound there. While they were in the pond they were well fed and seemed to thrive. General Humphreys died in May, 1882.

347. *Statement of Joshua E. Carey, Berlin, Worcester Co., Md., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 80 leather carp 2 years ago last December. I have kept them in a pond about an acre in surface, from 1½ to 2 feet deep, with a muddy bottom. Water flows through it about ¼ of the year. In winter it is very cold, so long as the springs are kept up by the rains.

PLANTS.—There are lilies in the pond, three-square and bent grass, pepper-grass, blue-grass, and some others.

ENEMIES.—It also has in it catfish, pike, sun-fish, frogs, and turtles; and there are musk-rats in its banks. When I first prepared the pond I passed all of the water through a fine basket, so as to get rid of other fish, but I see there are plenty in it yet; and I think that they have destroyed a great deal of carp spawn. Fish-hawks have probably caught some of the old carp.

FOOD.—I have not fed the carp but once since they were put in. There is plenty of food there.

GROWTH AND REPRODUCTION.—I am not able to state how many of the original carp there are in the pond at this time. I see quite a number. They are 18 inches long and 5 broad. I have not seen any young ones yet, but hope there are some in the grass which covers the bottom of the pond. There are trees standing in the pond so that I cannot haul a net in it.

MASSACHUSETTS.

348. *Statement of John Birkenhead, Mansfield, Bristol Co., Mass., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 6 carp in Nov., 1880. The pond is 30 by 40 feet, and about 2 or 3 feet in depth, and contains peat and gravel. It was not a success, as I suppose the frost reached the bottom of the pond.

349. *Statement of Emory C. Harris, Colerain, Franklin Co., Mass., Oct. 14, 1882.*

GROWTH.—I received last November 21 carp, all alive and healthy, and I put them into a large spring of water; but they all died but 3. These I put into my pond, 40 by 220 feet, and they are now nice fish, averaging 12 inches each.

350. *Statement of James S. Grinnell, Greenfield, Franklin Co., Mass., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in October, 1881. I put them in a small pond 10 to 12 feet across and fed by a spring, intending to transfer them to a larger one. When I came to transfer them, however, they were not to be found.

ENEMIES.—We killed a couple of water-snakes, which accounts for the loss of the carp. I am greatly interested in fish-culture and purpose trying again.

351. *Statement of James W. Hannum, Ludlow, Hampden Co., Mass., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in the fall of 1881 and again in the spring of 1882. I put the first lot in a small pond near the house. They all disappeared and I think were caught by an otter. The second lot I kept in a spring during the summer and transferred them in the fall to a wire cage, 3 feet cube, and anchored in a pond covering 20 acres.

ENEMIES.—I have not let them out in the pond on account of other fish—pickerel, catfish, &c.

FOOD.—I have given them boiled Indian meal.

GROWTH.—They are nearly the same size as when I first received them. I think the water is too cold for carp, or they would increase in size faster.

352. *Statement of William F. Martindale, Enfield, Hampshire Co., Mass., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in November, 1880. My pond is 60 by 80, with an annex of 12 by 40 feet. The water is from 1 to 5 feet deep. The bottom is muck and yellow loam. The water comes from springs 20 rods distant in quantity enough to fill a 2-inch pipe. Its temperature August 2 was 52° at the spring and 66° at the pond.

PLANTS.—The pond contains a fine round water grass that the fish pull from the bottom and eat. There is also a common water vine.

ENEMIES.—The pond contains no other fish, but some frogs. A fish-hawk took one of the old ones and a water snake 2 or 3 of the smaller ones.

FOOD.—I feed them once a day on sweet-corn and rye, boiled, and on various kinds of grain and bread.

GROWTH.—Last September the 2-year old measured from 12 to 15 inches.

REPRODUCTION.—I do not know how many young there are. The pond appeared to have a large supply last fall.

DIFFICULTIES.—I think I have lost a part of the fish from the loss of water in the spring, caused by the action of frost on the dam, which is an artificial one. There has been no serious difficulty with the fish. I have been very much interested in them, and I think they will become of much value.

353. *Statement of Lorin Barrus, Goshen, Hampshire Co., Mass., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—Hiram Packard, whose pond I have bought, received 18 carp November 9, 1880. The pond covers an acre, contains mud and peat, and varies from 1 to 6 feet in depth. The influx at low water would fill a 6-inch pipe; at high water there is quite a volume. The temperature is from 60° to 70°.

PLANTS.—In the shallow water there grows coarse grass, a sedge eel-grass and a mixture of fine grass and moss.

ENEMIES.—I have seen a few small frogs, a few small dace, and occasionally a small brook turtle.

FOOD.—I have not fed them, but I think there is an abundant natural supply.

GROWTH.—The 4 that remain would weigh in May, when I drew the pond off, from 5 to 6 pounds each. One of them measured 19 inches in length. The first year they weighed 1 pound, the second 3 pounds, and now, 6 pounds. Three of them look alike, having scales with the same general appearance, about as large as a thumb in length. The fourth one has scales twice as large and of a brighter color.

REPRODUCTION.—There is an appearance of some young fish in schools on the top of the water occasionally, but they vanish when one approaches. I am uncertain whether they are carp. I intend to stock another pond shortly.

DIFFICULTIES.—The pond froze over the night I had put the carp in, and I think they failed to find good winter quarters.

354. *Statement of John L. Shorey, Cambridgeport, Middlesex Co., Mass., Sept. 15, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received through Mr. E. A. Brackett 7 very small carp and put them in a muddy pond where there were a good many frogs. I have seen no trace of them since and think the frogs have eaten them up.

355. *Statement of Geo. M. French, Holliston, Middlesex Co., Mass., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in July, 1880. The pond, or lake, covers 450 acres, is from 25 to 30 feet deep in the deepest place, has a bottom of mud, gravel, and sand. It is fed by springs only. We put the carp in an artificial pond side of this lake and think they escaped into the lake.

ENEMIES.—The lake contains natural fishes, such as pickerel, perch, catfish, shiners, suckers, and besides is being stocked with land-locked salmon, white perch and trout.

356. *Statement of T. J. Marsh, jr., Tewksbury, Middlesex Co., Mass., Dec., 1882.*

DISPOSITION OF CARP RECEIVED.—The 400 or 500 carp received by the State Fish Commissioners in the fall of 1880 were placed in the reservoir of the Tewksbury almshouse for several reasons. First, they were received too late in the season to prepare a pond for them; secondly, to give a chance to test their expense. The water is cold spring-water from what formerly was a trout stream. The bottom of the pond is paved with stone. The low temperature of the water prevents vegetable growth, and consequently renders it an unfavorable place for carp.

FOOD.—I feed the carp with stale bread from the almshouse.

GROWTH.—They have grown finely, many of them weighing from $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds. With a grassy bottom and a higher temperature they would probably have doubled their size. This shows the rapid growth under adverse circumstances. Many of the fish are large enough to spawn next summer.

357. *Statement of Simon W. Hatheway, Islington, Norfolk Co., Mass., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I have been feeding carp to vipers, and am now engaged in killing the vipers (or water snakes), an occupation which gives me much pleasure. When I got the vipers killed I will try carp again.

358. *Statement of Martin Green, Green Hill, Worcester, Worcester Co., Mass., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp November 19, 1880, 31 November 10, 1881, and 19 November 18, 1881. I estimate that the pond contains 70 acres, with an average depth of 15 feet. It contains peat, muck, and the ordinary swamp grass. The temperature August 7, 1881, was 70° . It is fed entirely by springs, and overflows all the year except summer.

ENEMIES.—It contains frogs, snapping and speckled turtles.

GROWTH.—In the spring of 1881, while a temporary gate was removed for letting the water off, most of the first lot of carp escaped. September 24, 1881, I found 1 carp remaining, which was $14\frac{1}{2}$ inches in length, having grown $12\frac{1}{2}$ inches since November 19, 1880.

DESTROYING OTHER FISH.—At that time I bailed out many other fish, such as cat-fish, shiners, perch, and flat-fish. I then worked into the mud 10 pounds of quick-lime to destroy all other fish before again introducing carp.

REPRODUCTION.—During the spring of 1883, fish 6 or 8 inches long have been seen, supposed to be carp, but, as it is not convenient to draw off the pond, I cannot now state the condition of the fish.

MICHIGAN.

359. *Statement of C. C. Sutton, Millburgh, Berrien Co., Mich., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp, 5 scale and 5 leather, in January, 1880. On receiving them I put them in a hatching trough for a short time and then placed them in a pond 8 by 12 feet which had been used for a trout nursery. I supposed the trout were all out, but there was 1 left, and in 24 hours he had partially eaten them up, so much so as to kill them. I have given up trout-culture and want some more carp. There was no difficulty except the cannibal trout.

360. *Statement of P. B. Tuttle, Niles, Berrien Co., Mich., June 13, 1884.*

DISPOSITION OF CARP RECEIVED.—The pond in which my carp are is excavated in muck soil, which naturally is full of vegetation. The depth varies from $1\frac{1}{2}$ to 5 feet. The pond can be drained entirely dry in a few hours. The flow of water can be regulated from 1 to 40 inches, and is every way adapted to the propagation of carp.

Another pond adjacent to this, with a larger area, is adapted to the keeping of breeders. As soon as the carp are hatched in the small pond, the larger carp are removed to this pond and kept separate from the young carp. My fishery was constructed by the Michigan commissioners, and the estimated cost of ponds and building was \$5,000. It was given up by the State because the water proved too warm for the culture of speckled trout.

REPRODUCTION.—I have between 40 and 50 carp 3 years old. A few young were hatched last season, but were lost by a defective gate. Four years ago thousands of young carp were raised here, and carp grew in 14 months to weigh over 7 pounds. I would like to undertake the breeding of trout, and would be glad to exchange some carp for some of your trout at Northville.

361. *Statement of Martin Melcalf, Battle Creek, Calhoun Co., Mich., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In the summer of 1880 I received some carp and put them in a small spring, from which they were lost. I received the second lot in the summer of 1881, and the third lot in 1882. The first winter I kept them in a large muddy-bottom spring pond, and transferred them in the spring to a muddy bottom and weedy pond cut off from running water. As there is no circulation in hot weather the water gets very warm.

PLANTS AND ENEMIES.—The pond contains water-cresses, flags, and some frogs, but nothing else objectionable.

FOOD.—I feed the carp with refuse from the kitchen, farm, &c., including both raw and cooked corn, potatoes, &c. I feed them once in three days.

GROWTH.—Of those received in 1881 there are 4 left, which probably averaged $\frac{1}{2}$ of a pound last October, which was a fine growth considering that I did not feed them any in 1882 and the water was of quite low temperature. Of the lot received in 1882 there are about 100. I have seen no young.

362. *Statement of A. Garwood, Cassopolis, Cass Co., Mich., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp and kept them until this spring in an excavated pond 12 by 40 feet. This spring I put them in a pond twice as large, and as I let but little water flow into it it was warm.

PLANTS AND ENEMIES.—Being new it contains but little vegetation. It also contains frogs.

FOOD.—Most of the time I feed them with light bread once a day.

GROWTH.—I have 6 of the lot left, which are 15 inches long and 4 pounds in weight. They have produced no young.

DIFFICULTIES.—Those that I lost died during the winter, under the ice. I suppose the water was so cold through the summer as to prevent their spawning.

363. *Statement of Junius H. Hatch, Lansing, Ingham Co., Mich., July 20, 1883.*

DIFFICULTIES.—I have given fish-culture much attention and think the majority of failures occur through ignorance of the food and water necessary for development and growth of fish. I have frequently known white fish, trout, &c., being lost simply because they were dumped in waters teeming with predatory fish. This is a great obstacle to successful carp-culture here. Michigan, particularly in the southern part, is full of small, shallow, weedy, land-locked ponds, sometimes called sink holes, and peculiarly adapted to carp-culture.

364. *Statement of J. C. Sterling, Monroe, Monroe Co., Mich., Dec. 10, 1883.*

CARP IN LAKE ERIE.—One of our Monroe fishermen found in his catch of whitefish one day last week a fine specimen of German carp which weighed $3\frac{1}{2}$ pounds. The pound from which the fish was taken is in Lake Erie, about $\frac{1}{2}$ of a mile out from the mouth of Raisin River.

365. *Statement of Samuel Alexander, Birmingham, Oakland Co., Mich., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in the fall of 1880 and put them in a pond 12 by 20 feet and 3 feet deep, with a gravelly bottom. The flow of water is boundless from a clear and cold spring, excellent for drinking. It contains many plants.

ENEMIES.—There are no other fish nor turtles. If I were to guess the number of frogs I would say about 1,000,000,000,000,001.

MISCELLANEOUS.—They began to die immediately, and in the course of a few weeks all were dead. I conclude that the Michigan people who can get such excellent native fish as the whitefish, trout, bass, and pickerel will never put a very high estimate on carp. The frogs did not appear until the carp were dead, and I think to raise any kind of fish we should be obliged to exclude frogs and minks.

366. *Statement of Cornelius J. Lawrence, Southfield, Oakland Co., Mich., Sept. 15, 1883.*

GROWTH.—One of my neighbors got German carp from you last fall which are now 1 foot long, and I would like to raise some.

MINNESOTA.

367. *Statement of L. Z. Rogers, Waterville, Le Sueur Co., Minn., Sept. 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In April, 1881, I received 25 carp. I put them in a pond of 1 acre. I received a second lot in December, 1881, and put them in a 4-acre pond with water 10 feet deep. The water is very clear. The bottom is muddy and sandy, and there is no inlet nor outlet. Another lot received last spring I put into the latter pond.

ENEMIES.—The small pond contains no other fish, but contains small turtles and common wild duck. The second pond contains no fish except the carp; has plenty of vegetation and insects.

GROWTH.—After depositing the first lot I saw nothing of them, although I looked carefully all last summer, but in April of this year, just 2 years after depositing them, I found 3 old ones, each 21 inches long and weighing 6 pounds each. They had been dead a long time and appeared quite shriveled. My man claims to have seen during this summer a large and a small one also in the pond. To-day I looked in the large pond for carp, but saw none. I think, however, there must be some under the vegetation, which is very thick.

368. *Statement of R. O. Sweeney, St. Paul, Ramsey Co., Minn., Mar. 27, 1883.*

MORTALITY.—With few exceptions, the first lot of carp appeared to be in excellent condition when received. But they are evidently now, or were then, under the influence of a peculiar disease which is rapid and fatal, for they die in large numbers. Before death there is a remarkable bloating and protrusion of the eyes from the sockets in a singular manner as if the whole carcass was distended to bursting, yet remaining remarkably limp and free from *rigor mortis* so usual in small fish when dead. The healthiest and more vigorous ones prefer the cooler current through the center of the tank, while the weak and sickly ones mope about in the quiet corners where there is but little or no motion to the waters.

369. *Statement of John Fisher, Stillwater, Washington Co., Minn., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in November, 1880, and 20 in November, 1882. My pond or lake will average 65 rods wide and 90 rods long, with 5 feet of water and 1 foot or more of mud. It is land-locked, having no inlet or outlet. The water is icy cold in winter.

PLANTS.—It contains pond-lilies, common water-grass, and many kinds of weeds.

ENEMIES.—Frogs are plenty, and a small kind of turtle, sometimes called terrapin. I think the first lot were all taken out by a kingfisher.

PROTECTION FROM ENEMIES.—If I could get some more that would attain considerable size before winter, so as to be able to stand the cold, I would protect them by putting down a crib of boards 12 by 21 feet, or larger, sinking them in the muddy bottom where the water is deep, and then make a slat covering to protect them from kingfishers. I could then feed them and keep them away from their enemies until they begin to breed.

FOOD.—Until the lake froze over, I dropped in mixed cornmeal and flour and dough near the place where I put the carp. I have not fed them since.

DIFFICULTIES.—I have never seen any carp since a few days after putting them in. There seems to be no difficulty, unless perhaps a slight tincture of oxide of iron, in the water. Other lakes and streams in this vicinity freeze to a depth of 20 inches. My pond has never shown over 17 inches of ice.

OTHER FISH.—Seeing no signs of carp, in the summer of 1881 I put in some mullet, red-horse, sunfish, bass (or crappie), and pout (catfish), all from Lake Saint Croix, together with 15 bass from a land-locked lake 4 miles away. All of the red-horse and mullet and some of the sun-fish and pout have been found already along the shore. None of the bass have been seen, but the lake is full of pouts of every size. The red-horse and mullet were never seen until found dead, after being in the pond two winters. The bass and carp may be there, but I do not think so.

370. *Statement of John H. McLean, St. James, Watonwan Co., Minn., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in 1881 and 20 in 1882, and put them in a small lake, with a bottom of mud and sand. There I left them, and have taken no particular care of them since.

371. *Statement of H. C. D. Ordorff, Monticello, Wright Co., Minn., Oct. 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in October, 1881, and a second lot in November, 1882. My pond covers about $\frac{1}{4}$ of an acre; it has from 3 to 4 feet of water, and 9 feet of marsh. In winter it freezes to a depth of from 24 to 30 inches. Water flows through it in spring, the outlet being protected by a wire screen. I made a pool 16 feet square and 6 feet deep near the pond, in which I put the first lot, but they all got out. I put the last ones into the pond, and have never seen them since. I do not know how many are left, or whether they have produced any young.

PLANTS.—The pond contains water-lilies, and its bottom is overgrown with moss and weeds. It yields no better than the carp ponds in Germany.

ENEMIES.—There are bull-heads, minnows, two kinds of turtles, and a great many large frogs in it.

FOOD.—I fed my first carp once a day with lettuce and bread,

MISSISSIPPI.

372. *Statement of W. F. Moore, Corinth, Alcorn Co., Miss., Aug. 1, 1884.*

GROWTH.—The carp received in the fall of 1883 have done well, and they now measure from 8 to 12 inches in length.

373. *Statement of M. J. Rinmer, Kosciusko, Attala Co., Miss., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 25 carp, and have received 10 since. The pond is muddy and stumpy; the water clear and tolerably cold, as it comes entirely from springs. The pond covers about $1\frac{1}{4}$ acres, having a depth of 10 feet.

PLANTS.—There are the plants which usually grow about ponds, also willows.

ENEMIES.—There are bream, catfish, perch, silversides, hardshell turtles, &c.

FOOD.—I have given them corn and wheat bread, cabbage, beef, and worms.

GROWTH.—I should think they are about 18 inches long and weigh from 8 to 10 pounds. They are so wild we see little of them.

REPRODUCTION.—I have not noticed any young until this season. Now there are a great many from 2 to 3 inches in length.

DIFFICULTIES.—Owing to neglect, we have been troubled with turtles. It is difficult to catch the carp.

374. *Statement of A. E. Bagwell, Rocky Springs, Claiborne Co., Miss., July 30, 1882.*

HOW TO CATCH CARP.—I have German carp in my pond which are doing finely, but it is impossible to catch them with a hook.

375. *Statement of G. V. Young, Waverly, Clay Co., Miss., Aug. 25, 1883.*

DISPOSITION OF CARP RECEIVED.—My brother, W. L. Young, procured some carp about 2 years ago and placed them in a pond fed by an artesian well. It became necessary this summer to get rid of the small fish, most of them being minnows of the variety known as silversides. The pond was drained and the carp were placed in the bath-tub, where they remained 4 or 5 days. This tub or tank is 10 feet square and about 5 feet deep, and was constantly supplied with pure water. My brother subsequently placed the carp in the fish pond and let on a limited supply of water, where everything could be observed.

FOOD.—The carp were fed daily.

DIFFICULTIES.—They soon became very restless, and finally a fine specimen jumped out and was found dead. The carp was examined, and it proved to be a female in condition for spawning.

HABITS.—This restlessness on the part of the carp seemed to be a desire on the part of the females to avoid the males. The male carp in some instances forced the female out on the land.

376. *Statement of Wm. L. Young, Waverly, Clay Co., Miss., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 150 carp February 22, 1881. My pond is 40 by 120 feet, 4 feet deep, with a bottom of bluish pipe-clay. It is fed by an artesian well yielding 10 gallons per minute, and of about 60° temperature. There are no plants nor grasses in it.

ENEMIES.—There are sun-perch, a few mud-cats, and millions of minnows.

FOOD.—I have given them corn-bread about 4 times since putting them in the pond.

GROWTH.—Thirty-nine remain, which would measure 15 inches on the average.

REPRODUCTION.—There has yet been no young, but they are now full of eggs and appear to be about mature.

DIFFICULTIES.—The only difficulty has been to keep the carp from escaping at the outlet. The pond has just been cleaned and the defects remedied.

377. *Statement of E. R. Brown, Hazlehurst, Copiah Co., Miss., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the spring of 1882. I have a pond 90 by 180 feet, with a muddy bottom and a depth of 12 feet. It is supplied entirely by surface rain-water.

ENEMIES.—It contains perch, frogs, and hardshells, but no plants.

FOOD.—They have all the food they can get from nature, and whenever they want it.

MISCELLANEOUS.—I know nothing of the old ones, nor have I seen any young ones. I found it difficult to catch any.

378. *Statement of E. G. Peyton, Hazlehurst, Copiah Co., Miss., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp late in 1880 and 20 mirror carp last year. I have 2 ponds with muddy bottom; one 100 feet by 200, and the other 100 by 150 feet, and from 3 inches to 10 feet in depth. The ponds are supplied by spring water, and at this season of the year it is warm and the carp seem to thrive in it.

PLANTS.—The ponds contain grasses.

ENEMIES.—There are plenty of frogs and craw-fish and one or two turtles. Two large catfish were found in the pond December, 1882.

FOOD.—I feed them once a day on scraps from the table, bread, potatoes, lettuce, corn, chops, &c.

GROWTH.—There are 8 of the first lot which are not less than 2 feet in length, and weigh from 5 to 7 pounds each. November, 1881, 7 of the carp were 16 inches long and weighed 2 pounds; March, 1882, they were 18 inches long, and on draining the pond, December 15, 1882, I caught 24 large carp measuring 16 inches in length and weighing 2 pounds. These were planted in the winter of 1881-'82.

REPRODUCTION.—Last year they produced about 300 young, which are now from 7 to 15 inches in length. The carp were more backward in spawning this than last season. By May 15, 1883, there were young 1 inch long. I first saw young carp in my pond in April, 1882. I drained the pond December, 1882, and found 275 young, some as large as good-sized eating perch, and others from 3 to 6 inches long at the time named.

DISPOSITION OF YOUNG.—I supplied some of my neighbors with young in 1882. I sold about 200 of them.

DIFFICULTIES.—My most serious difficulty has been to keep turtles, frogs, craw-fish, and snakes out. I fear the craw-fish and frogs eat the eggs of the carp.

379. *Statement of William Oliver, treasurer of Mississippi Mills, Wesson, Copiah Co., Miss., May 2, 1883.*

GROWTH.—I received 18 carp, from 3 to 4 inches long, November 18, 1881. About 2 weeks ago a carp was killed in one of my ponds and found to weigh 15 pounds gross, and measured $2\frac{1}{4}$ feet in length.

EDIBLE QUALITIES.—Those who ate the carp say it was as fine as trout.

380. *Statement of W. W. Kelsey, Lewisburg, De Soto Co., Miss., Nov. 5, 1882.*

GROWTH.—The fish I received last December are doing well, and they will weigh from $1\frac{1}{2}$ to 3 pounds.

381. *Statement of G. W. Mason, Lewisburg, De Soto Co., Miss., July 17, 1882.*

GROWTH.—The 20 carp received in December, 1881, were seen in May, 1882, for the first time since they were placed in the pond. As seen in the shallows they appear sufficiently large for table use. They grow and thrive well in our waters, and when called come for food like pigs. I have seen no young yet.

382. *Statement of John Yost, Brandon, Franklin Co., Miss., July 30, 1882.*

DISPOSITION OF CARP RECEIVED.—About the middle of December, 1881, I received 20 carp and placed them in a box $2\frac{1}{2}$ feet square by 20 inches deep. I bored a number of small holes to allow the free circulation of the water running from the spring, and put a rock and a few shovelfull of dirt in the box to hold it down. I have two adjacent ponds, and in one I subsequently placed all the carp.

FOOD.—I feed the carp on cabbage leaves, lettuce, tomatoes, peaches, apples, and crumbs of corn-bread.

ENEMIES.—The carp were placed temporarily in the box until the pond could be rid of the sun-fish, bream, and catfish which inhabited it. I placed these fish in one of my ponds.

GROWTH.—A carp was captured the first day of the present month which was 12 inches long. This carp was 3 inches long when placed in the pond, and shows a gain of 9 inches in length in 6 months.

HOW TO CATCH CARP.—A 12-inch carp was caught with worm used as a bait.

DIFFICULTIES.—When I had prepared my pond for the reception of the carp I found 10 under the rock in the box dead. That left me 10 live carp, and they were sick. In taking the carp from the box one accidentally fell into the pond with the catfish and bream. This was the one caught with the hook. I have not seen the others since they were transferred from the box to the pond.

383. *Statement of Calvin W. Barber, Edwards Depot, Hinds Co., Miss., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1880. My pond covers $\frac{1}{2}$ of an acre, averages 3 feet in depth, and has a muddy bottom. It is supplied entirely by surface water from about 2 acres of land, and is quite warm.

PLANTS.—It contains no plants except Bermuda grass and willows.

ENEMIES.—It contains two species of perch, as well as bream, and frogs. I shall also need to guard against turtles.

FOOD.—Three times a week I give them corn, vegetables, &c.

GROWTH.—I have all of the old ones, and they will weigh from 8 to 10 pounds each. I have not seen any young yet.

384. *Statement of Thomas Atkinson, Jackson, Hinds Co., Miss., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp December 24, 1880. My pond covers $\frac{1}{2}$ of an acre, is from $1\frac{1}{2}$ to 6 feet deep, and has a muddy bottom. The water is still, except when there is an overflow from heavy rains.

PLANTS.—Bermuda grass grows around the edges, and willow trees with a large number of roots extending out into the water.

ENEMIES.—The pond contains some catfish and perch.

FOOD.—I feed them when convenient with corn-bread, stale crackers, meal, cabbage, turnips, and other vegetables.

GROWTH.—On the 19th of September, 1881, I drew off the pond, and found 7 carp from 12 to 14 inches long. I have not been able since to ascertain whether they have any young.

DIFFICULTIES.—The most serious difficulty has been to keep out other fish and to supply aquatic plant food.

385. *Statement of A. N. Kimball, Jackson, Hinds Co., Miss., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in January, 1880, and 20 more in December, 1882. My pond is 30 by 50, supplied by rain only, has a muddy bottom, and is from 2 to 5 feet deep. In the winter water flows through it abundantly. In the summer it is scarce and very warm.

PLANTS.—It contains willows and thick-leaved grasses, such as usually grow in swamps and wet places.

ENEMIES.—These are silversides, perch, and small loggerhead turtles, which have been caught with hooks. Birds, especially herons, frequently alight in the pond.

FOOD.—At irregular intervals I have given them boiled potatoes, corn-bread, and crackers.

GROWTH.—In January, 1881, there were 9 left; in September, 1882, there were 5 left. In January, 1883, these 5 old carp weighed from 44 to 5 pounds each.

REPRODUCTION.—In May, 1883, I sank a dip-net 30 inches in diameter, baited with bread, and caught about 15 carp not over an inch long. I have not seen them since June, and then only as they came to the surface to feed. They appear to be about 2 inches long.

DIFFICULTIES.—My most serious difficulty has been the fish of prey and turtles. The flood of February, 1882, may have carried off some carp.

386. *Statement of J. H. Odeneal, Jackson, Hinds Co., Miss., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in January, 1882. My pond is 120 feet in diameter, with a muddy bottom. There is very little overflow and the water is very warm.

PLANTS AND ENEMIES.—It contains water-grass and Bermuda grass, but no enemies.

FOOD.—I give them boiled corn and scraps of vegetables.

GROWTH.—As nearly as I can tell, they are about 14 inches in length.

REPRODUCTION.—They have produced a great many young, but I am afraid that the hogs have eaten many of them.

387. *Statement of Rev. Azel Hatch, Tougaloo, Hinds Co., Miss., Feb. 9, 1884.*

DISPOSITION OF CARP RECEIVED.—The 22 young carp I received last spring were put in a pond of the Tougaloo University. The unprecedented drought of last summer dried out the pond to such an extent that the fish must have perished.

GROWTH.—About October 1, one was found which had floundered out of the mud, and measured 1 foot in length. It was dead when found.

388. *Statement of R. O. Lipsy, Goodman, Holmes Co., Miss., Oct. 9, 1882.*

GROWTH.—The carp which I procured last November have surpassed by far my most sanguine expectations. Though I have never caught or handled them, some of them will measure from 12 to 15 inches in length and weigh from 8 to 10 pounds. So well pleased am I that I have had my pond enlarged to about 2 acres.

PLANTS.—The pond is set with Bermuda grass, herd's-grass, and yellow clover. I have it arranged so as to regulate the supply of water.

389. *Statement of R. P. Heffner, West, Holmes Co., Miss., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881. My pond covers 1 acre, is 6 feet deep, sloping back to 6 inches, and has a soft muddy bottom. It is supported by a good spring.

PLANTS.—It contains various grasses and weeds.

ENEMIES.—Catfish and perch. I have not seen any turtles.

DIFFICULTIES.—When I received the carp it was very cold. I had to cut ice 4 inches thick to put them in. As there were a good many other fish then in the pond, I think that is the reason why the carp did no better. I do not think any of them remain. If you will furnish some more I will drain the pond and have no other fish in it.

390. *Statement of Isaac W. Burch, Stonington, Jefferson Co., Miss., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp January 16, 1881. My pond covers 3 acres, averages 5 feet in depth, and has a muddy bottom. As there is no overflow except after heavy rains, the temperature is quite low.

PLANTS.—Water grasses of all kinds grow around the edges.

ENEMIES.—There are perch, hard and soft shell turtles, and plenty of frogs.

FOOD.—I don't feed them. They find plenty to eat.

GROWTH.—The old ones seem to be over 2 feet long, and look as if they would weigh 20 pounds or more.

REPRODUCTION.—The pond seems to be full of small fry, but some are quite large.

DIFFICULTIES.—We cannot catch them; have been trying all summer.

391. *Statement of W. F. Sneed, Oxford, La Fayette Co., Miss., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 carp in 1880, and have received some since. My pond is fed by springs, covers 4 acres, and has a muddy bottom. The water averages 3 feet in depth and 60° temperature.

PLANTS AND ENEMIES.—It contains grass and moss, and also water-terrapins, perch, and trout.

FOOD.—I give them corn-bread once a week.

GROWTH.—I think the old ones will weigh from 5 to 6 pounds each.

REPRODUCTION.—They have produced a great many young.

MISCELLANEOUS.—They have been no trouble, and I think them profitable when proper care is given them.

392. *Statement of C. Adams, Sharon, Madison Co., Miss., July 2, 1883.*

DISPOSITION OF CARP RECEIVED.—The first lot of carp were received in good condition and placed in my pond in November, 1881. They failed to spawn before May, 1883. My pond covers about $\frac{1}{2}$ of an acre and is now low, 3 feet being its maximum depth.

FOOD.—I have fed the fish principally on cooked cornmeal or bread, chops, corn, and fruit, such as apples, peaches, pears, and plums, and also on the famous Southern stock feed, cotton-seed, and sometimes on meats. I believe they will eat anything, but I think they are more fond of chops and bread and the worms and maggots as they fall from a carcass suspended over the water. My young ones can now be seen in large schools catching them as they drop into the water.

GROWTH AND REPRODUCTION.—At 2 months old the young fish are from 3 to 4 inches long and fine fat fellows. I think 6 will weigh one pound. They grow fast and I think are large enough to eat when 6 months old. The old ones are about 16 to 18 inches long, and will weigh from 3 to 5 pounds. The second lot I received, on January 3, 1883, being then about $1\frac{1}{4}$ inches long, will now weigh from $\frac{1}{2}$ to 1 pound. In January, 1882, I was told by a man that his carp had grown from about 4 to 16 or 18 inches in length in about 8 months.

HOW TO CATCH CARP.—I tried, day before yesterday, catching the carp with a hook baited with a red earth-worm, and caught five in a few minutes, one of the largest, two of the second, and two of the third size, the last being this year's spawn. They took the hook quick and pulled well. Their mouths tore badly, and without caution I would have lost a great many, one of the second size having the side of its mouth torn almost off.

393. *Statement of Wallace and McGowan, Holly Springs, Marshall Co., Miss., Dec. 4, 1880.*

GROWTH.—A party to whom we gave carp last February put them in a small high-land pond, and about a month ago took out one, which he says weighed over 3 pounds.

394. *Statement of A. Q. Withers, Holly Springs, Marshall Co., Miss., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp, measuring about $1\frac{1}{4}$ inches long and weighing from 1 to 2 ounces, received December 17, 1880, I placed in a pond 200 feet square and from 1 foot to 6 feet deep, where they remained until June 20, 1881. Fearing that my pond would go dry and I lose my fish, I seined it and found 21 carp remaining. I gave 4 of them to Mr. Mathers, the owner of the seine, and removed the others to a cistern, containing about 1,000 barrels of cold water, and having a depth of 25 feet. I have placed turf and twigs in the cistern. I received another lot of 30 in the fall, 1881.

ENEMIES.—The pond contains no other fish, but some frogs inhabit it.

FOOD.—Up to the time of removing the carp from the pond, I paid no attention to them, as there was a sufficient quantity of food in the pond. I now give them corn bread and shelled corn weekly. During water-melon season I frequently sliced up melons for them, and they would congregate around the floating pieces and munch the red part like humans. The carp could be seen every day swimming around the cistern and feeding with their peculiar sucking sound.

GROWTH.—It was all we could do to get the 4 carp I gave Mr. Mathers into a common water-bucket, notwithstanding they were the smallest of the lot. The 3 which died within a few days after placing them in the cistern averaged 12 inches in length. The entire lot averaged $2\frac{1}{4}$ pounds. The remainder of the carp in the cistern ultimately died and would have weighed 3 pounds. The carp last received now weigh fully 3 pounds each.

REPRODUCTION.—Since the last lot spawned I have seen a school of young which I judge to weigh from 2 to 3 ounces.

DIFFICULTIES.—The water froze in the buckets when the first young carp were en route and 3 perished.

MISCELLANEOUS.—Before they died I had intended to let my 14 carp remain in the cistern, and to convert it into a hatchery so as to remove the young at the proper time to the ponds. When I seined the pond the carp showed some activity, floundering about, and when upon the surface of the water in the cistern they darted and floundered below with quite a noise when suddenly surprised. I would not sell my carp for \$100 each if I could get no more.

395. *Statement of W. W. Cock, Hudsonville, Marshall Co., Miss., Nov. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received about 20 carp. They were kept in a still pond until the following summer, when the water dried up and I gave them away. The pond was about 3 feet deep, with a muddy bottom.

PLANTS.—Smart weeds and grasses grow in the pond.

ENEMIES.—Perch and bull-frogs inhabit the pond, but no turtles.

FOOD.—The carp fed on insects and mud. Very little care was taken of them.

GROWTH.—The 5 that I gave away in the summer of 1881 then weighed about $3\frac{1}{4}$ pounds each.

396. *Statement of J. M. Brooks, Waterford, Marshall Co., Miss., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 25 leather carp about 3 years ago, and have kept them in a small pond with muddy bottom. It is supplied only by rain-fall.

PLANTS.—It contains a water lily with large round leaves, commonly called "wampapin," in the Mississippi Valley.

ENEMIES.—There are also perch and frogs in the pond. I have never fed the carp.

GROWTH.—I still have all but 3, and they are large, probably from 5 to 6 pounds in weight.

REPRODUCTION.—The young are all in the pond, but I cannot tell their weight or number.

397. *Statement of Eugene Carleton, Decatur, Newton Co., Miss., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp which I received early in 1879 I distributed to J. B. Gaines, J. L. Hodge, and G. M. Gallaspy, none of whom have I heard from except Mr. Gallaspy, who makes a report for himself.

398. *Statement of G. M. Gallaspy, Decatur, Newton Co., Miss., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp November 16, 1879. My pond covers $\frac{1}{2}$ an acre, is 4 feet deep, slopes back gradually, and has a muddy bottom. It is fed by a stream 6 inches wide by 2 inches deep, but which in dry time ceases to flow.

PLANTS.—The pond contains wire-grass and reeds.

ENEMIES.—There are no other fish, but there are frogs, and I occasionally see a small turtle.

FOOD.—I give corn-bread once or twice a day.

GROWTH.—The 2 carp I have left would weigh about 4 pounds apiece. I have never seen any young.

DIFFICULTIES.—The greatest difficulty is by the theft of negroes. I had some carp in the pond last year that by this time would have weighed 10 pounds, as they were growing very fast.

399. *Statement of J. W. Guthrie, Newton, Newton Co., Miss., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp received 2 years ago I put in a pond covering $\frac{1}{4}$ of an acre, 2 $\frac{1}{2}$ feet deep, with a black, muddy bottom. It is fed by several small springs, which keep it full.

PLANTS.—There are all kinds of water grasses native to the South.

ENEMIES.—There are some perch and minnows, water-terrapins, and frogs.

FOOD.—I give them bread once a day.

REPRODUCTION.—They have produced young too numerous to mention. There are hundreds of them from 2 to 2 $\frac{1}{2}$ inches long and smaller. The old ones got away during the freshet last spring. They were about a foot in length when the dam broke.

400. *Statement of T. F. Pettus, Newton, Newton Co., Miss., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a dozen carp December 24, 1881. My pond is 30 by 50 feet and contains stagnant water. It also contains water grasses.

ENEMIES.—There are no enemies except frogs.

FOOD.—I give them corn 2 or 3 times a week.

GROWTH.—At 6 months old they were about 12 inches long. They grew very rapidly.

REPRODUCTION.—They were multiplying very rapidly, when the pond overflowed about 6 months after receiving them.

401. *Statement of Mrs. A. B. Watts, Newton, Newton Co., Miss., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 30 carp, December 24, 1880, and 30 more in November, 1881. My pond has a sandy bottom, is 100 by 160 feet, with a depth of from $\frac{1}{2}$ foot to 10 feet. It is fed by a spring. The temperature keeps at about 65°. It seems particularly adapted to carp.

PLANTS AND ENEMIES.—It contains bulrushes, mosses, and grasses. There are frogs in abundance, a few silversides, and occasionally a turtle.

FOOD.—We give them scraps from the table daily.

GROWTH.—The old ones weighed about 10 pounds when the pond was destroyed by the cyclone last spring.

REPRODUCTION.—There was a very great quantity of young which all escaped into the creek below.

MISCELLANEOUS.—They were no trouble. Their care was a pleasure. They are of great value to people living remote from market. We are enlarging the pond for another lot.

402. *Statement of Monroe Pointer, Como Depot, Panola Co., Miss., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp February 20, 1881, and 40 in the spring and fall of 1882. My pond is 50 by 50 feet, 10 feet deep, has a muddy bottom, and supplied with rain water. It contains no plants.

ENEMIES.—It contains a few perch.

FOOD.—Three times a week I give them wheat and corn ground.

GROWTH.—I transferred the old ones, which weighed 7 pounds each, to Dr Caruthers, who has a fine pond 6 miles west of Como Depot.

REPRODUCTION.—They have produced any quantity of young, which are now of various sizes and weights.

403. *Statement of John Ohleyer, Brandon, Rankin Co., Miss., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 11 carp nearly 3 years ago, and have had a few twice since. My pond is 140 feet long, from 12 to 30 feet wide, and 5 feet deep, with clay bottom. It is supplied by a small spring, which gets very low in summer. It never freezes.

PLANTS.—The pond is surrounded by water grass, Bermuda grass, and willow bushes.

ENEMIES.—There are no other fish, but a few turtles, some snakes, and a great many frogs.

FOOD.—I give them bread, crackers, and some vegetables once or twice a week.

GROWTH AND REPRODUCTION.—I caught some a few months ago that weighed about a pound. The young ones are very small.

404. *Statement of W. M. Thornton, Lake, Scott Co., Miss., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp November 23, 1880. My pond covers $\frac{1}{2}$ of an acre, is 8 feet deep, and has a very muddy bottom. It is dependent on rain for water, which gets quite warm in summer—65° to 75°.

PLANTS.—It contains water-lilies, wild rice, and water grasses.

ENEMIES.—There are sun-fish, craw-fish, frogs, toads, but no turtles. I fear I have but few spawn this season on account of the craw-fish.

FOOD.—I give them daily corn-bread, soft corn, and vegetable refuse from the garden.

GROWTH.—There are 15 from 20 to 25 inches long, which would weigh from 7 to 10 pounds each.

REPRODUCTION.—There were hundreds, and may be thousands, of young produced in 1882, which are now from 7 to 10 inches long. In May we ate some of them fried and they were excellent.

DIFFICULTIES.—The only difficulty is the craw-fish.

405. *Statement of F. M. Norfleet, Senatobia, Tate Co., Miss., Nov. 24, 1883.*

DISPOSITION OF CARP RECEIVED.—About January 1, 1881, I received 19 carp. My pond is about 40 by 60 yards, with a depth of from 2 to 4 feet, and a bottom covered with a muddy black deposit and washings from the horse lot. The rainfall off of about 4 or 5 acres supplies the pond with water, which is warm, except in midwinter.

PLANTS.—The pond contains a few weeds and some brush around the edges.

ENEMIES.—There are perch, cat, and bull-frogs. Occasionally a turtle is seen. The carp suffer from the depredations of other fish, which it seems almost impossible to keep out.

FOOD.—They get the washings from the feeding places for horses and hogs.

GROWTH.—I regard the carp as the most rapid growers among pond-fish. The old ones will weigh from 5 to 7 pounds. I caught one a few days ago which weighed 6 pounds. Less than half the original lot are still left.

REPRODUCTION.—I can discover no young. They must be very sluggish and careless in the protection of their young.

EDIBLE QUALITIES.—I regard the carp as being the best pond fish in existence. I have eaten them and find them to be as good as any.

406. *Statement of Wm. Laney, Tyro, Tate Co., Miss., July 22, 1882.*

GROWTH.—The carp received in December, 1881, and which then weighed hardly 1 ounce, now average 14 inches in length and 6 pounds in weight. I find the carp all that is claimed for them. My efforts in their culture have been very successful.

407. *Statement of Lowrey & Berry, Blue Mountain, Tippah Co., Miss., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 20 carp in the fall of 1880, 20 more in 1881, and 19 in 1882. Our pond is 60 by 120 feet, 3 feet in depth, has a bottom partially sand and partly soft mud. At present it is fed by a 2-inch stream of water, which stands at 75°. There are no plants in it.

ENEMIES.—There are a few small perch, a few frogs, but no turtles nor snakes.

FOOD.—We give them table scraps irregularly.

GROWTH.—We still have 3 of the first lot, which will weigh 6 pounds apiece, 10 of the second lot, and all of the last. Two-year-old carp weigh 4½ pounds. We have not seen any young yet.

DIFFICULTIES.—The first trouble was with other fish, which was partly obviated by moving the carp to a new pond after all but 4 had been destroyed. The new pond broke once and let out all of the second supply, a part of which was lost.

408. *Statement of L. Rogan, Ripley, Tippah Co., Miss., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in the winter of 1881-'82, and gave them to another gentleman, who had a pond. People here report their culture a success in ponds supplied both by rains and running water.

409. *Statement of E. F. Raworth, Vicksburg, Warren Co., Miss., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp in April, 1881. The pond is 100 feet long, 50 feet wide, 70 feet deep, and has a muddy bottom. It is supplied by rain-water. It contains no plants.

ENEMIES.—It contains catfish, white perch, bank perch, frogs, and turtles.

FOOD.—When first received I fed them on crackers, but not lately.

GROWTH.—The largest one caught weighed 4½ pounds. They vary from 2 to 4 pounds.

REPRODUCTION.—The young are small. They seem to be very prolific, but I cannot approximate the number.

EDIBLE QUALITIES.—I think it very likely that the muddy bottom of the pond causes the fish to be so indifferent for eating.

410. *Statement of W. L. Brandon, Fort Adams, Wilkinson Co., Miss., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 25 carp in February, 1881. My hatching pond covers ¼ an acre, has a muddy bottom, and shoals from 4 to 1 foot. It is supplied with rain, but being shaded, the temperature is between 80° and 90°.

PLANTS.—There are no grasses. I have planted wild rice, but the carp rooted it all out.

ENEMIES.—I exclude all fish, frogs, and turtles from the hatchery.

FOOD.—I gave them hominy left from the table, and sometimes lettuce and cabbage.

GROWTH.—The cyclone of April 28 damaged me many thousand dollars, and I mourn the loss of my carp more than anything else. The 4 I got out were about 18 inches long.

DIFFICULTIES FROM POISONING.—The cyclone of April 21 killed or caused the death of all but 4 of the carp in my hatchery. The hail thrashed the leaves off the pecan trees near the pond, into which they fell in large quantities, the tannin poisoning the water so that all died but the 4. The pecan leaves turned the water in the pond as black as ink. The fish were 3 years old, and when I saw them swimming on the surface of the water I thought they were spawning. When they began to die I immediately seined the pond, but only got out 4 alive. The carp in my pond were of the mirror and leather varieties. All the mirror carp were dead.

TAMENESS.—I did not get them so gentle as to eat out of my hand, but thought and cared for them continually. They were very lively and sportive. Please send another lot.

411. *Statement of Nath. Cropper, Woodville, Wilkinson Co., Miss., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881. My pond is about 40 feet in diameter, 3 feet deep, has a muddy bottom, and is supplied by the surface drainage of one acre. The pond being too small, I will soon transfer the carp to one that I am preparing, with muddy bottom, grasses, &c.

ENEMIES.—There are no other fish in the pond.

FOOD.—I give them corn-bread and vegetables about twice a week.

GROWTH.—The 6 that remain weigh about 15 pounds each.

REPRODUCTION.—I have lost a good many young by overflow of pond. Those left are of this spring's hatching and about 6 inches long.

DIFFICULTIES.—Three carp died in one day last summer, the cause of which I cannot ascertain.

412. *Statement of E. L. McGehee, M. D., Woodville, Wilkinson Co., Miss., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in January, 1880, and in January, 1883. My pond covers $\frac{1}{2}$ an acre, is 5 feet deep, has a grassy and muddy bottom. It is fed by rain-water, and the temperature varies. In the part that is deep and shaded the water is cool.

PLANTS AND ENEMIES.—It contains crab-grass, but neither frogs, turtles, nor other fish than carp.

GROWTH.—They are now 18 inches long and weigh from 4 to 5 pounds each.

REPRODUCTION.—They have produced hundreds of young, which are from 6 to 8 inches long.

MISCELLANEOUS.—I have not fed them, but they are a hardy and rapid growing fish. I find difficulty in catching them, as I do not like to draw the seine.

413. *Statement of A. M. Gaillard, Water Valley, Yalobusha Co., Miss., Apr. 10, 1882.*

GROWTH.—About 12 months ago I put 18 carp in my pond, measuring from 3 to 5 inches in length. We caught 1 last Monday which was 17 inches long and weighed 3 pounds. The value of these fish can be readily estimated when it is known that they have not been fed a dozen times in 12 months.

MISSOURI.

414. *Statement of T. Holt, Holt's Summit, Callaway Co., Mo., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, I received 21 carp. The pond in which I have kept them is 70 feet long, 40 feet broad, and 10 feet deep. Its bed is composed of yellow clay. A good quantity of moderately cool water flows through it.

PLANTS AND ENEMIES.—It has grasses growing in it, and contains one catfish and plenty of craw-fish.

FOOD.—I feed the carp with bread—not very often, only in the spring-time.

GROWTH AND REPRODUCTION.—I have 19 of the original lot left. They weigh 5 pounds apiece. I have not seen any young ones yet.

DIFFICULTIES.—My principal difficulty is in catching them. They will not bite at a hook, and I cannot catch many with a trammel-net.

415. *Statement of Paris A. Dougherty, Myers, Howard Co., Mo., Aug. 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The water of the pond in which the carp were kept was so muddy that I could not see them. I have now made another pond, 80 yards long, 50 yards wide, and 12 feet deep, in addition to my old one.

GROWTH.—I tried to catch some of them with a hook, but they would not bite. So I sent to Saint Louis and got a seine, and dragged out one about 18 inches long, the most beautiful fish I ever saw. From the growth which they have made I think I have got the richest thing I ever struck.

REPRODUCTION.—I now see schools of young fish all over my pond. I have a screen of fine wire in the drain to keep them from escaping. I want to try a plan of my own by taking the young out of the pond they hatched in and putting them into my new pond, so that they will grow up there and all come to market together. I will still keep the old ones in their place to produce new crops, which I will remove in their turn to the growing-pond.

DISPOSITION OF YOUNG.—I think that in 2 years from now I can sell \$500 worth of fish.

416. *Statement of J. P. Ozias, Centre View, Johnson Co., Mo., July 30, 1882.*

DISPOSITION OF CARP.—Early in June I paid to a gentleman who received carp from you \$5 for a pair of scale carp 2 years old. I placed them in a pond fed by a continual stream of spring water. I also obtained in the same way 7 mirror carp, for which I paid \$15. These were put in a reservoir, which is supplied with spring water by means of an air-pump.

PLANTS.—Grass grows in the pond and around the edges of the reservoir, where I planted it.

REPRODUCTION.—There are from 1,000 to 2,000 young scale carp from 1½ to 2 inches long in the pond. I have been very successful with the carp in this pond. Though the mirror carp deposited thousands of eggs on the grass, weeds, &c., which I tied in the center of the reservoir, none of those have hatched.

417. *Statement of Amos Markey, Warrensburg, Johnson Co., Mo., Aug. 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, I received 20 carp. I kept them in a pond which covers an acre, has a muddy bottom, and is 8 feet deep when full. It is filled from the rain only.

PLANTS AND ENEMIES.—It contains flags. There are no other fish in it now.

FOOD.—I did not feed them at all.

GROWTH.—In June, 1882, I drained my pond to get the wild fish out, and as the pond did not get full again, last winter all the carp died. They then weighed from 3 to 4 pounds. "If I had not drained my pond I would have had plenty of water, so that the fish could have wintered through. I made a big pond last spring, which covers 4 acres of ground, and is full of water from 1 foot to 5 feet deep.

418. *Statement of Selden P. Williams, Warrensburg, Johnson Co., Mo., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880. I put them in a pond covering about ¼ of an acre, with a depth of from 3 to 5 feet, and a muddy bottom. The pond is supplied by rain running off of a timothy and clover meadow.

PLANTS.—It contains no water plants, but is bordered with timothy.

ENEMIES.—There are very few frogs or turtles in it. Three little catfish were put in the same fall that the carp were, by the children, who did not know what the result would be. These, I think, prevented what would have been a good increase last year (1882).

FOOD.—I feed them with wheat, wheat-bran, shorts, and meal; also seeds of various kinds, especially sunflower seed.

GROWTH.—The fish were very small when I received them—about 3 to 3½ inches long. In the spring of 1882 they weighed 4 pounds, and in the fall of that year they were perfectly healthy. They were very lively and sportive and some of the prettiest fish I ever saw.

REPRODUCTION.—They produced some young, but I cannot tell how many.

DIFFICULTIES.—The winter of 1882 closed in with a good body of water in the pond. The ice formed 6 inches thick, after which there was a heavy fall of snow, followed by a long cold spell. Then came a sudden thaw and heavy rain, flooding the pond and raising and breaking up the ice. There came next a light freeze, and again a thaw, after which all the original carp floated to the top dead, together with some small carp and catfish. This cleaned the pond out and left it without fish. I am satisfied that their death was caused by the flooding with comparatively warm water, breaking up the ice and throwing them out of their bed.

Others getting carp at the same time as myself lost theirs, except one whose pond was fed by a spring as well as rain. I shall in future prevent the flooding of the pond in winter. I have applied for more carp.

419. *Statement of O. P. Johnson, Paris Springs, Lawrence Co., Mo., May 6, 1882.*

GROWTH.—The carp received in December, 1881, have made a splendid growth, the largest by actual weight being 4½ ounces and measuring about 7 inches in length.

420. *Statement of A. S. Ray, La Plata, Macon Co., Mo., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—On the 16th of October, 1881, I received 25 carp, and have had none since. I put them in a pond made expressly for them, covering 1 acre, and receiving the drainage from about 4 acres of meadow land. It is from 3 to 7 feet deep, and was dug in clay soil, but has a muddy bottom. The temperature of its water is now from 74° to 76°.

PLANTS.—Water grass, wild rice, and flags grow in the pond.

ENEMIES.—It contains no fish. The turtles I keep shut out. There are bull-frogs in it, and some water lizards, which I cannot keep out.

FOOD.—I give the carp baker's bread, oats, and corn-crackers every day.

GROWTH.—They were from 2 to 3 inches in length when I got them, in 1881, and last March, when the ice broke up, they were found to be from 12 to 17 inches long.

DIFFICULTIES.—They all froze to death last winter. The water was 7 feet deep under the ice all winter, and I have no idea what caused them to freeze. I will try some more this fall from the State hatchery. My neighbors got some carp at the same time that I did, and all but one of them lost all they had. He lost 6, but the balance of his are doing finely.

421. *Statement of William H. Terrell, Macon City, Macon Co., Mo., Mar. 12, 1883.*

DISPOSITION OF CARP RECEIVED.—I placed the 27 carp received June 14, 1881, in a pond rectangular in shape, 105 by 155 feet, with an average depth of 7½ feet, maximum depth of 12½ feet, and a muddy bottom. The water is as clear as though it issued from a spring. No stock are permitted to go to it, nor any sediment allowed to be washed into it. It is entirely cut off from the stream, a channel being cut around it. This pond was built at an expense of nearly \$200.

ENEMIES.—There are two other kinds of fish in the pond, namely, common perch or sun-fish and the common chub. The latter, however, got into the pond by accident. These fish subsequently died.

GROWTH.—The carp placed in the pond were of two sizes. To-day I measured one of the larger size in the presence of witnesses. Length of head, 4½ inches; tail, 3 inches; girth, 12½ inches; and its entire length, 19½ inches. Its width was 5½ inches, and it weighed a fraction over 5 pounds.

DIFFICULTIES.—When the ice thawed 26 of the 27 carp came to the surface dead. The cold winter seems to have been too severe for them, and I fear that this settles the question whether carp can be raised in this latitude, as I gave them a fair show in my pond.

MISCELLANEOUS.—The carp is a true sucker-fish, and more slender than our buffalo fish, which, with the exception of its color, it resembles very much.

422. *Statement of Peter Joseph Schmidt, Tipton, Moniteau Co., Mo., Oct. 13, 1882.*

GROWTH.—The carp that I received last January I placed in a pond purposely constructed for them. Some of them are now 13 inches long and from about 3½ to 4 inches in diameter.

423. *Statement of Samuel R. Snider, Monroe City, Monroe Co., Mo., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1881, I received 20 fish. The pond in which I have kept them covers about an acre and is from 3 to 10 feet deep. The bottom is composed of clay and black soil.

PLANTS AND ENEMIES.—It contains flags and water grass. There are catfish and sun-fish, frogs, and a few turtles in it.

GROWTH.—The carp are from 19 to 20 inches long and weigh from 4 to 5 pounds. I got some by their being accidentally washed out from the pond in an overflow. They have made a rapid growth, and I think them the best fish for our waters which we have.

424. *Statement of A. B. Warner, Monroe City, Monroe Co., Mo., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I was unsuccessful in raising any carp whatever from the 20 you gave me. The winter of 1881 was so extremely cold here that it was impossible for them to live in the ¼ acre of water I placed them in. The cold froze 5 feet of water solid that winter, and killed the fish in the muddy bottom of the pond. I should like some more.

425. *Statement of G. W. Farnum, M. D., Montgomery City, Montgomery Co., Mo., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp in the spring of 1880, and put them in a pond covering an acre and from 4 to 6 feet deep. The bottom is of clay. It only overflows after heavy rains. The temperature of the water is about 80° on top and 60° at the bottom.

PLANTS.—The pond contains *Nymphaea odorata*, *Sagittaria*, and a species of *Equisetacea*.

ENEMIES.—There are in it some black perch, silversides, a few frogs, and one turtle. I can't keep them out.

FOOD.—I feed the carp with wheat-bread and corn once and sometimes twice a day. They come to the edge of the water when called.

GROWTH AND REPRODUCTION.—I think that I have 8 left, as I have seen as many as 7 at a time this spring. They grow very rapidly and are now from 16 to 18 inches long. I don't know how many young they have produced, as they keep the pond so muddy. They root up my pond-lilies. I think they spawned this spring, as they acted as other fish do when spawning. The one killed had eggs in it. I caught a carp June, 1881, which was 13½ inches long.

426. *Statement of I. A. Bell, Racine, Newton Co., Mo., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 carp two years ago, but lost them in a freshet.

427. *Statement of C. C. Jackson, Hughesville, Pettis Co., Mo., Apr. 30, 1882.*

GROWTH.—I put 2 carp, each $3\frac{1}{4}$ inches long and exceedingly slim, in my pond last season. One caught in a seine last Saturday proved to be 20 inches long from the tip of its tail to the end of its nose, and 24 inches long taking in the curvature of its back. Its thickness from the middle of the back to the middle of the belly was $7\frac{1}{2}$ inches. Its width straight through the thickest part of the body was 4 inches; its weight, $4\frac{1}{2}$ pounds; and the scales on it were as large as a 5-cent piece. The growth of this carp is truly wonderful. The time is near at hand when everybody will have a carp pond the same as they do a cow and hog pen.

428. *Statement of Oscar Reid, Ferguson, Saint Louis Co., Mo., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—About 3 years ago I received 16 carp, and since then I have received from Saint Louis 16 more. The pond in which I have kept them is 180 feet long and 80 feet wide, and has an average depth of 4 feet. The water rises from the bottom, which is muddy.

PLANTS.—Water-lilies grow in it.

ENEMIES.—The pond also contains sun-fish, crappies, and turtles.

FOOD AND GROWTH.—I do not feed the carp, and do not know how many there are left. They weigh about 10 pounds on the scales.

REPRODUCTION.—I do not know that there are any young, but think there may be some.

DIFFICULTIES.—I have had no difficulty in their care. My only trouble is to catch them.

429. *Statement of George W. Campbell, 108 Locust street, Saint Louis, Mo., Nov. 18, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I received 20 scale carp not over 1 inch in length, which I placed in my pond. This is in size about 50 by 150 feet, has a muddy bottom, and slopes gradually from one end to a depth of about 6 feet at the other. No water flows out of it except once or twice a year during very heavy rains; then I let it out gradually through an 8-inch pipe, so that the water is usually about the same depth.

PLANTS AND ENEMIES.—There are no enemies except a few catfish and sun-fish. It contains no plants nor grasses, but is sodded with grass all around the banks.

FOOD.—During the 4 years they have had no care except that perhaps 3 or 4 times during each summer's drought I fed them with corn-meal mixed with water and made stiff.

GROWTH.—To-day I secured 4 men, who made a haul with a seine and landed 7 carp, 6 of which averaged about 3 pounds, and the seventh one weighed, I guess, 1 pound. The latter was evidently not over a year old. The others have had but 3 summers' growth, and have made an increase in weight of exactly 1 pound each every season, which, when we consider that they have had no care, may be regarded good, and proves them to be a very profitable species for propagation.

REPRODUCTION.—I do not know how many young they have produced, but they seem to have done well. I have seen no young over 3 inches long. I think they did not do well the first year, as there was no brush in the water to protect them.

EDIBLE QUALITIES.—Three families, including my own, have to-day, for the first time, tested carp upon the table. None of us claim to be epicures, but we have often tested the qualities of our black bass, crappie, channel cat, and the buffalo of the Mississippi, and, in our judgment, the carp compare favorably only with the latter; perhaps we may say, only with the 2 last named.

DIFFICULTIES.—I have had no difficulties, unless it has been that the catfish have fed to some extent upon the young.

430. *Statement of George Eckardt, Saint Louis, Saint Louis Co., Mo., Dec. 8, 1882.*

GROWTH.—I have carp 6 months old, from 4 to $14\frac{1}{2}$ inches long, and in very fine condition.

431. *Statement of Dr. I. G. W. Steedman, Saint Louis, Saint Louis Co., Mo., Nov. 27, 1882.*

REPRODUCTION.—On draining our ponds in Forest Park, to our great surprise, we have found a bountiful supply of young carp. I suppose we have 20,000, at a rough estimate. They are beautiful specimens, averaging from 4 to 6 inches in length. In

a pond of 5 acres we found 400 young carp of 14 inches. If I had not put the parent fish in the pond with my own hands, I would have supposed they were dwarfed old fish, but the facts are absolute and true as stated above. Next season I have great confidence that we will produce vast numbers of young carp.

432. *Statement of E. Crockett, Marshall, Saline Co., Mo., Apr. 11, 1883.*

CARP TAKEN FROM MISSOURI RIVER.—Large numbers of young carp, a foot or more in length, are being taken from the Missouri River near here, and with other fish are sold in the markets at this place. One of the largest weighed 2 pounds.

433. *Statement of Samuel McClelland, Salt Springs, Saline Co., Mo., Jan. 18, 1883.*

GROWTH.—The carp I received in June, 1880, have increased in size and multiplied in number beyond all my expectations. The original carp are now over 3 feet long. On one occasion I caught one of these large fish, but it broke the line and escaped.

REPRODUCTION.—The young of the fall of 1880, when my carp first spawned, are 27 inches long and weigh 10 pounds each. The following summer's young now measure from 12 to 18 inches in length and weigh from 1 to 5 pounds. Last summer we caught with the hook all the carp we wanted for use. The fish taken were in but one instance of the second hatch, weighing about a pound in the spring and 5 pounds in the fall. In summer millions of little fish can be seen in the water.

MISCELLANEOUS.—In regard to spawning, I believe my carp are laying eggs every warm day in the year, yet I have never found an egg, except in the fish which are caught, and they are generally full. My ponds now cover 8 acres, to which I will add 2 more in the spring.

HOW TO CATCH CARP.—We have caught but one of the large ones. After we got it out of the water it broke the line and got away. We caught but one of the first lot in a net; it measured as before stated. We caught with the hook all we wanted for use last summer. Our catch was invariably of the second hatch, commencing in the spring at 1 pound and increasing by degrees till in the fall they weighed as much as 5 pounds. We often tried to seine them out, but only succeeded in catching a few of the same size we caught with the hooks. Often larger ones would strike the net with great force, but when you came to shore they were not in it. I believe they go down in the mud and the head-line drags over them.

434. *Statement of Samuel McClelland, Salt Springs, Saline Co., Mo., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 carp from the United States Fish Commission June 28, 1880, and bought 4 more from Mr. J. C. Keithley. I have since received 10 scale carp from Saint Joseph. My ponds are fed by springs within the banks, which produce 18 gallons per minute. There are 8 acres of surface water, the depth varying from 6 inches to 8 feet. The bottom is peat and black soil. Very little water passes out of the ponds, what they lose being mostly evaporated, and it is not cold, but hot as the sun can make it.

PLANTS.—The ponds contain all kinds of plants and grasses I have ever seen, and some I never saw before, but I only know the names of the flag or cat-tail, lily, and arrow plant. Another plant I call water-clover came this summer, and the ponds are covered with it. The little plant I send you is abundant, and the fish eat it as a cow eats clover. It has increased so fast that the ponds are covered with it. The leaves spread out on the water and the roots hang down. The fish when feeding on it open their mouths wide and push their lips up through them, sucking down all that is within the circle. I have seen dozens of them feeding on it at a time. They do it so quietly that it scarcely makes a ripple. The plant was so thick that the fish could not see me. I was so close I could have spit in their mouths when their lips came through, so there can be no mistake about their eating it. I can see no seeds nor blossoms. How it increases or where it came from I do not know. [The specimen inclosed by Mr. McClelland has been identified by Mr. W. B. Conant, assistant botanist of the Department of Agriculture, as *Lemna polyrrhiza* L. (duck-weed or duck's-meat). He says, "There are several species of *Lemna*. The flowers are produced from the margin of the frond and are very small and very obscure. This species is supposed not to flower at all in this country, but the specimen appears to have seeds, which, if true, would establish its flowering here. Possibly there may be some other species intermixed in the specimen. The mode of propagating is by budding from a cleft on the edge of the frond. This is one of the smaller flowering plants, and some species are among the smallest."—EDITOR.]

ENEMIES.—I am sorry to say the ponds contain mud-cat and sun-perch, crappie, hard-shell turtles, wild ducks, cranes, gulls, night-herons, king-fishers, snakes, frogs, &c. I have found no carp in ducks nor turtles, but have taken 9 from the stomach of one night-heron.

FOOD.—I have fed the carp on corn, oats, wheat, screenings, and boiled potatoes; but since I enlarged the ponds the carp root for a living, staying at the bottom. They refuse to come to the surface for the most tempting morsel. Last year I could bring them to the surface by food floating on the water. This year nothing will bring them up. When I feed them, oats and millet seem to be their choice.

GROWTH AND HABITS.—To the best of my knowledge there are 8 or 10 of the original number, and I feel sure they were all well a year ago. The old ones are over 3 feet long, I think. For days, and sometimes weeks, the water is still and comparatively clear; you would think no living thing was in it; then all at once there is a bubbling, then wave after wave appears and the water fairly boils and foams, being moved by the fish below. Murky clouds rise to the surface, and soon the whole pond is like as if a hog had wallowed there. Then comes the calm, and the water becomes clear again. Such are the carp. They stay either in some clear, shady spot or in the muddy water, leaving us to imagine their size and numbers.

REPRODUCTION.—How many young have they produced? Oh, heavens! How many sands are there on the sea-shore? They breed from early spring to late fall—millions of them. They first spawned when two years old and were 27 inches long, weighing 15 pounds. It is just impossible to catch the old ones with the seines, and we have no hook that will hold them. The young weigh from a mite up to 15 pounds. I stocked a new pond one year ago, and the young averaged a pound at least last spring. We caught 61 at one draw. I suppose they were last fall's hatch. When very young they may be seen upon the margin of the pond in shallow water by thousands, acting very much like any other little fish. By the time they are an inch long they disappear and another lot of small fry takes their places. When they have gone to the bottom it is seldom that they reappear unless brought out by violence or starvation.

SALES.—I have sold lots of the young for stocking other men's ponds. They come 200 miles to get them. I have sold none for food, as they are hard to catch. When I have finished making my ponds and put the fish on the market I expect to make more money than can be made by a farm of 400 acres of the best land in Missouri.

EDIBLE QUALITIES.—Have we eaten any carp? Yes, we used them all last summer and gave a mess to all our friends and neighbors. All with one voice say they are the best fish they ever did eat, and so say I. We cook them as you please. They are good any way.

FUNGUS AND OTHER DIFFICULTIES.—Last spring I saw a few little ones having a scurf or a growth of some kind extending from the nose back until the whole body appeared swollen or musty-looking. They became sick and swam near the top. All I saw, which were 6 or 8, died. I do not know what was the matter or the cause of it. The most serious difficulty has been to keep down their many enemies. When I drain the ponds I will make clean work of it, and not till then can I make a full and fair statement of my success in raising carp. But as it is I am well satisfied and the whole country is surprised.

435. *Statement of J. C. Keithley, Shackleford, Saline Co., Mo., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 4 mirror carp June 24, 1880. Eight were allotted to me, but 4 I gave in payment for their transportation. I afterwards received 10 scale carp. I have kept them in a pond which covers $\frac{1}{4}$ of an acre, is from 2 to 6 feet deep, and has partly clay and partly rich soil for a bottom. It is fed by a perennial spring flowing at the rate of 2 gullons per minute. The temperature of the water at the spring is 54° Fahr.

PLANTS AND ENEMIES.—It contains water-cresses, flags, water grasses, &c. There are no fish in it besides the carp. Water-frogs and toads spawn in it in the spring of the year.

FOOD.—I give them no food at present, but will give cabbage, crushed corn, and wheat screenings to them when the pond is well filled.

GROWTH.—I have 3 of my original carp left. I lost one soon after putting them in the pond. They now weigh about 8 or 10 pounds. When I last weighed them, which was at the end of the first year, they weighed 2 $\frac{1}{2}$ pounds.

REPRODUCTION.—I am not able to say how many young have been produced, as the water is too muddy to count them. They are from 8 to 10 inches long. I think they were spawned last year. My first 3 carp were all males. We have not used any of the young ones, but will commence eating them next year.

MISCELLANEOUS.—This fall I expect to make a pond of 3 acres, which I should like to stock with leather carp exclusively, if you can furnish them to me when it is ready. It will be on black alluvial soil, where grasses and water-cresses will grow luxuriantly, and it will be fed by three good permanent springs.

SUCCESS OF OTHERS IN RAISING CARP.—I believe that Mr. McClelland and I were the first to receive carp in this part of the State. Mr. McClelland has succeeded beyond all expectations. He has sent numbers to other States and counties for breeding

purposes. I think we have the very best of soil for raising the German carp, and also the best of water, as we exclude the rain-water and depend on soft spring water to supply our ponds.

436. *Statement of William A. Reid, Shelby, Shelby Co., Mo., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880. Eight more were given to me in November, 1882. I had an old pond of some years' standing. In August, 1879, I drained it thoroughly, and enlarged it, scraping out all the mud down to the solid clay, so as to make it about 2 feet deeper. After being finished, it was exposed to the hot summer sun for at least two months (August and September) before there was any water in it. It is now about 200 feet long, 60 feet wide, and from 4 to 6 feet deep.

PLANTS.—Smartweed and other wild grasses grow around the edges.

ENEMIES.—In November, 1880, I put in the 20 carp; in the following August I dragged the pond with a seine and found no carp, but found minnows by the thousand, some perch, and 1 or 2 catfish. Last summer (1882) there were any quantity of perch, and I caught 3 or 4 catfish, but no minnows whatever. There seemed to be thousands of perch of all sizes. I caught a number of messes of full-grown ones. This summer I have been unable to see a single perch, but there are a good many small catfish, besides turtles and frogs in abundance. Now, the wonder to me is how these various kinds of fish got into the pond. It had at no time any connection with water below it, and all the water that went into it was what fell in my grass lot above the pond. It is just impossible that they got into it from below, and of course there was no place above for them to come from. How did all that multitude of perch that was there last summer and fall disappear so suddenly? I have come to the conclusion that minnows, perch, and catfish cannot be kept out of a pond here unless it is arched over and thoroughly cemented so that a chigger cannot get in. I was extremely careful and thought I had a dead-sure thing against other fish. Can you offer any explanation?

FOOD.—I fed the carp for some time with bread and cabbage, but finally quit feeding, because I thought all were dead.

437. *Statement of Jesse Jennings, Piketon, Stoddard Co., Mo., Feb. 18, 1884.*

GROWTH.—The carp which I received in November, 1881, now weigh nearly 12 pounds apiece. I expect them to increase during the coming summer.

438. *Statement of A. Hubbs, Mounds, Vernon Co., Mo., Dec. 1, 1882.*

DISPOSITION OF CARP RECEIVED.—I planted my carp last fall in a newly constructed pond, supplied with water from fields. No other fish had been placed in it.

FOOD.—Last winter being an open one here, the carp had plenty to eat.

GROWTH AND REPRODUCTION.—August 14, 1882, my original carp were from 12 to 16 inches long, and the numerous young in the pond about the size of my old fish when planted. Now the original carp are from 2 to 2½ feet long, and the young from 1 to 10 inches.

NEBRASKA.

439. *Statement of B. E. B. Kennedy, Omaha, Douglas Co., Nebr., Apr. 14, 1883.*

FUNGUS.—On visiting our fisheries yesterday I find that many of the young carp are affected with a kind of parasite or fungus, which proves fatal. With some it appears on the back, some will have a strip nearly around the body, and some about the fins and tail. This fungus is easily removed, and the skin or flesh under it has the appearance as if the spot had been blistered. Several hundred have already died, and many more are similarly situated, and, unless there is some remedy administered, all will be likely to die. We have separated the affected ones from the others, hoping to stay the spread of the disease, if it is one. Those that show no fungus appear all right and take food readily.

NOTE BY PROFESSOR BAIRD ON FUNGUS.—Where the carp are taken from their winter quarters for our spring shipments there seems to be a general tendency to the development of the fungus. It is probably due to the abrasions produced in handling, the development of fungus taking place in consequence of the emaciated condition of the fish after wintering. We do not find this diseased condition in the fish taken out of the ponds for the fall and winter shipments.

I am at a loss what remedy to suggest. It is possible that you may be able to

destroy it by immersing the fish for a few seconds in a brine, of course allowing them to remain but a short time, and repeating the bath several times at intervals sufficient to allow the fish to recuperate from the shock of the operation.

440. *Statement of B. E. B. Kennedy, Omaha, Douglas Co., Nebr., Oct. 23, 1883.*

GROWTH.—Our carp at the fisheries which we received in December, 1881, have grown well, but did not spawn this year. They will be 3 years old next summer. Some of these two-year-old carp weigh 3 or 4 pounds. I am more than ever satisfied that this is the fish for Nebraska.

441. *Statement of J. Burrows, Melroy, Gage Co., Nebr., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp received from you and placed in my pond did not, in my opinion, survive the first winter. I went personally to Saint Joseph, Mo. (a distance of 130 miles), to obtain them. On my return I was compelled to remain over-night at a place where there was no hotel. That night the weather turned intensely cold. I set the can containing the carp as near as I deemed prudent to a well-heated coal-stove at the railroad station. By morning the room had become very cold and crystals of ice had formed through the water in the can, with a thin coating of ice on its surface. I added water of a higher temperature, but was careful not to make a too sudden or great change. I was able to place them in the pond that afternoon at 4 o'clock. They were all alive (20), but I thought they seemed dull. Seeing nothing of them the next spring and summer, and having another pond to which I could remove them, I drained the pond carefully, but found no carp, nor any remains of any. My belief is that they did not live through the winter.

ENEMIES.—My pond had not at that time been invaded by predatory vermin such as turtles and bass, but these occupy it now to such an extent that the attempt to stock it with carp would be futile. I know of no way in which I can keep out bass without an outlay far beyond my means. They run in in times of high water, and in our rainy season the rise is frequently so sudden and great that no barrier, outside of an appropriation in the river and harbor bill, would be of any avail.

The loss of my carp caused me great regret. I would be glad now to make another attempt at their propagation, were I not satisfied that the obstacles which I cannot overcome make failure inevitable.

NEW HAMPSHIRE.

442. *Statement of Stillman S. Hutchinson, Milford, Hillsborough Co., N. H., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in November, 1880, and some subsequently. My pond covers $\frac{1}{2}$ acre, is 4 feet deep, and has a clayey bottom. It is fed by springs, and there is very little waste water. The temperature is about 50° to 60° in midsummer.

PLANTS.—It contains white-water lilies and a dense growth of grass.

ENEMIES.—It contains frogs only. Some of the carp were caught last winter by a mink.

FOOD.—I have fed them from 5 to 3 times a week on wheat, bran, boiled potatoes, lettuce, &c.

GROWTH.—I have seen 6 of the old carp this season, and should judge they would weigh 2½ pounds each. They are about 15 inches long.

REPRODUCTION.—They have produced a great number of young, which are from 2 to 5 inches long. I have no means of accurately estimating the number. I am very much pleased with them so far.

NEW JERSEY.

443. *Statement of Banner Thomas, Absecon, Atlantic Co., N. J., Nov. 1, 1882.*

GROWTH.—On New Year's eve a small stock of carp were placed in my pond, 1½ miles north of Absecon, N. J. They were little fingerlings, not one of them probably weighing over an ounce. This season I constructed 3 more ponds, and on Saturday I went down to transfer the carp to a larger pond, in order to vacate the first one for this season's supply, now about to be distributed. The transfer was in the presence of a large number of persons who had assembled for the purpose. The carp were measured, and the largest ones weighed. The smallest measured 17 inches in length, and the two largest 22 inches in length and weighed 7 pounds each. The age of these fish cannot be much, if any, over 15 months, and the most of this growth has been attained in the last 7 months.

444. *Statement of D. S. Blackman, Port Republic, Atlantic Co., N. J., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—My pond is a mill-pond supplied with water from a cedar swamp, and contains pond lilies, and no other fish or reptiles. I got 20 carp in December, 1881, and left them in the can until the pond embankments were finished. I put in some mud for them to imbed themselves in, but they all soon died. A fine lot from Washington, which reached me in the fall of 1882, I had to keep till December on account of a break in my mill-dam, which supplies water for the carp ponds. The cold set in very suddenly and severely and before I could again fill the pond with water they, to my sorrow and surprise, were frozen. I had the can warmly kept, too. I shed tears over their loss, and last fall I was given a few more very small ones, which also died, in spite of all I could do, seemingly because the can was rusty. I do hope you will send me another lot this fall, as I want to give them a fair trial.

445. *Statement of E. Miller, Mahwah, Bergen Co., N. J., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp 3 years ago last autumn. The pond in which I have kept them covers about an acre, is from 5 to 6 feet deep, and has a clay bottom. Five gallons of water flow through it per minute. The temperature is from 30° to 60°.

PLANTS.—There are no plants or grasses growing on the bottom. There is meadow grass around the edges, on which the carp feed at night.

ENEMIES.—The pond contains trout and frogs as well as carp.

GROWTH.—There are 4 or 5 of the original lot left. They weigh 4 or more pounds. My son was walking on the margin of the lake August 13, 1883, and saw one of the original carp in the pond, and captured it by the aid of a scoop-net used in catching frogs. He brought it to the house, a distance of 100 yards, and ascertained its weight to be 5½ pounds and its length 22½ inches. It was a male carp nearly scaleless and very fat.

REPRODUCTION.—Thousands of young have been produced, which are from 2 to 8 inches long and differ much in shape and color.

DISPOSITION OF YOUNG.—We have stocked two ponds for our neighbors with about 30 carp each.

VARIETIES.—My stock seems to be a mixture of many varieties. They vary in color from yellow to brown, some having a mixture of the two colors. They are unlike, too, in form, and some are wholly and others partly without scales, while others have a compact covering of scales. Some have mouths like the sucker and others like the bass. Some are short and very stout; others are shaped like the codfish and have large and angular heads. The eyes in some seem fixed; in others they turn in their sockets and seem to stare at you. They seem to be a mixture in variety, but all of the sucker (carp) class. I think the full-scaled variety—bass-shaped—are in the majority and will in a short time prevail.

HOW TO CATCH CARP.—They are difficult to catch; shy of nets, and slow to bite. The best bait for them are large, lively angle worms. The full-scaled variety are the easiest to take with gill-nets. The scaleless are baiters, and are about the only ones to take the hook.

446. *Statement of John H. Brakeley, Bordentown, Burlington Co., N. J., Nov. 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I first received carp in November, 1880, but lost that 20 by the breakage of dams. One year ago last October I stocked a pond with 26 leather carp, the pond consisting of about 3 acres. But little water flows through it, as the streams are led around by canals. These fish had been received in November, 1881, being at that time only about 2 inches long, but which had grown during the year to be from 12 to 14 inches in length, and attained an average weight of 1½ pounds. In another pond, containing ¼ of an acre, I had at the same time (November, 1881) placed 14 fish of the same size and age as the 26. The water in the small pond was from 12 to 18 inches deep, and its temperature in summer not below 85°. The bottom is sand, clay, and peat.

PLANTS.—The large pond had been constructed before I placed the carp in it, and consequently had a fine growth of aquatic vegetation, and was admirably adapted to carp-culture. The ponds contain the white water-lily (*Nymphaea odorata*), the yellow water-lily (*Nuphar advena*), water starwort (*Callitriche*), water purslane (*Ludwigia palustris*), bur-reed (*Sparganium*), bladderwort (*Utricularia gibba*), hornwort (*Ceratophyllum*), &c.

ENEMIES.—While I had been careful to exclude all other denizens of the water I possibly could, so as to give the carp undisputed possession, there were aquatic intruders in large numbers, the presence of which I had not suspected. There had been

a small leak from an adjoining pond stocked with pike and bass, numbers of sun-fish and minnows—the leak so small as to scarcely attract notice—yet in October last when the water was drawn, to my utter surprise, we took from the collector several pike and catfish, a vast number of mullets, about 20 eels, and several bushels of small fry, consisting of sun-fish, roach, and minnows, with any quantity of tadpoles. My ponds were sadly infested with snapping-turtles, small turtles, and snakes. Of the former my men caught 48 in the early part of the season, and over 100 of the second. The shotgun has made snakes and large frogs scarce. I have examined the stomach of two large frogs and found one to contain a May beetle, and the other a katydid, a grasshopper, and a land beetle. So I conclude that they do no harm to carp.

FOOD.—Having taught my carp to come to a certain place for food, they made their appearance on April 3 last, and continued to come whenever their favorite food—cracker crumbs—was thrown to them, till December 9, when they went into winter quarters. This gives them a long season in which to grow. I have fed them but little, but enough to ascertain that they give a decided preference to cooked food over uncooked. They seemed to have no taste for raw food thrown to them, such as clover and cabbage, but ate greedily of boiled sweet potatoes, squash, and cracked corn. Of bread, and particularly of crackers, they seemed specially fond, but cared little for boiled white potatoes. Their favorite natural food in my ponds is the water purslane, *Ludwigia palustris*. Of this they tear up vast quantities, which floats about in large masses, throwing out roots, and continuing its growth in the water.

GROWTH.—On October 4 last I drew the water from the large pond and found my 26 fish in the collector. On weighing some of them I found them to have attained a weight of from $4\frac{1}{2}$ to 5 pounds. This certainly was a satisfactory growth, and was much beyond my expectations. A fish-hawk was seen to capture one of the carp in the small pond last spring, but all the rest were found on drawing the water in October. The largest in this pond weighed 5 pounds.

REPRODUCTION.—I noticed movements which indicate spawning as early as May 18. I found 15 young carp in the small pond varying from 6 to $11\frac{1}{2}$ inches in length, and the largest weighing $13\frac{1}{2}$ ounces. My carp were too young to have made much increase, being only 2 years old at spawning time. In October last I killed a carp weighing $4\frac{1}{2}$ pounds by severing the chief blood vessel with the small blade of a pocket-knife. It proved to be a female with a well-developed roe, weighing a little over one pound.

EDIBLE QUALITIES.—It was cooked, as fish usually are, by frying. We found it fat, succulent, flaky, and entirely free from troublesome bones. In solidity and flakiness it reminded one of the salmon. All who partook of it pronounced it a first-class freshwater fish. And while not considering it equal to a six-pound Delaware shad, it is certainly a fair substitute for that most excellent fish during the five or six months preceding its advent in our waters. I think I detected a little of the mullet taste.

HIBERNATION.—My fish are still about, as two days ago they came up after cracker crumbs.

447. *Statement of John H. Brakeley, Bordentown, Burlington Co., N. J., Oct. 13, 1884.*

GROWTH AND REPRODUCTION.—Three years ago this fall I received a few carp from the Commission, and I have just stocked a 5-acre pond with 2,500 young carp, hatched this year, which vary from 2 to 9 inches in length; most of them being from 3 to 5 inches long. I weighed 15 of my large fish and found they weighed 92 pounds, or an average of $6\frac{1}{2}$ pounds each. The heaviest weighed $7\frac{1}{2}$ pounds.

448. *Statement of P. Lorillard, Jobstown, Burlington Co., N. J., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—My 50 carp came in November, 1879. The pond in which they have been kept covers about 3 acres, has a muddy bottom, and is about 12 feet deep in the middle. The water is pumped from a brook and from an artesian well, the water of which is strongly impregnated with iron.

PLANTS.—It contains water-grasses, pond-lilies, and a little wild rice.

ENEMIES.—We have in the pond frogs big enough to eat small ducks, thousands of turtles, and also roach. We have put in some pike to thin the carp out.

FOOD.—The carp are fed with bread crumbs, boiled corn meal, and refuse vegetable tops from the garden.

GROWTH.—I caught one last fall weighing 20 pounds. I think there are some now that would weigh over 25 pounds.

REPRODUCTION.—They have produced thousands of young. The pond is full of carp of all sizes; the number cannot be estimated.

EDIBLE QUALITIES.—I do not think they are worth raising as a food-fish; they are hardly as good as the sucker. I wish we had stocked our pond with white perch.

[The trouble was that he ate his carp in the spawning season. In a subsequent letter his agent informs us that small carp eaten at a different time were pronounced "very fair."—EDITOR.]

HOW TO CATCH CARP.—We catch the smaller ones with worms.

449. *Statement of Amos Ebert, Kirkwood, Camden Co., N. J., Apr. 20, 1883.*

GROWTH.—The carp I received November, 1881, were found in November, 1882, to measure from 17 to 18 inches in length and to weigh over 4 pounds.

REPRODUCTION.—My carp will be 2 years old this summer. A few days ago I saw a disturbance in the pond not noticed before, and I thought they must be spawning. Next morning I saw spawn around the edge of the pond attached to weeds and sticks.

450. *Statement of Hiram Cook, Verona, Essex Co., N. J., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in April, 1881, and 20 more subsequently. I put them into a pond which I made, which was supplied with spring water, and the muskrats dug through the banks so that the carp escaped into the headwaters of the Passaic River, near Little Falls. The supply of water to the pond is sufficient to fill an inch pipe continually.

PLANTS.—There are water-cresses growing in the pond.

GROWTH.—I have only seen or heard of but 2 of them. These were caught by boys fishing, and would weigh about 1 pound apiece.

NEW TRIAL PROPOSED.—I have built up my dam again which the musk-rats destroyed, and would like to stock the pond again and make another trial.

451. *Statement of E. L. Hall, Woodbury, Gloucester Co., N. J., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the autumn of 1880. The pond in which I put them was 250 feet long and 30 feet wide, excavated in a low piece of ground and fed by underdrains. During the summer the outlet was by sinkage, and the water was quite warm; the balance of the year there is an overflow of from 2 to 6 inches in diameter. Say one quarter of the area was 30 inches deep, the balance not more than 12 inches.

PLANTS.—It contained various kinds of water-grass.

ENEMIES.—There were no other fish in it, but plenty of frogs.

REPRODUCTION.—In the winter of 1881-'82, I saw some of the original fish, and thousands of small fry.

MISCELLANEOUS.—I donated 3 acres, including this lake, to the city for a public square, reserving the sole right to cut ice and take fish from the lake. Some one emptied the pond, fish and all.

452. *Statement of Lytleton White, Eatontown, Monmouth Co., N. J., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 or 15 carp in the fall of 1880. They were put in a mill pond of from 5 to 10 acres in extent, with a muddy bottom and an average depth of 3 feet, through which flows a brook of about 10 feet in width and 1 foot deep.

ENEMIES.—The pond is inhabited by catfish, suckers, sun-fish, turtles, &c. As none of the carp have been seen or found, either dead or alive, I presume they were all devoured by the catfish. I presume that it would be useless to try again with so many enemies to contend with.

453. *Statement of B. M. Hartshorne, Highlands, Monmouth Co., N. J., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—In May, 1881, I received about 10 carp. The pond in which I kept them was originally a marsh overflowed at high tides. It covers about 1 acre and has a very muddy bottom. Its greatest depth is 5 feet, gradually shoaling.

ENEMIES.—Besides the carp, there are now in it musk-rats, snapping-turtles and mud-turtles, eels, small perch and sun-fish, and a quantity of fresh-water mussels.

GROWTH.—On draining the pond last May, all the fish escaped under a netting placed across the waste-gate into the Shrewsbury River, an arm of the sea. Two of the carp remained in the raceway below the dam and were returned to the pond. They were about 2 feet 3 inches in length, very stout, and would weigh about 7 pounds each.

454. *Statement of Robert Kirby, Imlaystown, Monmouth Co., N. J., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 small ones three years ago last November. I have kept them in a pond 41 yards long and 15 yards wide. I have 3 ponds, all about one size, and all fed from a spring. The bottom is muddy. About a tile full of water flows through them, which is cool where it runs in, but very warm after it has run through the three ponds, in summer; it is not very cold in winter.

PLANTS.—Water-cresses and other cresses grow in the ponds, and white clover, parsley, and several kinds of grass grow around the borders.

ENEMIES.—The upper pond contains chubs, little copperhead frogs, and speckle-back terrapin. The kingfisher made us a great deal of trouble. We shot the kingfisher and saved 2 carp.

FOOD.—I give corn mash to the carp sometimes, but they pay little attention to it. They feed on snails and water-cress and grass.

GROWTH.—There are 2 leather carp left. We suppose that they would weigh from 6 to 7 pounds; they are the size of shad; when received they were from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch long.

REPRODUCTION.—We have not seen any young ones yet. I am afraid my carp are both males or both females. I would like to have a few more.

455. *Statement of George W. Hedden, and nine others, Farmer's Hotel, Morristown, Morris Co., N. J., Nov. 1, 1883.*

GROWTH AND REPRODUCTION.—The carp placed in Mr. Charles E. Noble's pond December 2, 1880, first spawned in the spring of this year, and have grown remarkably. One of them is 19 inches long and weighs 3 $\frac{1}{2}$ pounds.

EDIBLE QUALITIES.—Two mirror carp were cooked at the Farmer's Hotel and the guests thought them very palatable. They were very fat. We deem them a valuable article of diet, which should be raised especially in our country, where there are so many places adapted to their culture.

456. *Statement of B. F. Howell, Morristown, Morris Co., N. J., July 25, 1881.*

DISPOSITION OF CARP RECEIVED.—I received 25 in February, 1881. I kept them in a pond 100 feet square and 18 inches deep, with a muddy bottom. A 6-inch pipe would carry the water which passes through it.

ENEMIES.—It contains catfish, &c.

GROWTH.—My carp weighed 3 pounds when I lost them. Mr. Noble, of this town, has fine luck with his, and they grow very fast and are very tame. It is a great curiosity to see them feed. His pond is pure spring water.

DIFFICULTIES.—The fish you kindly sent me were all carried away by a break in my pond. A neighbor lost his fish in the same way. I should like some more carp for this pond and also for 2 larger ones which I have in other parts of the county.

457. *Statement of Charles E. Noble, Morristown, Morris Co., N. J., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp which I received I put into a small pond 100 feet in diameter and 6 feet deep. The bottom is naturally quicksand, but has been filled in 6 inches deep with firm sand such as masons use. About 15,000 gallons of water flow into it daily, directly from springs which have a temperature of 60°. The temperature of the water at the surface of the pond is not less than 70° in summer.

PLANTS.—It contains no plants nor grasses. Its edges are even and riprapped with stone.

ENEMIES.—There are shiners and 6 goldfish in the pond. Frogs, snakes, and muskrats get in, but are killed by every means I can employ.

FOOD.—We usually give the carp, during the summer, the daily waste from the kitchen, say 4 gallons or so of bread, griddle cakes, and cooked potatoes and other vegetables.

GROWTH.—At least half of the original carp are still in the pond; perhaps all of them. I judge they will weigh from 3 to 4 pounds. They look about as large as a fair-sized shad, though all are not the same size. They would average probably 3 pounds.

REPRODUCTION.—I can see a dozen or more young of last year's hatching, but did not know I had them till last month. They are about 6 inches long and are growing rapidly.

DIFFICULTIES.—They are no difficulty at all, but, on the other hand, we take pleasure in feeding them. They are quite tame now, and come up to take any floating food close in shore. The only objection to them for a pleasant pond on the lawn is that they root around in the bottom and keep the water muddy.

458. *Statement of H. B. Stone, Morristown, Morris Co., N. J., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—On the 1st of December, 1880, I received 20 carp for myself and 140 in custody for others. I received some more in 1882. I have kept them in a pond on Spring Brook farm, the property of John T. Foote, esq. This pond is 250 feet long, 100 feet wide, and 3 $\frac{1}{2}$ feet deep, and has a muddy bottom. It has no

inlet or outlet except a drainage pipe which I laid, which is 100 feet long and closed by a gate. The temperature of the water is 75° in midsummer. It freezes over in winter; the fish were deposited through a hole cut in ice 6 inches thick.

PLANTS.—It contains what we call "muck-shaws," an aquatic plant with a large pointed leaf and bearing a yellow blossom. The roots of this form "tussocks," which prevent the lead-line of a seine from keeping the bottom. Mr. Rud. Hessel spoke of oak leaves being detrimental. This pond is the recipient of a large quantity, as small oaks were left on the ground when it was cleared.

ENEMIES.—Catfish, snapping-turtle, and the common small land terrapin occur in the pond, and the snakes and kingfishers are troublesome.

FOOD.—The fish in this pond have never been fed. I have tried to feed them, but they never show themselves, and I was in doubt of their existence until yesterday.

GROWTH.—At that time we seined the pond, but among those that we caught only one, to judge from the size, belonged to the original lot. He weighed, I should think, from 2½ to 3 pounds. In the excitement he slipped through our fingers and escaped.

For two parties who receipted for them I placed 40 carp, on the 2d of December, 1880, in one of our reservoirs, from which we obtain our drinking water, which Professor Cook, our State geologist, says, if it has any fault, is too pure. When deposited they were from 2 to 2½ inches long. I caught one in June which measured 6 inches, which I considered a rapid growth, if they hibernate, as they are said to do. These fish are now from 12 to 18 inches in length—I would say, averaging 15 inches—and weigh from 2 to 3 pounds. The water in this reservoir is about 12 feet deep and clear. The bottom is composed of clay, covered with what earthy deposit has accumulated in, say, five years; and the margin is rip-rapped. The fish have been exceedingly shy, and we have never succeeded in getting them to take food.

REPRODUCTION.—In the net 100 feet long which we drew in the pond yesterday we caught 22 carp, besides the old one which escaped us, as related above. Of these, 21 averaged 6 inches in length; those we took to be yearlings. The other was 1½ inches long and was supposed to be of this spring's hatching. The securing of the latter was no doubt an accident, the net having a 1½ inch mesh. The water was muddy when the net was drawn—more so than I had ever seen it; perhaps made so by cattle.

Charles E. Noble, esq., who, together with myself, filed the applications for the first lot of carp that came to this county, has a pond of his own, feeds his carp regularly, and has been successful with them. He never saw his year-old fish until about a month ago, when he discovered them to be about 6 inches in length and abundant.

EDIBLE QUALITIES.—I have not yet eaten any carp. I have never regarded them as choice fish, but if they are equal to a moss-bunker they would give to our people, "hewers of wood and drawers of water," a good many of whom spend half their time in the bowels of the earth, a variety in their diet that is wholesome and nutritious, while those who have the means and leisure can spend both in search of something better.

459. *Statement of E. B. Woodruff, Morristown, Morris Co., N. J., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—About the last of December, 1880, I received about 15 carp. They were put into my pond through 10 inches of ice when there was so little water in it that they must have gone into the muck. The pond had been emptied to get rid of catfish, and had not been filled. This pond covers about an acre, and has a depth of from 2 to 5 feet. It was originally a muck hole, and the bottom is covered with muck. The water runs from November to the last of April. It is supplied wholly by surface drainage, but never dries up entirely. The temperature of the water is quite warm in summer.

PLANTS.—There are no plants in the pond except water-grasses, and—when the field is seeded—timothy grass grows around the edges.

ENEMIES.—It now has no fish in it except the carp, but has the ordinary small frogs of such places, and also small water-turtles.

FOOD.—I have thrown in vegetables and bread to see if there were any fish, but have never seen them take any.

GROWTH AND REPRODUCTION.—Until lately I have not known carp were in the pond, as the water is not at all clear. While I was absent from home, a short time ago, my farmer caught 2, the largest being more than 12 inches long. He says he should think there were 50 more, at least.

460. *Statement of Monroe Howell, Parsippany, Morris Co., N. J., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 21 carp in 1880. I have kept them in a pond 7 feet deep covering 20 acres, which I built expressly for them. It has a muddy bottom and is fed by springs. The amount of water flowing through it would fill a 4-inch pipe.

PLANTS.—It contains all grasses that are common on ordinary marshy land.

ENEMIES.—It also contains frogs, and abundance of small fish. I don't know of there being any other fish but carp in the pond.

MISCELLANEOUS.—I have never fed the carp and have no means of knowing how many old ones are left or how many young they have produced. I have tried various methods of catching the carp, but have never succeeded. There never has been a carp taken out, for I allow no fishing.

461. *Statement of William H. Howell, Whippany, Morris Co., N. J., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp 3 years ago, and neighbors have since put about 100 more in my pond. My mill-pond, in which the carp were placed, covers about 2 acres, is from 1 to 4 feet deep, and has a muddy bottom. The Whippany River, a small stream, runs in. It is not all spring water.

PLANTS.—Water grass and water weeds grow near the shore. A large part of the surface is covered by what we call muckshaw.

ENEMIES.—The pond contains frogs, turtles to some extent, and all fresh-water fish of our latitude except trout.

MISCELLANEOUS.—I have never seen one of the carp since they were put in the pond. From what I read, I believe my pond to be good ground for carp, and they may be all right; but, at any rate, difficulty would arise in trying to take them.

462. *Statement of Charles S. Medary, Little Falls, Passaic Co., N. J., 1882.*

PRICE.—My price-list for carp is as follows: Mirror carp, ten months old, \$75 per 100; mirror carp, ten months old, selected, \$85 per 100; scale carp, ten months old, \$70 per 100; scale carp, ten months old, selected, \$86 per 100; special rates on large orders. No orders filled for less than \$25. Cans for shipping, \$2 to \$3, according to size.

463. *Statement of Winslow Schoomaker, Singac, Passaic Co., N. J., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in good condition in the fall of 1880, and put them into a pond which covers $\frac{1}{2}$ of an acre, and has a muddy bottom. A stream of water of from 4 to 6 inches in diameter usually flows through it. In July of 1881 I had 14 left, and I felt very proud of them. When the dry weather came on the water got scarce in my pond, and I removed them to other waters. They did well, but in the fall when I wished to put them back I only found one.

GROWTH.—In July, 1881, my fish weighed about $\frac{1}{4}$ pound. The one which I had left I gave to my father-in-law, Louis Klotz, in the fall of 1882; but through some unknown cause it died when he put it in his pond. It then weighed $2\frac{1}{4}$ pounds. Mr. Klotz sent for some carp in the fall of 1881. He managed to save about 6 this summer, which will weigh 3 or 4 pounds.

REPRODUCTION.—Mr. Klotz's fish have spawned, and the young are doing well. He has several ponds and is devoting a large part of his time to them.

464. *Statement of John Collins, Bernardsville, Somerset Co., N. J., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 23 in December, 1880. I kept them at first in a pond 300 feet square and 4 feet deep, with a bottom of muck and sand; 20,000 gallons of water, of a temperature of 75°, flows through it daily. On the 10th of August, 1882, we had to let the water out of the pond to make repairs, and most of the fish went out into neighboring ponds. We caught 5 and put them in a little muddy pond 25 feet square, and kept them there until October 26, when we killed them to cook.

ENEMIES.—The large pond contains sun-fish, trout, frogs, and turtles.

GROWTH.—The 5 carp caught measured, respectively, 3, $3\frac{1}{2}$, 4, and $4\frac{1}{4}$ pounds. We were sorry that we had to let the pond out, when we found how they were growing.

EDIBLE QUALITIES.—When cooked, they were soft, of poor flesh, and of a muddy taste. I expect from being kept in a little, muddy pond.

MISCELLANEOUS.—We now have our pond thoroughly fixed, and would like to have some more carp.

465. *Statement of J. V. D. Pumyea, Plainville, Somerset Co., N. J., Nov. 17, 1883.*

GROWTH.—The carp which I received and placed in my pond April 6 were taken out yesterday, and measured 16 inches in length. A pair weighed 8 pounds.

466. *Statement of John Dietrich, Plainfield, Union Co., N. J., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In October, 1880, I received 20 carp, and in June, 1881, I received 20 more. The pond in which I have kept them is irregular in shape, its 4 sides being respectively 40, 23, 33 and 10 feet. Its average depth is 2½ feet and its greatest depth 3½ feet. The bottom is mostly of mud, but is composed of gravel at the sides. There are 3 springs in the bottom, and water flows in through one 3-inch pipe at the surface, and out through a 4-inch pipe, keeping the surface pure. The temperature of the water is from 70° to 76° Fabr. I think it a mistake to keep the water above 76° at any time for health of fish.

PLANTS.—The pond contains water-lily and other aquatic plants; also moss from Rahway River. It has a grass border.

ENEMIES.—I think I have banished all pestiferous turtles and snakes. I think the last snake went this morning.

FOOD.—I have only given the carp wheat bread and corn bread, and at no stated period; usually at evening time, about sunset. I love to sit on some stone steps at the margin of the pond and call up the fish with some nice wheat-bread. They come close to my feet and take their morsel with a relish always.

GROWTH.—I think that there are 3 old ones left. They weigh from 3 to 4½ pounds.

REPRODUCTION.—They have produced thousands of young, but their enemies, which I have been fighting, have kept them thinned down. The young measure from 6 to 10 inches in length.

DIFFICULTIES.—One year ago, in August, 1882, we were visited by an unprecedented storm or cyclone, which deluged our city and the surrounding country. Bridges, and fences, ponds, fish, and all went, but the fish loved their home and remained in the stream outside of my rebuilt pond. Fifty or more were caught and eaten, and I bought 4, and caught 4 of the original ones.

467. *Statement of C. R. Maltby, Plainfield, Union Co., N. J., May 3, 1884.*

DISPOSITION OF CARP RECEIVED.—I received 40 carp February 8, 1880. I put them in a pond containing about ¼ of an acre, which is from 1 to 3½ feet deep, and has a bottom composed of sand and muck. Forty inches of water flow into it from springs within ¼ mile. I have put screens at the places where the water enters and leaves the pond, to prevent the fish from escaping.

PLANTS.—There is eel-grass growing in the pond.

ENEMIES.—It also contains catfish, eels, frogs, sun-fish, a few pike, and a few turtles, but no snapping-turtles.

FOOD.—I do not give them any food. Every shower and heavy rain washes the streets of the city and the water flows through the pond.

GROWTH.—I do not know how many of the carp are left. They weighed 2½ pounds February, 1882, and from 4 to 5 pounds September 6, 1883.

REPRODUCTION.—I have just found in the pond a good many young about 6 inches long.

468. *Statement of Percy C. Ohl, fish warden, Plainfield, Union Co., N. J., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 25 carp in the winter of 1880. I put them into a spring-water lake about 3 acres in extent, with a muddy bottom, gravelly slopes, and grassy banks. Its greatest depth is 6 feet, and its least 2 feet, the average being 4 feet. About 5,000 gallons of water pass through it every 24 hours. The average temperature for the summer months is 66°.

PLANTS.—The pond is clear of all grasses or plants, except roots from the banks.

ENEMIES.—There are suckers, eels, catfish, black bass, minnows, fresh-water terrapins, snapping-turtles, &c., in it.

FOOD AND GROWTH.—I never feed the carp. In the spring of 1882, 20 could be counted. I only have 2 or 3 left now, which are about 24 inches long and weigh, I should say, 7 pounds.

EDIBLE QUALITIES.—A leather carp recently caught in this vicinity, weighing over 6½ pounds, was one of the most toothsome fish I ever tasted.

DIFFICULTIES.—These few carp were planted in my pond in midwinter, it being necessary to cut through a foot of ice to deposit them. The pond then contained quite a number of black bass, and I expected that the carp would be devoured in the spring, or whenever the bass came out again. I was pleased, however, to notice in the following year nearly all the carp, which had grown to be about 6 inches in length. They continued to grow until they were immense, but the freshet of last September made nearly a clean sweep of everything. I have not seen any fish in the pond since, but hear that several very large fish are there.

469. *Statement of J. R. Shotwell, Railway, Union Co., N. J., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received 18 carp. They were put in a pond of about 2 acres, belonging to Mr. A. F. Shotwell. It has a clay bottom, is from 4 to 5 feet deep, and receives the drainage of about 100 acres of woodland and meadow.

PLANTS.—It contains *Nymphaea odorata*.

ENEMIES.—There are frogs and turtles in it.

GROWTH.—The old carp are now 11 inches long.

REPRODUCTION.—They have produced a large number of young, which are from 1 to 2 inches long.

DIFFICULTIES.—There has been no difficulty in their care; they take care of themselves.

NEW MEXICO.

470. *Statement of E. S. Stover, Albuquerque, Bernalillo Co., N. Mex., Aug. 10, 1884.*

REARING CARP IN ALKALINE WATER.—I received a lot of carp from Mr. Menaul, at Laguna, N. Mex., in the spring of 1883, he having received them 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 2 years and after such treatment they have bred, which I think proves conclusively that they are a very hardy fish. July 27, 1884, the pond was literally full of young from 1 to 3 inches long. 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.

FOOD.—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.

471. *Statement of John Menaul, of Laguna, Valencia Co., N. Mex., Nov. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—Of the 575 fish received, I lost over 100 during the first 4 months, after which no more of them died. My ponds are fed from a spring 700 feet distant, and are very much sheltered on the east by very high lava masses.

GROWTH.—Owing to the water being so cold they have little more than doubled in size or weight, while others sent to Albuquerque increased 1½ pounds in weight.

NEW YORK.

472. *Statement of Chauncy Miller, Shakers, Albany Co., N. Y., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 6 carp received on May 10, 1880, I put in a small pond, with a sandy and mucky bottom. It has for 4 months during the year enough water to run a saw and grist-mill, and is quite warm in summer.

PLANTS.—Pond-lilies and various kinds of wild grass grow in the pond.

ENEMIES.—Bass, bull-heads, sun-fish, eels, and turtles are found in the pond.

DIFFICULTIES.—The pond dried up the first summer after the carp were put in and they all perished.

473. *Statement of N. Finch, North Pitcher, Chenango Co., N. Y., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 19 carp received on November 18, 1880, I put in a pond covering about ¼ of an acre, with a depth varying from 5 to 6 feet, a muddy bottom, and a temperature varying from 30° to 40°. It is fed by a spring.

PLANTS.—Swamp grass grows in the pond.

ENEMIES.—The pond contains a few frogs.

DIFFICULTIES.—It was very cold when the carp arrived. Only 3 carp appeared after the cold weather was gone, and they, too, soon disappeared.

474. *Statement of Daniel Bidwell, Mellenville, Columbia Co., N. Y., Jan. 10, 1881.*

DISPOSITION OF CARP RECEIVED.—I received 13 small carp May 9, 1880, in good order, and immediately deposited them in my pond, which was not quite completed. The bottom of the pond is composed of clay and sand. In the latter part of August, the season being very dry, I had the water drawn and set workmen to finish digging it out with horses and scrapers.

ENEMIES.—Some days after I planted the carp I noticed the pond was full of frogs, some of large size, and as the fish had not been seen I supposed they had destroyed them.

GROWTH.—After the men had been at work several days 3 carp were seen, one of which was 10 inches long and weighed over a pound. We then saw 9 more in the water, that was about 12 inches deep, in a small space in the center of the pond. The wonderful growth from May 9 to September 9, 4 months, beats anything I ever saw, or of which I ever heard.

475. *Statement of P. A. M. Van Wyck, New Hamburg, Dutchess Co., N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 2 lots of leather carp received 2 years ago I put in a fresh-water creek, full of coves and bays, such as I deem good resorts for carp.

GROWTH AND REPRODUCTION.—Last fall I saw a small school of carp which averaged from 7 to 8 inches long. I have not seen them since.

476. *Statement of Hiram A. Gates, Coxsackie, Greene Co., N. Y., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in May, 1881, I put in a pond covering about $\frac{1}{4}$ of an acre, with an average depth of 3 feet, and a muddy bottom. The flow of water is irregular, and is very warm in summer.

PLANTS.—Plants indigenous here grow in the pond.

ENEMIES.—No fish, but plenty of frogs and turtles inhabit the pond.

FOOD.—I do not feed the carp, but there is an abundance of red animalculæ in the pond.

DIFFICULTIES.—In the spring of 1882 I found the remains of 2 carp, each about 10 inches long, and I judge they would have weighed 2 or 3 pounds. These were frozen in the preceding winter, and I fear the others shared a similar fate. I intend to deepen the pond and try the carp again.

477. *Statement of H. D. McGovern, 288 Fulton St., Brooklyn, N. Y., Mar. 30, 1881.*

DISPOSITION OF CARP.—I placed 35 carp, 18 months old, some of which weighed 2½ pounds, in a pond prepared for them. The pond, which was constructed for observation and fed from springs, was 3 feet in depth, there being a bottom of mud or fine loam of 6 inches.

FOOD.—I ascertained from experiment that carp disposed of oatmeal dough and a dough of rye meal mixed with chopped cabbage more quickly than any other kind of food given them. If carp are not fed in December, January, and February, they will go in the mud where they will be safer than were they regularly fed.

METHOD OF FEEDING.—In the early part of January I kept an air hole open in the ice which had accumulated on the pond, and fed the fish by means of a wooden spout, 1 foot square and 4 feet long, inclosed in a large sheaf of cat-heads and closed at the opening with a wad of saltgrass to keep the frosty air from entering the tube or shaft. When I wanted to feed my carp I would remove the grass wad and drop my food down the aperture, after which I would obscure the light from the opening by throwing a coat over my head, and would then be rewarded by seeing all the fish within range of the opening at the bottom. My shaft worked well until the temperature fell to zero, for then, notwithstanding the covering of reeds or cat-heads, it closed up, and I was compelled to cut holes in the ice and remove all the particles remaining.

After the opening was cleared I would drop in food, and as the fish were not shy they could be seen hovering around the opening after eating.

HARDINESS.—They can stand any amount of handling in moderate weather, and live longer out of water than any fish I have ever handled. I can instance a case where a carp that was wrapped by me in a piece of wet burlap was kept out of the water for 2½ hours, when, on placing it in a tank of water, it swam off as if it had only been changed from one tank to another. There was no swooning nor cause for resuscitation.

JUMPING POWERS.—At the lapse of a month or two after placing them in a pond carp have been found in an adjacent one having no seeming connection with the first. The fact is the carp will jump 3 feet, and then, like an eel, wriggle its way over damp grass and make its way to other waters.

CONSTRUCTION OF PONDS.—In northern waters a carp pond should be at least 4 feet deep, with a foot of soft bottom, making in all 5 feet.

478. *Statement of James Annin jr., Caledonia, Livingston Co., N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the spring of 1880. The temperature of the water I placed them in is 48°, and is so cold that they did not grow 1 inch the first year. Every few weeks 1 or 2 died, and at the end of the second season I had none of them left.

479. *Statement of M. B. Jarvis, Canastota, Madison Co., N. Y., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on January 11, 1881, I put in a pond covering about $\frac{1}{4}$ of an acre, with a depth of from 2 to 3 feet, and a muddy bottom. The water in the pond is kept fresh by the spring and Erie Canal water that flows into it.

PLANTS.—Frog-spittle and eel-grass grow in the pond, and lilies and other varieties of grasses around its edges.

ENEMIES.—Many small turtles and minnows and a few frogs inhabit the pond.

DIFFICULTIES.—I do not know what has become of the carp. I have not seen them since they were put in the pond, though I can hardly believe the fish have been killed, or that they have died, or escaped. There is so much eel-grass and vegetable matter growing in the pond it is difficult to ascertain about the fish.

480. *Statement of Seth Green, Rochester, Monroe Co., N. Y., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—In a pond, 75 by 85 feet, with a depth of 15 inches, and a muddy bottom, I put 10 carp received on May 8, 1880, and others received November 10, 1882, and December 19, 1883. It is supplied by a half inch stream of water which is usually at a temperature of 75° F.

PLANTS AND ENEMIES.—Moss and flags grow in the pond. It is also infested by frogs.

FOOD.—I give the carp chopped liver daily.

GROWTH.—There are from 5 to 6 original carp remaining, which average about 2 pounds. There are no young in the pond.

DIFFICULTIES.—Some of the carp became infected with fungus and died.

481. *Statement of Eugene G. Blackford, Fulton Market, New York City, Mar. 21, 1882, and Apr. 4, 1884.*

GROWTH.—I have just received from Mr. J. Reynal, of White Plains, Westchester County, New York, a large live carp measuring 17 $\frac{1}{2}$ inches in length, which I am going to exhibit on April 1. This is one of the lot received 2 years ago. [March 21, 1882.]

CARP IN JAMES RIVER.—A barrel of shad arrived to-day in our market that were caught in the James River, Virginia. Among them was a German carp, weighing 3 $\frac{1}{2}$ pounds. [April 4, 1884.]

482. *Statement of L. W. Bristol, Lockport, Niagara Co., N. Y., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received on November 9, 1880, I put in a pond, 20 by 40 feet, with a bottom of clay and mud; 20 gallons of water, at a temperature of 77°, flow through the pond each hour.

PLANTS.—Pond-lilies, flags, and grass grow in the pond.

ENEMIES.—No turtles, frogs, nor other fish inhabit the pond.

FOOD.—I give the carp chopped liver and Indian bread once a week.

GROWTH AND REPRODUCTION.—I have all the original carp. There are in the pond quantities of small fry, with an average of 1 $\frac{1}{2}$ inches.

DIFFICULTIES.—My pond is only 30 feet above the bed of the Eighteen-mile Creek, where water-snakes abound in great quantities. Last season I shot 17 of them, some of which were 4 feet and 8 inches long, and this season I shot 8, but none over 3 feet long. In this locality they are the most formidable enemy with which the carp have to contend.

MISCELLANEOUS.—Three years ago the fountain basin in Glenwood Cemetery was stocked with goldfish, and in a short time we had about 1,000 young fish. Last

year the fish began to disappear, and on investigation I found that the artificial rock work harbored snakes, which had climbed up to the basin from Eighteen-mile Creek, 50 feet below. These snakes proved such a pest that we have abandoned raising fish in this basin.

483. *Statement of William N. Clark, New York City, N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 40 carp received in the fall of 1880 (of which 20 were leather carp), and the 20 carp received in the fall of 1881, I put in a pond 35 by 70 feet, with a depth varying from $1\frac{1}{2}$ to 6 feet, and a muddy bottom. A 3-inch stream supplies the pond with water, except in summer when there is scarcely any flow. It is located near High Bridge.

PLANTS.—No plants grow in the pond.

ENEMIES.—Eels and goldfish inhabit the pond.

FOOD.—For about 9 months during the last and the present season bread has been given the carp daily.

GROWTH.—The leather carp average $2\frac{1}{2}$ pounds in weight and 18 inches in length, and the other variety $1\frac{1}{2}$ pounds. All of the original are alive. They are easily kept, and are very hearty.

REPRODUCTION.—I do not know whether the young in the pond are carp or goldfish.

484. *Statement of W. A. Conklin, Central Park, New York City, N. Y., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received December 1, 1879, I put in a pond covering 10 acres, with an average depth of 10 feet, and a muddy bottom. Seventy gallons of water flow through it per minute.

ENEMIES.—Goldfish, sun-fish, catfish, white and yellow perch, frogs, and painted turtles inhabit the pond.

DIFFICULTIES.—Other fish have destroyed the carp spawn.

485. *Statement of William G. Crenshaw, P. O. Box 168, New York City, N. Y., Aug. 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I have not seen the carp received on January 25, 1881, and January 25, 1882, since I placed them in a pond in Orange County, Virginia. But I think there are plenty of carp in the pond, although they cannot be caught.

486. *Statement of Francis Endicott, 57 Beekman st., New York City, N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 250 carp received through Mr. E. G. Blackford in 1880, and 64 more received on December 13, 1881, I put in the lakes and ponds of Staten Island. Most of these ponds and lakes are public waters, and are stagnant.

PLANTS.—Pond-lilies and dog-lilies grow in some of the ponds and lakes.

ENEMIES.—Goldfish are numerous, and thrive in the ponds and lakes. Turtles, and from 2 to 3 varieties of frogs, also inhabit them.

GROWTH.—The 4 carp which were found dead in Captain Woods' pond weighed 5 pounds each. Several other members of the Richmond County Game and Fish Protective Association have reported enormous carp in their ponds. The semi-stagnant waters of this county are especially adapted to the successful culture of the carp.

DIFFICULTIES.—Our ponds and lakes are too near the great city of New York.

487. *Statement of F. C. Havemeyer, 117 Wall st., New York City, N. Y., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp received in November, 1879, I put in an ice pond, 45 by 55 feet, with an average depth of 4 feet, and a bottom composed of mud and gravel. The spring water which flows into the pond is sufficient to fill it in the course of a week. The temperature of the pond varies from 70° to 75° . In November, 1882, I received 25 more and placed them in a pond, 50 by 125, contiguous to the smaller one, and built 2 years later.

PLANTS.—No plants grow in the pond. It contains no enemies.

FOOD.—From 3 to 4 times a week I give the carp lettuce and other vegetables. I also feed them on stale wheat and bran bread.

GROWTH.—The 17 original carp remaining average from 2 to $2\frac{1}{2}$ pounds. I have not seen any young yet.

DIFFICULTIES.—When the water was run off from the smaller pond just before the completion of the larger one, several carp escaped.

488. *Statement of W. R. T. Jones, 51 Wall st., New York City, N. Y., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The 6 carp received in 1881 I put in a 1-acre pond, with a depth of 3 feet, and a muddy bottom. The water is quite warm in summer, and does not overflow except in spring.

PLANTS AND ENEMIES.—Duck-weed grows in the pond. Goldfish, frogs, and turtles also inhabit it. I do not feed the carp.

GROWTH.—The original carp average about 14 inches in length.

REPRODUCTION.—There are apparently a number of young in the pond. The carp hybridize with gold fish.

489. *Statement of George P. Ludlam, superintendent New York Hospital, New York City, N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in 1881 weighed about an ounce each and were placed in tanks (aquaria) which contain about 300 gallons of water. No plants grow in the tanks.

FOOD.—We give the carp bread, Indian meal, and chopped beef.

GROWTH.—We have all of the original carp, and they average from $\frac{1}{2}$ to 1 pound. There are no young.

490. *Statement of Barnet Phillips, New York City, N. Y., Oct. 6, 1882.*

HARDHOOD AND GROWTH.—Some 10 days ago, after the big rains, a man and wagon, going along a road 8 miles from Newburg, in this State, found something flopping in a mud puddle, not more than 3 feet in circumference. He picked up what seemed a nondescript fish to him, put it in his wagon, and jolted on to Newburg. The fish being still alive, it was put in water, and all who saw it failed to recognize it. Finally, the fish was sent to Mr. E. G. Blackford. I had the pleasure of seeing this morning in an aquarium a fine 3-pound leather carp, the same Newburg fish.

491. *Statement of W. H. Schieffelin, New York City, N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on November 22, 1880, I put in a lake just inside ocean beach on Long Island, $\frac{1}{4}$ by $\frac{1}{4}$ mile, with a maximum depth of 10 feet, and the water slightly brackish, but it has no visible outlet.

PLANTS.—White water-lilies and grass grow in the pond.

ENEMIES.—Black bass (large mouth) and perch (not yellow) inhabit the pond.

FOOD.—I never feed the carp.

MISCELLANEOUS.—I have not seen the carp since they were placed in the pond, but presume they are doing well.

492. *Statement of James A. Van Brunt, 75 South st., New York City, N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received on January 10, 1881, I put in a pond at Huntington, in Suffolk County, 25 by 100 feet, with a bottom of white sand, and supplied by springs.

ENEMIES.—Frogs, turtles, eels, and other fish are found in the pond. I never feed the carp.

GROWTH.—Last year I caught one that weighed $\frac{1}{2}$ pound.

DIFFICULTIES.—I sometimes think that the other fish in the pond have eaten up my carp.

493. *Statement of Geo. E. Ward, 43 South st., New York City, N. Y., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 6 leather carp received on December 10, 1880, and 22 scale carp received subsequently I put in a $\frac{1}{2}$ -acre pond, with an average depth of 4 feet, and a muddy bottom. The brook water that empties in the pond is very warm in summer. There are no plants in the pond.

ENEMIES.—Trout, sun-fish, shiners, sea salmon, eels, and turtles inhabit the pond. I have not fed the carp.

GROWTH.—The original carp that have been seen average from 8 to 10 inches in length. I have seen no young yet.

DIFFICULTIES.—The dam broke and many carp escaped into another pond below, which leads into Cow Bay.

494. *Statement of Edward R. Wilbur, New York City, N. Y., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on May 28, 1880, and the 10 received in 1881 I put in a pond 1,500 feet long, and from 6 to 50 feet wide, with a depth varying from 2 to 4 feet, and a soft bottom. It is fed by springs, and as the dam is raised above the head of the spring the water filters through the spongy banks.

GRASSES.—Grasses grow in the pond, and roots in the banks.

ENEMIES.—Frogs, speckle tortoise, and painted turtles, but no other fish than carp inhabit the pond.

FOOD.—I give the carp stale bread, potato parings, and oat meal, and they come to the surface for bread, cabbage, lettuce, &c. They dig into the banks for roots.

GROWTH.—There are about half of the original carp remaining. A year ago I measured 22 inches in length, and I should judge that they now average from 24 to 26 inches long, and weigh from 4 to 6 pounds. They are quite large, strong, and active.

REPRODUCTION.—I am unable to state the number of young in the pond.

DIFFICULTIES.—Soon after the carp were placed in the pond I found 6 of them dead and partially eaten. I find it almost impossible to catch them even with a net.

95. *Statement of J. T. Watson, secretary Kirkland Fish Society, Clinton, Oneida Co., N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 9 carp in 1880, 215 in 1881, 40 in 1882, 160 in January, 1883, and 20 in April, 1883. They were distributed in warm bayous and ponds having plenty of water and muddy bottoms.

PLANTS.—Wild plants grow in the ponds and bayous.

ENEMIES.—In some waters there are no other fish. Some contain chubs, California trout, bass, a few turtles, and many frogs. We give the carp no food.

GROWTH.—We have a greater part of the original carp, and they average 2 pounds, and are about 1 foot long. The oldest carp probably spawned this season.

DIFFICULTIES.—Some of the carp of last winter's lot froze during the time occupied in shipping. One was found bitten by some animal, probably a musk-rat.

496. *Statement of Thomas W. Jones, Maynard, Oneida Co., N. Y., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 8 carp received on June 19, 1880, and the 12 in the fall of 1880, I put in a half-acre pond, with a maximum depth of 5 feet, and a bottom composed of clay and mud. A 2-inch stream of water, at a temperature of from 60 to 70 degrees, flows into it.

PLANTS AND ENEMIES.—Wild rice and pond-lilies grow in the pond. I cannot free it of turtles. No other fish inhabit it. Minks abound.

FOOD.—I gave the carp green corn.

DIFFICULTIES.—Five months after I received the carp, when they were killed by minks, they averaged 2 pounds. In one year I have killed 30 minks and 3 coons.

497. *Statement of Burton G. Foster, Vernon, Oneida Co., N. Y., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in December, 1880, I put in a pond 60 by 300 feet, with a depth of 5 feet, and a muddy bottom. It is fed by a stream of soft spring water. Until the fall of 1881, the surplus water was discharged through a waste-weir, 18 inches square.

PLANTS AND ENEMIES.—Trees, grass, and sumac grow around the edges of the pond. Nothing infests the pond except, perhaps, frogs.

FOOD.—I gave the carp wheat bran, bread, apples, and pumpkins.

REPRODUCTION.—In the summer of 1881 there were hundreds of young in the pond. The carp grew and multiplied beyond expectation.

DIFFICULTIES.—In the fall of 1881, the dam broke and caused all the carp to escape, except 2 or 3 which were caught by Oneida Indians, who live but $\frac{1}{4}$ mile distant. These were large, nice fish. If I can get more carp I will rebuild my dam.

498. *Statement of William Watson, Whitestown, Oneida Co., N. Y., Aug. 2, 1882.*

DISPOSITION OF CARP RECEIVED.—Three years ago last May I received 10 carp, 8 of which reached home alive. I put them in a small pond on a hillside with southern exposure. The pond covers 350 yards and the lower end is 5 feet deep with a muddy bottom. The third spring I made several new ponds lower down the creek and in one of these ponds I put 3 carp, in the others 5. In June, 1882, I received 10 more and put them in the old pond.

PLANTS.—I planted water-lilies, wild rice, &c., in the ponds that I constructed the third spring.

ENEMIES.—In the lower ponds all sorts of enemies of the carp seemed to thrive and they exterminated all of the 5 old ones. There were musk-rats, minks, turtles, king-fishers, cranes in great quantities, and frogs without number. A small minnow, which I supposed to be a stickleback, also got in. This last spring I found 1 of the 3 lying nearly dead, with a wound on the back of its neck and its tail off. Last winter I transferred the old ones to a new pond and on the following morning I found 2 of them dead. These pests have made such work that I am almost discouraged, but will draw off the ponds and try to exterminate them.

FOOD.—The first year I fed the carp on stale bread and corn.

GROWTH AND REPRODUCTION.—The second year I had over 60 young carp. I subsequently found young in both ponds by the thousands. I exhibited 3 of the old fish and some of the young at our State fair. The largest weighed 5 pounds. The wounded carp that was found in the pond weighed $6\frac{1}{2}$ pounds, and the old carp that were found dead in the new pond to which they were transferred weighed respectively 6 and $6\frac{1}{2}$ pounds. This spring some of the carp last received weighed $1\frac{1}{2}$ pounds.

DIFFICULTIES.—Vermin and cranes disturb the carp.

499. *Statement of E. L. Van Dusen, Geneva, Ontario Co., N. Y., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received on May 18, 1880, I placed in a pond covering about $\frac{1}{2}$ acre, with an average depth of 6 feet. It is replaced with fresh water every 2 days.

PLANTS.—Only a small quantity of eel-grass grows in the pond.

ENEMIES.—Plenty of frogs, but no turtles nor other fish than carp inhabit the pond. I never feed the carp.

GROWTH.—The 7 original carp remaining average from 2 to 3 pounds.

REPRODUCTION.—There were no young in the pond last year, and very few this year. I do not know why they do not increase.

500. *Statement of John Melvin, M. D., Shortsville, Ontario Co., N. Y., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 11 carp received in June, 1880, and the 14 in November, 1882, I put in a pond covering $\frac{1}{2}$ of an acre, with a depth of 5 feet, and a muddy bottom. It never freezes over and has a flow of water of from 2 to 4 inches.

PLANTS.—Moss, pond-lily, flag, and other varieties of water plants grow in the pond.

ENEMIES.—Bull-frogs, turtles, water-snakes, and occasionally water-rats and musk-rats inhabit the pond. Bass and sun-fish were put in the pond by some boys after the carp were received. I think the bass and sun-fish killed my carp.

FOOD.—In the fall of 1882 I gave the carp bread, rice, corn, and wheat daily. They have not been fed since.

GROWTH.—The original carp remaining, when 2 years old, weighed 2 pounds.

501. *Statement of E. Lovejoy, Victor, Ontario Co., N. Y., Sept. 29, 1884.*

GROWTH.—The carp I received in November, 1882, are doing nicely. I saw them occasionally last summer and think they then weighed a pound each, at least. They were from 12 to 14 inches long.

REPRODUCTION.—On drawing my pond I find plenty of small fry. I believe I have thousands of them.

EDIBLE QUALITIES.—We cooked a large carp weighing 62 ounces but we did not like it, it being very fat. If they are not better at other seasons of the year I want no more of them.

502. *Statement of Lewis Beach, Cornwall, Orange Co., N. Y., Aug. 30, 1883.*

GROWTH.—About three years ago last January Mr. S. S. Mapes stocked his pond in the town of Wallkill with 20 carp received from the U. S. F. C., and last year caught one weighing 5 pounds. Tuesday he caught another which measured 2 feet and weighed $5\frac{1}{2}$ pounds. This is a remarkable growth for this kind of fish in a pond where the water is almost all cold spring water. Mr. Mapes expects to exhibit the carp at the fair in Middletown from September 18th to the 21st if a suitable place can be made for it.

503. *Statement of William B. Westervelt, Middle Hope, Orange Co., N. Y., Nov. 9, 1882.*

GROWTH.—On November 5, 1881, carp not exceeding 2 inches in length were placed in the lake at our cemetery. During a freshet some weeks ago the bank was carried away and we lost our fish. Three of them have since been captured just below the

break, and one is now in the possession of Mr. E. G. Blackford, of New York. The other two I have in a small temporary pond with those just received. The 3 measure 16 inches each, and will weigh 3 pounds. They seem to like to get down in the mud since the cold weather commenced and seem rather dormant.

504. *Statement of Wickham T. Shaw, Middletown, Orange Co., N. Y., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in January, 1881, I put in a mill-pond covering about $\frac{1}{4}$ of an acre, with a maximum depth of 7 feet, a muddy bottom, and fed by a stream that is warm in summer.

PLANTS AND ENEMIES.—Plants indigenous here grow in the pond. Catfish, a few bull-frogs, and occasionally snapping-turtles are found in it. I do not feed the carp.

DIFFICULTIES.—I have not been able to seine out any of the carp, but I have been informed that they have been seen up the stream, and large in size.

505. *Statement of Chas. E. Harr, Newburgh, Orange Co. N. Y., Sept. 30, 1882.*

DISPOSITION OF CARP RECEIVED.—On the 5th of November, 1881, 25 young carp were put in the cemetery pond, of which Mr. William Westervelt is keeper. It is located at Cedar Hill, 7 miles north of here.

GROWTH.—Mr. Westervelt caught one of them the first of last April, which was 8 inches long and weighed over a pound. To-day one weighing about 2 $\frac{1}{2}$ pounds and measuring 15 inches in length, was taken from a shallow pool which connects with the cemetery pond by a small brook.

VITALITY.—The 2 gentlemen who were driving by noticed it in water scarcely deep enough to cover it. They picked it up and brought it in their carriage to town, and when placed in my aquarium it revived. It was probably washed out of the pond which was broken during the recent high water, and had several bruises on it.

In addition to the above test the carp was put in a small bait-kettle, and sent to Mr. E. G. Blackford, Fulton Market, New York, for identification. He pronounced it a fine specimen of the leather carp, and stated that he had forwarded, through Hon. Lewis Beach, small carp to that neighborhood in November, 1881. It had grown in 10 months from 2 ounces to 46 ounces.

506. *Statement of John C. Donaldson, Gilbertsville, Otsego Co., N. Y., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—During the first winter I kept the 20 carp received in November, 1880, in a spring. In the following May I put 9 in a pond covering 20 square rods, with a depth all the way up to 2 feet, and a bottom of mud from 2 to 5 feet deep. In wet season the flow of water is 2 inches, but during the dry season only a small spring in the pond supplies it with water. It is always cool at the bottom, and in very warm seasons the surface water is 80°.

PLANTS.—In the shallow parts of the pond grow rushes (*Eleocharis palustris*), with a little scratch-grass, cat-tail flag, and pimpernel.

ENEMIES.—All kinds of frogs and lizards, many water-beetles, and larvæ of dragon-flies, but no fish nor turtles inhabit the pond. Before but not since the carp were put in the pond toads frequented it to lay their eggs.

FOOD.—I give the carp crumbs daily. Buckwheat cakes seem to be their favorite food. For nearly 2 years I did not feed them. Last summer they dug up all the rushes, leaving the stems to float upon the surface of the water.

GROWTH.—Occasionally I see from 3 to 4 of the original carp. Last April I caught one that weighed 2 pounds and 10 ounces, and I estimate their present weight to vary from 2 to 5 pounds. The 7 I left in the spring do not average more than 4 inches in length. During the first winter 4 died.

REPRODUCTION.—I have counted 100 young at one time. Last year's young, having been fed frequently, grow much faster than the original lot, and average $\frac{1}{4}$ pound each. This year's fry are very small, and a few weeks since they became so tame as to eat out of my hand.

DIFFICULTIES.—Two or three times most of the water has escaped from the pond through the holes made in the dam by frost and mice.

507. *Statement of J. T. Welton, Schenectady, Otsego Co., N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 11 carp received on June 1, 1880, I put in pond 40 by 75 feet, with a depth varying from 1 to 3 feet, and fed by a 3-inch stream of cold spring water.

PLANTS AND ENEMIES.—Marsh grasses and various kinds of weeds grow in the pond. Frogs alone also inhabit it.

FOOD.—I give the carp crackers or bread, but not oftener than once in 2 weeks.

GROWTH.—The 4 remaining carp average from 4 to 6 pounds.

DIFFICULTIES.—Small boys killed 5 carp; 2 others, one of which was full of spawn, jumped over the dam and perished. I am at a loss to know why the ones remaining do not increase.

508. *Statement of Niram Vaughn, Worcester, Otsego Co., N. Y., Aug. 20, 1893.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on November 26, 1880, and 15 in December, 1881, I put in a pond 30 by 40 feet, with an average depth of about 3 feet and a muddy bottom. It is supplied with spring water, which is cool in summer and warm in winter.

ENEMIES.—The pond is inhabited by nothing that disturbs carp.

DIFFICULTIES.—The first lot of carp were sickly when received, and soon died. The second lot I have not seen since I placed them in the pond.

509. *Statement of Thomas Clapham, Roslyn, Queens Co., N. Y., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in 1881 and the 20 more received in 1882 I kept in a small pond 12 by 25 feet until August, 1883, when I removed them to a 2-acre pond. This pond has an average depth of 4 feet and a bottom of mud and clay. A constant 8-inch stream of water flows into it. In summer the temperature is about 65°, and in winter it rarely freezes over.

PLANTS.—White pond-lilies, water-cress, converva (frog-spittle), and various kinds of grass grow in the pond.

ENEMIES.—Common brook trout, California brook trout, minnows, frogs, eels, and 3 varieties of turtle inhabit the pond.

FOOD.—As the pond contains a great quantity of natural food, I never feed the carp. They eat converva, and are causing it to disappear from the pond.

GROWTH.—In August, 1882, the largest carp weighed 6 ounces, and in June, 1883, one that I caught with an artificial fly weighed 3 pounds. This great growth is to me simply wonderful. Daily I see 8 in a school, and they are growing rapidly.

REPRODUCTION.—This summer I noticed many small fish about 1½ inches long, which are different from any I have seen. I think they are carp.

HARDINESS.—Having tried various experiments with individual carp, I am convinced that they will thrive in muddy and stagnant water. I have 3 which have been in a box sunk in the ground in my garden since last fall. Although the water in it is stagnant and during warm weather very offensive, yet the carp remain healthy. We have hundreds of surface-drainage ponds on Long Island, in which carp would do well and furnish a deal of cheap food in places where fish are rarely obtainable.

510. *Statement of Mrs. Leonice M. S. Moulton, Roslyn, Queens Co., N. Y., Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 22 carp December 15, 1880; cut the ice and put them in. My pond covers about an acre, and has a muddy bottom. I put a wire screen over the outlet in the winter of 1881-'82. The screen became clogged with leaves; the water rose in my absence, and broke a place in my dam, through which I think the carp escaped. The pond is fed from small springs on the hillside with very cold water, but the surface water at the outlet is warm. The leaves from willow, cedar, sycamore, and wild cherry trees form *débris* and mud at the bottom.

PLANTS.—The pond is particularly free from plants. Wild roses, alders, clematis, ferns, milk-weed, Virginia creeper, and wild grape grow along the bank.

ENEMIES.—The pond contains a few sun-fish, minnows, frogs, and turtles.

FOOD.—I did not feed the carp, but thought of throwing bread on the surface, as I saw the old women do at Fontainebleau, France, but not seeing any carp I did not throw away any bread.

MISCELLANEOUS.—I believe my pond adapted to carp culture, and am anxious to know where the carp are.

511. *Statement of O. D. Burtis, Syosset, Queens Co., N. Y., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received about 3 years ago I put in a pond covering about 5 acres, with a maximum depth of 7 feet and a muddy bottom. It has no outlet.

PLANTS.—I keep the pond free of plants.

ENEMIES.—Sun-fish, goldfish, eels, turtles, and frogs are found in great numbers in the pond. I do not feed the carp.

DIFFICULTIES.—The enemies of the carp that inhabit the pond destroyed them.

512. *Statement of George L. Smith, Whitestone, Queens Co., N. Y., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received in the fall of 1881 I put in a pond 150 feet square, with a depth of 6 feet in the center and a muddy bottom. It is fed by a spring, and has a small discharge of surplus water.

PLANTS AND ENEMIES.—Grass grows on one side of the pond. There are some frogs in it.

DIFFICULTIES.—I have only seen the carp two or three times since placing them in the pond.

513. *Statement of Abe Winant, Rossville, Richmond Co., N. Y., Oct. 2, 1883.*

GROWTH.—One day this week I caught a carp weighing 5 pounds in the pond of Mr. Kennard. These fish were put in the pond some three years ago, about an inch long. I have no doubt that there are carp in the pond that will weigh 8 pounds. They probably spawned last spring.

HOW TO CATCH CARP.—The bait used in catching the carp was a crust of bread.

514. *Statement of John F. Hauptman, Pomona, Rockland Co., N. Y., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on November 29, 1880, I put in a mill-pond covering about 7 acres, with a maximum depth of 8 feet and a muddy and sandy bottom. The water supply is not sufficient to run a mill. The pond contains a great many springs on one side, where the water is cold. In other parts it is warm.

PLANTS.—Plants are only to be found where the water runs up into the bogs.

ENEMIES.—Perch, suckers, shiners, catfish, and sun-fish abound in the pond. I have not seen the carp since I placed them in the pond.

515. *Statement of N. S. Rutter, Sparkill, Rockland Co., N. Y., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp, about 3 inches long, received on November 12, 1880, I put in a pond covering about 1 acre, with a muddy bottom, and fed by a good flow of cold spring water.

ENEMIES.—Snapping-turtles got in the pond in July, 1881.

GROWTH.—In June, 1881, 3 carp averaged 7 inches in length.

DIFFICULTIES.—As I have not been able to catch any carp since the snapping turtles got in the pond, I fear the turtles have destroyed them.

516. *Statement of Henry D. Grindle, M. D., Spring Valley, Rockland Co., N. Y., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on May 10, 1880, I put in a pond covering 3 acres, with a depth varying from 2 to 20 feet, and a muddy bottom. A sufficient supply of water flows into the pond to maintain a uniform depth, except during a freshet, when it runs from 10 to 12 inches above the screened sluice-way.

PLANTS AND ENEMIES.—Water-lilies grow in the pond. This fall I shall try to free the pond of the small turtles and sun-fish that inhabit it.

FOOD.—I give the carp stale bakers' bread daily, and about an hour before sundown I sometimes feed them on lettuce, boiled cabbage, and cracked boiled corn.

GROWTH.—The 2 carp remaining recently weighed 14 and 15 pounds, respectively.

DIFFICULTIES.—Had I constructed a wire screen over the sluice-way when I received the carp, I would doubtless have raised all of them.

517. *Statement of A. S. Pease, Saratoga Springs, Saratoga Co., N. Y., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on May 12, 1880, I put in my pond, in Rensselaer County, covering about $\frac{1}{2}$ of an acre, and fed by a bold stream from springs.

PLANTS AND ENEMIES.—Common grasses grow on the edges of the pond. Common brook fish, chiefly minnows, inhabit it.

FOOD.—I gave the carp no food.

DIFFICULTIES.—The carp had grown considerably before the dam broke last winter, when all of them escaped into the Hoosic River. My pond is now secure, and I desire more carp.

518. *Statement of P. Rust, Franklinton, Schoharie Co., N. Y., Apr. 25, 1884.*

DISPOSITION OF CARP RECEIVED.—The 21 carp received on December 24, 1880, I put in a $\frac{1}{2}$ -acre pond, having a maximum depth of 7 feet, gradually decreasing in depth towards the shore. The bottom is composed of mud and clay. The small

spring which feeds the pond hardly supplies enough water in hot, dry weather to equal the amount lost by evaporation. The temperature of the pond in August is 70°.

PLANTS.—Plants common to boggy or marshy places grow in the pond, which also contains a vast quantity of frog-spittle.

ENEMIES.—Nothing that disturbs the carp inhabits the pond.

FOOD.—I give the carp boiled rye and the refuse from the table occasionally, but with no regularity. The carp would not eat the food given them last summer, as the pond afforded a bountiful supply.

GROWTH.—The 5 carp remaining average more than 20 inches in length, and weigh nearly 6 pounds each.

DIFFICULTIES.—My pond was not ready when the carp arrived, so I had to winter them in a spring, consequently losing all but 5. I have found no little difficulty in constructing my pond properly.

519. *Statement of T. V. Smith, Sharon Springs, Schoharie Co., N. Y., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received on May 13, 1880, and 19 in November, 1882, I placed in $\frac{1}{4}$ -acre pond, with a depth varying from 1 to 5 feet, a muddy bottom, and fed by an inch stream of spring water. The temperature is 75°.

PLANTS AND ENEMIES.—Water-lilies grow in the pond. One goldfish and the carp are all that inhabit it.

FOOD.—I give the carp crackers and oatmeal.

GROWTH.—The 1 remaining of the original carp is 20 inches long, and those of the second lot, which are doing well, average 6 inches in length. There are no young yet.

520. *Statement of J. Otis Fellows, Hornellsville, Steuben Co., N. Y., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 19 carp received on November 17, 1880, I put in a pond 80 rods long by from 20 to 50 feet wide, formed in an old bed of the river. It has no current, but the rise and fall of the river affects it, as it is open at the lower end. It is from 2 to 12 feet deep, and has a muddy bottom.

PLANTS AND ENEMIES.—Cat-tails and swamp-grass grow in the pond. Frogs, suckers, chubs, shiners, and bull-heads are found in it.

FOOD.—I do not feed the carp.

GROWTH.—This spring, a dead carp 17 inches long, 5 inches in thickness, and $\frac{3}{4}$ pounds in weight was found.

DIFFICULTIES.—Poachers fish for the carp. When I have a suitable place for the carp, I will want more.

521. *Statement of John E. R. Patten, Hornellsville, Steuben Co., N. Y., Dec. 22, 1883.*

DISPOSITION OF CARP RECEIVED.—In the summer of 1880 I received 9 carp. My pond is 20 by 36 feet. The water is $3\frac{1}{2}$ feet deep, and the bottom is muddy. This pond is supplied with water by a small rill. The water is medium cold. The carp died the first winter. The weather was severely cold, and I think they died from being frozen or from suffocation. I found the remains of them in the spring of 1881.

PLANTS.—The pond contains ordinary water-plants.

ENEMIES.—Frogs only in pond.

FOOD.—I gave the carp bread crumbs daily.

522. *Statement of C. D. Northrop, Woodhull, Steuben Co., N. Y., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on August 6, 1880, and those received subsequently, I put in a pond 16 by 64 feet, with an average depth of 2 feet, and 8 inches of mud on the bottom. Probably 50 barrels of water, at a temperature of from 55° to 75°, flow through the pond per day.

PLANTS.—Plants indigenous here grow in the pond.

ENEMIES.—A few small frogs and plenty of water-snakes, but no fish nor turtles inhabit the pond.

FOOD.—I did not feed the carp.

GROWTH.—In October, 1882, the 2 original carp remaining weighed, respectively, 1 $\frac{1}{2}$ and 1 $\frac{1}{4}$ pounds. They grew rapidly, and would soon have attained an enormous size. I am at a loss to know the cause of the disappearance of some of the original carp, and why those remaining do not spawn.

523. *Statement of E. B. Sutton, Babylon, Suffolk Co., N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on December 7, 1880, I put in a small pond, with a depth of 5 feet, a good outlet, and fed by a large pond. As the water got very hot in summer, I removed them to a mill-pond covering about 20 acres, and supplied with an abundance of water.

PLANTS AND ENEMIES.—Pond-lilies grow in the pond. The brook trout that inhabit the pond probably fed on the carp.

FOOD.—While in the small pond, I gave the carp bread and cabbage leaves. I seldom give them any food now.

CARP IN SOUTH BAY.—The carp escaped into South Bay when my mill was undergoing repairs. I learn that carp of large size have been taken there.

524. *Statement of Lester H. Davis, Coram, Suffolk Co., N. Y., Sept. 2, 1883.*

GROWTH.—A few days ago I took from my pond 2 leather carp weighing, respectively, 5 and 5½ pounds. When they were placed in the pond 2 years ago they were nothing but an inch of transparency with a bullet head at one end.

EDIBLE QUALITIES.—The larger of these 2 carp was eaten at the Ichthyophagous Club in New York. The officers voted it excellent eating.

HOW TO CATCH CARP.—I caught the carp with hook and line.

SALE OF CARP.—I placed these carp at Mr. Blackford's stand in Fulton Market. These 2 fish have had no appreciable effect on the markets, but I think carp will soon be an important item in the bill of fare in the Southern and Western States.

525. *Statement of Stehlin & Co., Huntington, Suffolk Co., N. Y., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 86 carp received in December, 1880, I put in a pond covering over 9 acres, with a sandy and muddy bottom. It is fed by springs, and has no outlet except through gravel.

PLANTS AND ENEMIES.—A mossy vegetation is found in the pond. Small frogs and water-turtles infest it.

FOOD.—I do not feed the carp.

GROWTH.—The original carp weigh from ½ to 1½ pounds. I have seen no young yet.

DIFFICULTIES.—Poachers visit the pond.

526. *Statement of Irad W. Gildersleeve, Mattituck, Suffolk Co., N. Y., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 30 carp received in October, 1881, into a ½-acre pond, which after much rain is sometimes increased to from 2 to 3 acres. It has a bottom of clay, and, as it is supplied only by rain-water, it occasionally dries up. In September, 1882, I removed from 6 to 8 of the carp to a pond covering from 20 to 30 acres, with a depth of from 15 to 20 feet. In 1882 I received another lot, and placed them in a pond covering from 40 to 50 acres, and being very deep.

PLANTS.—Timothy predominates in the small pond, which is formed in a grass lot.

ENEMIES.—Nothing that disturbs the carp inhabits the small pond. The large ponds are stocked with black bass, pickerel, perch, roach, catfish, &c.

FOOD.—I do not feed the carp.

GROWTH.—Two of the carp of the lot that I removed to the large pond weighed, respectively, 2 and 2½ pounds. The others were very much smaller. The original carp were rapid growers.

DIFFICULTIES.—In September, 1882, the small pond dried up, and all the carp except the ones removed to the large pond perished.

527. *Statement of John C. Wells, Mattituck, Suffolk Co., N. Y., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in May, 1881, I put in a pond covering about 2 acres, with a depth varying from 1 to 6 feet. It is fed by springs from an upper pond, and has an outlet into Peconic Bay. It is protected by a valve in the dam, so constructed as to allow the passage of the discharge water from the pond, but closes when the tide rises, thereby preventing the entrance of salt water.

ENEMIES.—Eels got into the pond from Peconic Bay.

DIFFICULTIES.—As the carp have not been seen since they were put in the pond, I am inclined to think that the eels devoured them.

MISCELLANEOUS.—If I can get another supply of carp I will place them in a smaller inclosure, which is free from all fish, till they are large enough to be put in the larger pond.

528. *Statement of Samuel J. Hopkins, Miller's Place, Suffolk Co., N. Y., Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 carp in May, 1880. My pond covers ¼ of an acre, has a bottom of sand, mud, and bog, and water from 2 to 4 feet deep. The water changes about once a week and stands at about 74° in summer.

ENEMIES.—Frogs and eels are found in the pond.

FOOD.—In the first part of the summer I gave them wheat, corn, and potatoes twice a week, but later not so often.

GROWTH.—I still have about all of them, and they weigh from 6 to 8 pounds.

REPRODUCTION.—In 1881 there were several thousand young; since that not many. The 1881 brood would now weigh 3 to 5 pounds each. I have supplied about 600 carp to stock neighboring ponds.

EDIBLE QUALITIES.—I have eaten one carp which was half baked and half fried, and think them very good, very much like bluefish.

DIFFICULTIES.—The most serious difficulty has been the eels and frogs. The carp do not seem to thrive real well, but I have not determined the trouble.

529. *Statement of George W. Hopkins, Mount Sinai, Suffolk Co., N. Y., Oct. 10, 1880.*

GROWTH.—The carp received through Mr. E. G. Blackford were about 3 inches in length, but by October 1, 1880, measured from 12 to 14 inches each.

530. *Statement of Edward Thompson, Saint Johnland, Suffolk Co., N. Y., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp received November 6, 1880, I put in a pond covering about 10 square rods, from 1 to 4 feet deep, having a muddy bottom. The water, of which very little flows out of the pond, is quite warm in summer, though it freezes over in winter.

PLANTS.—Flags and rushes grow in the pond.

ENEMIES.—Bull-frogs and plenty of common frogs and small water-turtles infest the pond.

FOOD.—I have given the carp cabbage, clams, lettuce, and bread. They are very fond of minnows when scaled, and, in fact, eat almost anything given them.

GROWTH.—The 22 original carp remaining vary in weight from 3 to 6 pounds, and 1 of them would, perhaps, weigh 8 pounds.

REPRODUCTION.—There are many young in the pond, and also quite a number of yearling, which vary in weight from 8 to 16 ounces.

EDIBLE QUALITIES.—It would be an utter impossibility to take any fish out of a muddy hole and expect it to taste like a fish out of a pond with pure, clear water such as you could stoop down and drink out of. One fact which cannot be got over is that different food and water will make either animal, fowl, or fish taste differently, no matter where they come from or what their names are. I once sent Mr. Eugene G. Blackford two brook trout, about $\frac{1}{2}$ pound each, and asked him his opinion as to flavor, and he pronounced them as good, if not better, than any he had ever eaten. Why? Because they were fed on the natural food for trout. Again, I have eaten trout that tasted very distinctly of liver. Why? Because they were fed on liver. It is the food and water which makes the carp have so many different tastes.

I might ask one more question. Can you find two even in one family to whom things taste alike? It is not so in mine. I would venture to say it would be the same with beef, pork, or any other fish, no matter where it came from.

The carp is the best fish I know of for workingmen and mechanics, who rarely lack an appetite, and who will always consider the fish good when they can get it. My personal opinion is that it is a very superior fish, and I will even go so far as to say that I prefer it to trout.

MISCELLANEOUS.—I expect to have a pond covering about 5 acres, and at all seasons of the year a depth of water varying from 1 to 10 feet.

531. *Statement of J. B. Hawzhurst, Homowack, Ulster Co., N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in May, 1881, I put in a pond 240 feet in circumference, with a muddy bottom. A small vein of moderately cool spring water feeds the pond. Plants do not grow in the pond.

ENEMIES.—Shiners inhabit the pond.

FOOD.—Occasionally I give the carp potatoes, bread, and other food.

GROWTH.—Yesterday I caught a carp that measured 15 inches in length. Had I fed them well I think they would have been double their present size.

REPRODUCTION.—The young in the pond average from 3 to 4 inches in length.

532. *Statement of William E. Sill, Sodus Point, Wayne Co., N. Y., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in May, 1881, I put in a $\frac{1}{2}$ -acre pond, with an average depth of 1 foot, and a muddy bottom. A varying supply of surface water feeds the pond.

The pond dried up in the fall of 1881, and all the carp perished.

533. *Statement of George W. Dibble, Irvington, Westchester Co., N. Y., Oct. 31, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 25, 1879, I received 12 carp, and on November 21, 1882, 20 more. My pond covers several acres, is from 6 to 10 feet deep, and has a muddy bottom.

PLANTS.—Plants indigenous here grow in the pond.

ENEMIES.—The pond is inhabited by frogs and turtles, shiners, and sunfish.

FOOD.—I do not feed the carp.

GROWTH.—October, 1882, I caught 5 original carp. The largest weighed 8½ pounds and the rest 7 pounds and over. When caught they appeared to be ready to spawn.

EDIBLE QUALITIES.—I have eaten carp boiled and baked. They are very good when boiled, but better when baked. The edible qualities of the carp are fair.

534. *Statement of Samuel K. Satterlee, Rye, Westchester Co., N. Y., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received November 1, 1880, the 20 in the fall of 1881, and the 2 one-year old carp that I bought I put in a pond, oval in shape, about 40 by 100 feet, with an average depth of 3 feet, and a muddy bottom. There are 2 holes in the bottom, with sides of stone, one of which is 3 by 10 feet and 3 feet deep; the other is circular in shape, with a diameter and depth of 4 feet. From September to March the flow of water is from 2 to 3 inches, and from June 15 to September 1 it is not equal in amount to that absorbed by the earth and that consumed by evaporation. To-day, at 5 o'clock, the temperature of the water 3 feet below the surface is 77°.

PLANTS.—There are no plants in the pond except a few water-lilies which I planted; nor is there vegetation at its sides, as it has a stone wall.

ENEMIES.—Occasionally frogs, but no other fish than carp, inhabit the pond.

FOOD.—Every afternoon I give the carp stale bread, and occasionally I feed them on boiled potatoes and hominy made into Indian cakes, all of which they like. I sometimes throw in water-cress, but they do not seem to relish it.

GROWTH.—In the fall of 1881 I gave away 6 original carp, and 8 more were stolen, 1 of which was fully 10 inches long. There are none of the original carp remaining. I have from 6 to 8 of the second lot, which average from 5 to 7 pounds.

REPRODUCTION.—Besides the number of young carried off by an overflow, and the ones eaten by frogs, fish-hawks, &c., I have about 1,500. Of this number, 30 average 7 inches in length, 1,000 from 3 to 4 inches, and some others are still smaller.

DISTRIBUTION OF YOUNG.—I distributed gratuitously to owners of ponds 400 young in the fall of 1882, and 150 more in the spring of 1883. I also intend to give away what young I may raise in the future, except a few which I shall keep for breeding purposes. In October next I will put from 6 to 8 of the largest in a smaller pond, where I will also place California trout, in order to ascertain the self-sustaining power, growth, and age of the carp.

MISCELLANEOUS.—The reason why I have not lost any carp by ice, which forms over my pond to the thickness of 2 feet, is that the trenches or holes before alluded to afford them protection from the severity of the winter. The bottoms of these trenches should always be 4 feet from the ice. They also afford the carp a cool retreat in warm weather. I have partially constructed another small pond, with a depth of 3½ feet, and it always has a plentiful supply of pure, cool spring water. The carp seem to grow more rapidly in this pond, where a larger supply of natural food is obtainable, and do not rise to the food offered them. When completed the pond will be 40 by 100 feet.

535. *Statement of C. Deutermann & Son, White Plains, Westchester Co., N. Y., Apr. 2, 1884.*

GROWTH.—We received 20 carp about 18 months ago. Six of these survived, and have grown to such size that we have taken great interest in them. If more can be obtained, we will stock all of our ponds with them.

NORTH CAROLINA.

536. *Statement of Thomas L. Martin, Harrisburg, Cabarrus Co., N. C., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in February, 1880, and the ones in December, 1882, I put in two ponds, covering, respectively, ½ and ½ of an acre. They are on a spring branch, and have a maximum depth of 5 feet, and muddy bottoms. From 1 gallon to 2 gallons of water flow through them per minute.

PLANTS AND ENEMIES.—Grass, swamp-lily, and flag or cat-tail grow in the pond. Frogs and turtles, but no other fish, inhabit it.

FOOD.—I sometimes give the carp bread and cabbage.

GROWTH.—In the fall of 1882 the original carp averaged 4½ pounds,

REPRODUCTION.—June 9, 1883, I saw signs of spawning, and 14 days later there were a great many young in the pond.

DIFFICULTIES.—Poachers visit the pond.

537. *Statement of C. A. Barringer, Springville, Cabarrus Co., N. C., Sept. 22, 1883.*

GROWTH.—I have just drained my pond, and find 4 fine carp about 14 inches long of those you sent me last February.

ENEMIES.—I caught a turtle in July, and also a very large snapping-turtle, which I think had eaten the others.

538. *Statement of Dr. R. L. Beall, Lenoir, Caldwell Co., N. C., Feb. 28, 1883.*

REPRODUCTION.—I placed in my pond 47 young carp less than 2 years ago. On draining it I now find 2,000 carp.

539. *Statement of J. A. Dula, Lenoir, Caldwell Co., N. C., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 1, 1882, I received 20 carp, which I gave to a neighbor, I having received 130 from Col. G. N. Folk. My pond covers an acre, and is so constructed that the water can cover a larger area when needed. It is 2 feet deep, and has a bottom of black loam. There flows through the pond about 1½ inches of water.

PLANTS.—Wild oats, rushes, &c., grow in the pond.

ENEMIES.—I try to exterminate the frogs and turtles. There are no other fish in the pond.

FOOD.—The carp are very fond of wheat bread and watermelons. I do not feed them regularly.

GROWTH.—Some of the carp weigh 2 pounds. All of them are growing rapidly and are creating a sensation in my neighborhood. I think the carp a very hardy fish.

540. *Statement of George N. Folk, Lenoir, Caldwell Co., N. C., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The 17 scale and 3 leather carp received on December 7, 1880, I put in a pond covering less than ½ acre, having a width varying from 3 to 25 feet, and a depth from 1 to 7 feet. Cool water from a spring at the head of the pond discharges just enough water into it to prevent stagnation.

PLANTS.—Rushes and reeds grow in the pond, and the bloom and seed of pussy willow and sycamore trees are blown upon its surface.

ENEMIES.—Frogs, turtles, and snakes are a serious annoyance to the carp. No other fish inhabit the pond.

FOOD.—In winter, the carp take scarcely any food, but are ravenous in summer and come to the top for the wheaten bread that I throw upon the water. They will eat anything that is given to chickens and pigs, and are less expensive to raise.

GROWTH.—There are 15 carp remaining. The leather are the largest and average from 6 to 7 pounds.

REPRODUCTION.—There are several thousands of young in the pond, and they vary in size from 1 inch to 14 inches.

DISPOSITION OF YOUNG.—I have given young to my neighbors to stock their ponds. I have still many applications for young.

HARDIHOOD.—Carp are thrifty, and can be more easily raised than any fish that has been cultivated in this hilly country. They are attracting general attention, and are wanted by nearly every enterprising landowner.

541. *Statement of J. A. Long, Yanceyville, Caswell Co., N. C., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in December, 1879, I put in a pond covering about ½ acre, with an average depth of 3½ feet, and a muddy and sandy bottom. A small spring supplies the pond with water.

PLANTS AND ENEMIES.—Flag or cat-tail grows in the pond. I cannot rid it of cat-fish, perch, terrapins, and loggerhead turtles.

FOOD.—Occasionally I give the carp corn and corn-bread.

GROWTH.—The 10 carp remaining, average about 5 pounds. I have seen a carp which was 15 months old that weighed 4 pounds.

REPRODUCTION.—There are many young in the pond, and the oldest average about 1 pound in weight.

542. *Statement of Ira A. Fitzgerald, Linwood, Davidson Co., N. C., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in February, 1881, and 10 received in March, 1882, I placed in 2 ponds covering, respectively, $\frac{1}{4}$ and $\frac{1}{2}$ acre, with depths of 4 and 7 feet, and muddy bottoms. A 2-inch flow of water, at a temperature in winter of 40° and in summer of 70°, supplies either pond.

PLANTS AND ENEMIES.—Flag and a few water-lilies grow in the ponds. A few frogs but no other fish inhabit it.

FOOD.—I give the carp bread, boiled corn, wheat, cucumbers, chopped melon rinds, and other vegetables.

GROWTH.—The 18 original carp are each larger than shad.

REPRODUCTION.—Though the carp did not spawn till 1883, the young are as large as a man's hand.

DIFFICULTIES.—I find it difficult to keep vermin out of the ponds.

MISCELLANEOUS.—I intend to construct other ponds this fall, and would be glad to get some leather and mirror carp.

543. *Statement of Robert H. Ricks, Rocky Mount, Edgecomb Co., N. C., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on February 25, 1881, and 18 more subsequently, I put in a pond covering 12 acres. It has a muddy bottom, and a considerable amount of water in winter but little during the dry seasons. In summer the water is warm.

PLANTS AND ENEMIES.—Flag and grass grow in the pond. I have nearly exterminated the frogs and turtles, but a variety of creek fish still inhabit it.

FOOD.—I do not feed the carp.

GROWTH.—Seventeen months after the carp were put in the pond, I caught one that weighed 4 pounds.

REPRODUCTION.—The young are from 10 to 12 inches long.

DIFFICULTIES.—Mill-pond roaches give the carp more trouble than anything else.

544. *Statement of L. A. Thornburg, Dallas, Gaston Co., N. C., Sept. 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in April, 1880. My pond covers 4 acres, has a muddy bottom, and is 7 feet deep in the deepest part. A small creek flows through it. It is warm in summer and sometimes ice forms on it in winter.

PLANTS.—The pond contains a plant, which under the water is like moss, but when it comes to the surface has a small leaf.

ENEMIES.—There are perch and eels, turtles, frogs, and minnows in the pond. I have to-day moved the carp to a small pond which is free from other fish.

FOOD.—I have not fed them.

GROWTH.—I have all of the original lot, and they are about 2 feet long, weighing 8 pounds each.

REPRODUCTION.—I have seen 1 of the young which was 6 inches long.

545. *Statement of A. L. Darden, Contentnea, Greene Co., N. C., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—On February 28, 1881, I received 20 carp. I placed them in a mill-pond which covers from 5 to 7 acres, is from 1 to 3 feet deep, and has a muddy bottom. In winter a great quantity of water flows through the pond, but in summer a very little. Spring water flows through the pond except during a big rain.

PLANTS.—The pond contains willow trees but no grasses.

ENEMIES.—Bull-frogs, turtles, catfish, mullet, perch, and eels in small quantities inhabit the pond.

GROWTH.—Two of the original carp were about 28 inches long and weighed 10 pounds each.

EDIBLE QUALITIES.—We have eaten carp, some stewed, some baked, and some fried. All were pronounced of the very best by those who ate them. I think the carp in the finest fish that I ever saw, and has the finest flavor for eating. I prefer it stewed.

546. *Statement of James W. Albright, editor of the Daily Bugle, Greensborough, Guilford Co., N. C., May 2, 1883.*

GROWTH AND REPRODUCTION.—About two years ago last February, 18 carp about 4 inches long were placed in the Albright mill-pond, 2 miles north of this place. This pond was drawn yesterday and a wholesale capture of carp took place. Two old ones were captured, and the 1 shown us by Mr. J. E. McKnight measured 24 inches in

length, 16 inches around the body, and weighed 7 pounds and 2 ounces. The other was about the same size. There were 105 caught which weighed from 16 to 24 ounces, and measured from 10 to 13 inches in length. Several large ones are known to have escaped, and it is hoped they may stock the ponds lower down the stream.

Thus it will be seen that these fish spawn as early as 12 months of age, but when they cease to grow we know not.

547. *Statement of H. G. Ewart, Hendersonville, Henderson Co., N. C., Mar. 20, 1884.*

DISPOSITION OF CARP RECEIVED.—I placed the 40 carp, which I received December 15, 1881, in an extensive spawning pond, covering an area of 100 by 150 feet, with a depth of from 4 inches to 5 feet. I subsequently built hatching, nursery, and stock ponds. My hatching pond covers an area of 5 acres. It is fed by water from an adjacent spring, which is conducted in wooden troughs. The water in the pond is from 2 inches to 4 feet deep. Below this pond is the nursery pond, the depth of which varies from 2 inches to 6 feet, with a soil of black loam. The stock pond is situated $\frac{1}{2}$ of a mile from the nursery pond.

PLANTS.—The hatching pond is well supplied with needle grass, pickerel weed, water-lilies, wild rice, and other aquatics. The nursery pond also contains numerous aquatic productions.

ENEMIES.—Green frogs, musk-rats, turtles, snakes, cranes, herons, and kingfishers disturb the carp, and the only remedy is a shotgun, which must be used diligently and effectively during the summer months; otherwise the carp would soon be exterminated. I killed a blue crane which had swallowed whole a carp weighing 1 $\frac{1}{2}$ pounds. The pond can be protected from poachers by stretching barbed wire under the surface of the water, close to the banks. This will soon put a stop to night seining.

FOOD.—Commencing in the spring, I daily give them lettuce leaves, turnip tops, and kitchen scraps. Later, I feed cabbage leaves, melon rinds, sweet corn, squash, &c., and in the fall pumpkins, boiled turnips, cabbage, potatoes, &c. They seem especially fond of pumpkins.

GROWTH.—I have carp weighing 5, 7, and 8 pounds which are only 3 years old, and 2 year-old carp weighing from 3 $\frac{1}{2}$ to 4 pounds. In South Carolina, Georgia, or the eastern part of this State, where the waters are warmer, the fish would doubtless have attained a weight of 15 pounds. In this section, with long winter and late springs, they will not grow with such rapidity.

REPRODUCTION.—Last September I caught a female carp, weighing only 1 $\frac{1}{2}$ pounds, that must have had 20,000 eggs in it. A female carp weighing 5 pounds is said to contain 500,000 eggs. Unlike other fish, they do not spawn at certain seasons, but drop their eggs as soon as each female attains maturity, whether that be in April or November.

Just before the spawning season the carp evinces great activity. Naturally sluggish, it now swims rapidly through the pond, and often, like the mullet, jumps its entire length out of the water. When ready to deposit its eggs, the female carp heads rapidly for the warm, shallow water, closely pursued by the male. When the female drops her eggs, the male swims closely behind her, and dropping his milt among them vigorously lashes the water with his tail, mixing the spawn. This is the method of impregnation, and the eggs hatch in from 6 to 12 days, according to the temperature of the water.

EDIBLE QUALITIES.—Some carp were taken after the spawning season, late in the fall, and were plump and in good condition. I tried them baked and fried, and found them far superior in flavor to the mullet or perch, and very nearly, if not indeed quite, the equal of the shad. The flesh is very white, and is of about the same consistency as the latter fish.

The carp is as free from bones as any fish I know of. Indeed, with large carp, the bones give no trouble, the flesh flaking off nicely. Carp, however, should not be eaten during the spawning season, or immediately thereafter, as at that time, like all other fish, the flesh is soft and of an unpleasant taste. I do not believe, however, that carp taken from stagnant and offensive pools of water would be fit to eat; for, in such, the flesh of the fish will undoubtedly be affected and rendered unfit for table use, having a moldy and muddy taste.

HOW TO CATCH CARP.—The carp is not so gamy as the sheepshead, trout, or spanish mackerel, but it takes the hook freely at all times, is a strong puller and fights to the last. It often happened last fall that they snapped my line in two and escaped with bait and hook.

VITALITY.—Carp are wonderfully tenacious of life. Last September I caught a 2-pound carp, placed it in an empty bucket, and after a walk of $\frac{1}{4}$ mile and a delay of at least $\frac{1}{2}$ of an hour, placed it in a tub of water. To my surprise in a few seconds it was as lively as when taken from the pond. I am now shipping breeders over the States, so far without loss.

DIFFICULTIES.—By committing the serious blunder of building cheap dams, the heavy freshets of 1882 swept my dams away, leaving me only a dozen or more of my carp. The 3 ponds which I subsequently built have been constructed on an improved plan.

FUNGUS.—I have been troubled but little with fungus. This is a moldy growth on the carp's back, caused by impure water, sometimes by wounds, often from a weak condition of the fish. There is no cure for it. Whenever it appears, the only thing to be done is to drain the ponds, kill all the diseased fish, and commence anew.

MISCELLANEOUS.—Whenever I ascertain that the carp are spawning, I examine the brush and twigs carefully, and transfer the branches covered with the eggs to the hatching pond, in which no fish are kept. Here they are placed in shallow water and carefully protected from frogs, turtles, &c., until hatched, when they are regularly fed with small particles of bread or cracker crumbs saturated in sweet milk. A trunk which extends through the dam is a pass-way for the small fry in the hatching to the nursery pond. The mouth of this trunk in the hatching pond is screened with galvanized wire mesh, large enough to admit of the passage of the little fry into the nursery, but too small to permit ingress to larger fish. In the nursery pond the hatch of this year will be allowed to remain until November, when the pond will be drawn, and the fry, then lively little fingerlings able to care for themselves, transferred to stock pond. This transfer is made by placing the young carp in 40-gallon barrels, and hauling them to the stock pond, where they have an unlimited pasture of about 75 acres in which to roam, and an inexhaustible supply of vegetable and insect life to fatten on. At a cost of \$2,000, I have a most complete set of ponds, which, when the water is flush, cover 50 acres. I have three ponds—a nursery pond covering 2½ acres and a stock pond covering 45 acres, in addition to the spawning pond. All of these abound in aquatic plants.

548. *Statement of P. C. Carlton, Statesville, Iredell Co., N. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1880, and some subsequently. My pond contains 1 acre, and has an average depth of 1½ feet, with a bottom of alluvial soil. There is a flow of 1½ inches of spring water into it.

PLANTS AND ENEMIES.—It contains pond-lilies, wild rye, &c., and also a few frogs and turtles which I am trying to exterminate. Frogs, turtles, cranes, and musk-rats eat the spawn of carp.

FOOD.—I feed the carp with soft corn and mush twice weekly, sometimes 3 times.

GROWTH.—There are 12 or 15 of the original lot left. They weigh from 5 to 7 pounds.

REPRODUCTION.—They have produced a large number of young, which are from 2 to 12 inches long.

MISCELLANEOUS.—I consider the carp the best fish ever introduced into Southern waters.

549. *Statement of C. W. Alexander, Charlotte, Mecklenburg Co., N. C., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880. My pond covers ¼ acre, has a muddy bottom, and is supplied from springs.

PLANTS.—An abundance of natural grasses grow about the pond.

ENEMIES.—There are quite a number of perch in the pond. I have succeeded in keeping the turtles caught out. I have tried to kill out everything but the carp.

GROWTH.—I have 19 of the original lot, and they will weigh from 5 to 7 pounds each.

REPRODUCTION.—I think the perch destroyed the spawn, as, when I drew off the pond last fall, I found at least 3 bushels of perch.

550. *Statement of W. W. Grier, Charlotte, Mecklenburg Co., N. C., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The 40 carp received in November, 1880, I placed in an artificial pond covering about ¼ acre, with a depth from 18 inches to 4 feet, and a muddy bottom. A moderately cool spring supplies the pond with water.

PLANTS.—Cresses grow in the pond, and ordinary meadow grasses along the banks.

ENEMIES.—Frogs and turtles in abundance, but no other fish inhabit the pond.

FOOD.—I give the carp scraps of fresh meats, rabbit-meat, and different kinds of coarse food.

GROWTH AND REPRODUCTION.—I think there are 36 old carp remaining. I can give no idea of the number of young. One measured 14 inches in length.

DIFFICULTIES.—I have not given the carp the attention they should have received. I find it difficult to rid the pond of the frogs and turtles.

551. *Statement of S. P. Blankenship, Pineville, Mecklenburg Co., N. C., 1883.*

FOOD.—I have received in all 60 carp. I feed them on boiled rice, wheat, peas, and scraps from the table.

REPRODUCTION.—I cannot count the young, but they are very numerous. I expect to have an abundance of fish for my table another year, even in my small pond.

552. *Statement of David Farlow, Level Plains, Randolph Co., N. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received about 20 carp in March, 1881. My pond covers about $\frac{1}{2}$ acre, and has an average depth of about 2 feet, and a muddy bottom. A strong spring branch supplies the pond with water.

PLANTS AND ENEMIES.—Weeds and a coarse grass grow in the pond. Bull-frogs and branch minnows, but no other fish inhabit it.

FOOD.—Irregularly, I feed the carp on bread.

GROWTH.—There are from 3 to 4 old carp remaining, and these average 16 inches in length, and from 2 to 3 pounds in weight.

REPRODUCTION.—There are perhaps 1,000 of last year's young in the pond, and these are from 8 to 10 inches long, and weigh from $\frac{1}{2}$ to 1 pound.

DIFFICULTIES.—Pouchers visit the pond.

553. *Statement of P. N. Stanback, Little's Mills, Richmond Co., N. C., Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 80 carp in November and December, 1879, and 14 in February, 1883. My pond is 45 by 70 feet, of muddy bottom, and 7 feet deep. It is amply supplied with spring water at all seasons. It never gets hot.

PLANTS.—There is a fringe of grass, rushes, &c., around the border.

ENEMIES.—There are a few perch, a few frogs, but no turtles.

FOOD.—I feed them two or three times a week on cooked bread. They became very gentle last summer, and would come readily to their food.

GROWTH.—Those that have not been fished out by thieves are about 12 to 14 inches long.

REPRODUCTION.—There are a few young which are 4 or 5 inches long.

DIFFICULTIES.—The only difficulty has arisen from the very thievish negroes, who could doubtless inform you about their edible qualities. I cannot eat any because I have been too eager to propagate them.

MISCELLANEOUS.—I have prepared 3 ponds, with an aggregate length of 320 feet, 50 feet width, and inclosed with a paling 7 feet high. I surmounted it by a strand of barbed wire. I stocked the first pond with perch and redhorse, which did finely but for the negroes. Some of them had attained the weight of from 6 to 9 pounds, but I lost them all in one day. The carp grew finely as I fed them bountifully with bread every day, so that from December to June they had attained a size of from 10 to 12 inches, and came regularly to their feeding-place. This pleased me so much that I showed them to many friends, and one day a few negroes were admitted to see the sight. Shortly afterward the carp failed to be seen basking in the shade of the bridge over the pond. I have raised the barbed-wire fence, and am going to try it again.

554. *Statement of W. R. Fraley, Salisbury, Rowan Co., N. C., Sept. 8, 1882.*

GROWTH.—I received on the 8th of December last, 20 mirror carp about 3 inches long, which would have weighed probably about $\frac{1}{2}$ ounce each. Since then I have weighed and measured them at various times, with the following results, to wit:

	Length.	Width.	Weight.
1882. May 20	9 $\frac{1}{2}$ inches.	3 $\frac{1}{2}$ inches.	1 pound.
June 20	12 $\frac{1}{2}$ inches.	4 $\frac{1}{2}$ inches.	2 pounds.
July 20	14 $\frac{1}{2}$ inches.	4 $\frac{1}{2}$ inches.	2 $\frac{1}{2}$ pounds.
August 15	16 $\frac{1}{2}$ inches.	5 inches.	3 pounds.

555. *Statement of W. F. Watson, Salisbury, Rowan Co., N. C., Aug. 10, 1882.*

GROWTH.—On April 1, I received a lot of carp measuring from 2 $\frac{1}{2}$ to 3 inches in length and weighing about $\frac{1}{2}$ ounce each. On August 3 one of these fish measured exactly 12 $\frac{1}{2}$ inches in length, 4 $\frac{1}{2}$ inches in width, and weighed 1 $\frac{1}{2}$ pounds. The fish was fine and fat and very active.

556. *Statement of Samuel H. Hand, Reidville, Rockingham Co., N. C., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 scale carp received in March, 1881, I put in a pond 25 by 60 yards, with a depth varying from 2 to 7 feet. The water that flows into the pond is temperate and clear.

PLANTS.—Cat-tails grow in the pond. It contains nothing that disturbs the carp.
FOOD.—I give the carp refuse from the table.

GROWTH.—The 25 original carp vary in weight from 1½ to 2½ pounds, and are hearty. I have seen no young yet.

557. *Statement of Oliver Hicks, Rutherfordton, Rutherford Co., N. C., Oct. 28, 1882.*

VALUE.—I would not take \$500 for the prospect my carp pond now offers.

558. *Statement of M. R. Banner, Walnut Cove, Stokes Co., N. C., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp October 13, 1880. My pond covers ¼ of an acre, is 8 feet deep, and has a muddy bottom. It is supplied with water from a small spring branch, the mean temperature of which in summer is about 80°C.

PLANTS AND ENEMIES.—It contains a few weeds, vines, and rushes. Some frogs and one muskrat found their way into it.

FOOD.—Once a week I give them ears of corn and corn-bread baked without sifting.

GROWTH.—The 6 of the original lot which I had left were 16 inches long on the 14th of last September, at which time carp pond and all were washed away.

REPRODUCTION.—There were a good many young there in 1882, but they were very small.

559. *Statement of Jos. A. Haywood, Raleigh, Wake Co., N. C., Feb. 23, 1884.*

GROWTH.—The mirror carp which I received from the Government in 1882 now weigh from 10 to 15 pounds each.

560. *Statement of S. G. Worth, Supt. Fisheries, Raleigh, Wake Co., N. C., Oct. 25, 1883.*

GROWTH.—Messrs. Joe and J. Pugh Haywood, of Raleigh, drew off their pond 2 weeks ago and found 16 three-year-old fish, the smallest was 12 and the longest 15 pounds in weight.

A letter from Jacob E. Masters, of Red Hill, Mitchell County, yesterday, reports a carp, measured with a square, 19 inches long, thick and broad in proportion. He secured the fish this year, and in March they were only 4 inches long. Mitchell is one of our highest and coldest counties, containing mountains more than 5,000 feet high.

EDIBLE QUALITIES.—Dr. D. W. C. Benbow, of the Benbow House, Greensborough, bought 11 carp a few days ago and served them for breakfast to his guests. They were on the bill of fare, and all who ate with one accord pronounced them excellent.

561. *Statement of W. K. Hunter, Rolesville, Wake Co., N. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on March 6, 1881, I put in a pond covering about 1 acre, with a depth of 5 feet, and a muddy bottom. A stream of 4 square inches, colder than ordinary branch water, flows into the pond.

PLANTS AND ENEMIES.—Oat-hay, or grass, grows in the pond. A few bull-frogs, but no other fish than carp inhabit it.

GROWTH.—The 18 carp remaining average 4 pounds in weight.

REPRODUCTION.—The 200 young vary in length from 3 to 7 inches.

DISPOSITION OF YOUNG.—I have stocked 5 ponds larger than the one in which the original carp are kept.

OHIO.

562. *Statement of George Weedman, M. D., Nova, Ashland Co., Ohio, Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in November, 1880, I put in a pond covering about ½ acre, with a depth of from 7 to 10 feet, and a bottom composed of sand and gravel. Pure spring water feeds it.

ENEMIES.—Black bass and sun-fish are found in the pond.

FOOD.—I give the carp light bread and crackers about twice a week.

GROWTH.—I caught a carp in March which was 15 inches long. I saw one this evening that appeared to be nearly 18 inches in length.

REPRODUCTION.—When the water is still, great numbers of young can be seen. The pond is well supplied with them.

DIFFICULTIES.—I have no means of draining the pond.

563. *Statement of J. F. Brown, Conneaut, Ashtabula, Co., Ohio, July 30, 1883.*

DIFFICULTIES.—Although the 15 carp received on November 9, 1880, were in good condition when they went into their first winter quarters, they were all destroyed before the following spring by minks.

564. *Statement of the Athens Asylum for the Insane, Athens, Athens Co., Ohio, Dec. 14, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1881 we received about 1 dozen carp. In the year 1882 we received 2 lots of about 1 dozen each, and received in October, 1883, another lot. We kept the carp in a chain of artificial lakes of about 16 acres in area, puddled with clay and covered with sand and stones for spawning. The average depth of the water is 5 feet. In addition to the supply of water received from springs, water is pumped into the lakes from the Hocking River through 6-inch pipes. The temperature of the water is that of the surrounding atmosphere, but varies in parts by being fed by the water from the springs.

PLANTS.—Mosses, water-grass, sweet-water algæ, and pond-lilies are found in the lakes.

ENEMIES.—The pond contains frogs, catfish, sun-fish, and it is partially stocked with bass. Efforts were made to rid the lakes of all the fish except the bass.

FOOD.—We gave the carp no food artificially.

GROWTH.—A carp caught last spring weighed 1½ pounds.

REPRODUCTION.—We cannot tell the number of young produced.

565. *Statement of August Sourd, Fayetteville, Brown Co., Ohio, Sept. 11, 1884.*

GROWTH.—I received German carp in November, 1882. They are now 2 years old and weigh 6½ pounds. They have not spawned yet.

566. *Statement of Samuel Gillespie, Millville, Butler Co., Ohio, Dec. 14, 1882.*

DISPOSITION OF CARP RECEIVED.—When I received the carp November 7, 1881, they were about 2 inches long. After putting them in the pond I saw nothing of them until the 15th of June.

FOOD.—I then commenced feeding them twice a day on bread and potatoes. I continued this until the middle of July; then I commenced on sweet corn cut from the cob. They are very fond of this, and come as readily for it as my pigs. I still fed the scraps from the table, too, but corn is their favorite.

GROWTH AND HIBERNATION.—My fish surpass all expectations in growth. They are estimated by the most competent judges to weigh 4 pounds. On the 16th day of November they bade me adieu until next summer. They have caused quite an excitement, and people come miles to see them.

567. *Statement of Andrew Phillip, Kilgore, Carroll Co., Ohio, Aug. 4, 1884.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in November, 1880, I put in a pond covering about ½ of an acre, and having a muddy bottom. It is fed by 2 or 3 springs of moderately cool spring water. The pond contains no plants, but there are many frogs and turtles in it. I did not feed the carp.

DIFFICULTIES.—My pond is not adapted to carp culture, and, besides, such enemies as the turtle and snake are too numerous for them. None of the carp remain.

568. *Statement of Kemp Gaines, Springfield, Clark Co., Ohio, Nov. 28, 1881.*

FOOD.—The carp I received in November, 1880, were only from 2 to 3½ inches long, and I do not think the largest would have weighed more than an ounce. As the pond was so rich in food for carp, I did not deem it necessary to feed the carp regularly. It is true that food was sometimes given them, but it was done only to ascertain what they were fond of. I have fed water-grasses which grow around the pond, purslane, cut cabbage, boiled potatoes, and green sugar-corn. They seemed to relish all that we gave them, but showed a decided preference for the green corn, sliced from the ear. Any warm day I could bring the carp to the surface of the water by slicing some green corn in the water near the edge of the pond. Within from 2 to 5 minutes, from 10 to 15 of the 20 carp could be counted, their backs being out of the water. I do not know by what means they discovered in so short a time that the corn was in the pond.

GROWTH.—By the means of a dip-net I succeeded in taking from the pond in the last week in August 3 scale carp. They measured, respectively, 13, 14, and 15 inches, and

weighed $1\frac{1}{2}$, $2\frac{1}{2}$, and $2\frac{1}{4}$ pounds. The last part of October I caught in the same way a leather carp which was 18 inches long and weighed 2 pounds. I am satisfied that there are now fish in my pond which will weigh between 3 and 4 pounds, though not over 18 months old. Scale carp, being the more bulky fish, outweigh leather carp.

REPRODUCTION.—I think the carp spawned to some extent about the middle of last August, though I have seen no young. This, I think, is due to the fact that the pond has a bottom of clay and marl which gives the water a yellowish tint, thereby rendering it impossible to see small fish unless they be very near the surface. Since seeing my carp, quite a number of people have engaged young fish of me.

MISCELLANEOUS.—If the same interest which is now manifested among the farmers continues to exist, Ohio, in a few years, will be largely supplied with a cheap and wholesome food, produced from waste lands not heretofore utilized.

569. *Statement of Kemp Gaines, Springfield, Clark Co., Ohio, Dec. 11, 1882.*

GROWTH AND REPRODUCTION.—When I drained my pond this fall I found that I had lost but 1 of my carp, having 19 old fish living which weigh from 4 to 6 pounds each. About $\frac{1}{3}$ of the young fish hatched last spring and summer are from 6 to 7 inches long. By feeding them regularly they will grow much larger in the same length of time. I let one of my neighbors have 48 young fish from 2 to 4 inches in length, on the 20th of July, 1882. He fed them scraps from the table most every day. The 1st of November he drained his pond to stop a leak in the embankment and took the fish out. I was present and measured several myself. None were less than 8 inches, and many of them 12 inches long.

Sixteen applicants who did not get their ponds ready this fall expect to stock them next summer. If I still have good luck I think I will be able to fill all applications I may get another year. I have separated my scale and leather carp, thinking they will do better.

DISPOSITION OF YOUNG.—During the summer and fall I have furnished young carp for stocking 23 ponds with from 2 to 5 dozen fish to each pond. I have kept over 300 for stocking 2 ponds of my own which I constructed the past summer. [See also above.]

570. *Statement of Kemp Gaines, Springfield, Clark Co., Ohio, Nov. 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 10 scale carp and 10 leather carp. I have kept them in 2 artificial ponds covering about 1 acre each. The bottom is composed of mud and marl and the greatest depths are 5 and 6 feet. About as much water flows through the ponds as could be carried in a $2\frac{1}{2}$ -inch pipe. The temperature is about that of river water after the stream reaches the ponds.

PLANTS.—The bottom of each pond is covered with a kind of moss that grows in boggy mill-races, and the edges with different kinds of water-grasses.

ENEMIES.—There are no other fish, but there are plenty of frogs and toads in summer. There are also a few muskrats which cause trouble by burrowing in the embankments.

FOOD.—I feed the carp with green corn.

GROWTH.—I have 16 of the original lot still left; 8 scale and 8 leather. They are all about the same size. I weighed several when I drained the ponds this fall and found them to weigh $7\frac{1}{2}$ and 8 pounds.

REPRODUCTION.—About 4,000 young have been produced. Those 1 year old weigh from $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds, and the young fish are from $2\frac{1}{2}$ to 6 inches long.

DISPOSITION OF YOUNG.—I stocked 22 ponds last season with young carp and 24 ponds this season, and I still have several applications to fill. I supplied from 3 dozen to 10 dozen carp to each of the 24 ponds, and for each of the 18 of the 24 ponds stocked this season I furnished 5 or 6 yearling fish (3 males and 2 females) that will spawn next spring—over 100 in all. I have thus far supplied ponds in 5 different counties in my own State, and have 300 small and 40 yearling carp remaining for my own use.

EDIBLE QUALITIES.—During the summer quite a number of my neighbors and friends have eaten carp at my house, and their opinion as to superiority was about equally divided between the leather and scale varieties, which I had fried separately. Either of the kinds is equal to any of our river fish, bass not excepted.

HOW TO DISTINGUISH THE SEXES OF CARP.—I find that the key to this problem is in the form of the head of carp. I always examine the heads of carp taken for table use, and in but one instance have I been mistaken as to the sex of the fish thus examined.

571. *Statement of S. Miller, Felicity, Clermont Co., Ohio, Nov. 2, 1883.*

GROWTH.—I received through your agent, Frank N. Clark, of Northville, Mich., 20 carp, of last year's spawning, on March 8, 1883. After putting them in a pond I did not see them until the latter part of May. I soon after began to feed them and they became quite tame and grew very rapidly, so that by September 1 they were half as long as a man's arm, and would weigh fully 5 pounds each. About this time they went into winter quarters. The farmers in this section are wild over fish-ponds.

572. *Statement of W. J. Quarry, Felicity, Clermont Co., Ohio, Dec. 1, 1882.*

GROWTH.—The fish Mr. R. T. Adams received last December are doing nicely, and will weigh from 4 to 5 pounds.

573. *Statement of John H. Abrams, Moscow, Clermont Co., Ohio, Oct. 16, 1883.*

DISPOSITION OF CARP RECEIVED.—Last March Mr. Prickett received 20 carp, the largest not more than 2½ inches long. He lost all but 3 in a fresbet. These remained in a shallow pond until the middle of August, when they were found to measure 11½ inches in length.

574. *Statement of G. W. Prickett, Moscow, Clermont Co., Ohio, Dec. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The fish I received from you last winter I had in my pond, but the dam broke and I lost all but 2. The breaking was caused by too much surface water running into it. I have since built a race-way that leads all the water around the pond.

GROWTH.—The carp when received were about 3 inches long. Five months later I drained the pond and caught 2 fish that measured 11 inches each. I think this pretty good growth for 5 months.

575. *Statement of Leo Weltz, Wilmington, Clinton Co., Ohio, July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received in the spring of 1882 I put in a pond covering about ½ acre, with a depth of from 6 to 8 feet, and a bottom composed of clay. The temperature of the pond varies from 50° to 75°. It is fed by a hold spring.

PLANTS.—Various kinds of algae and moss grow in the pond; and shade-trees on the banks, which are soddy. Nothing that disturbs the carp inhabits the pond.

FOOD.—About twice a week I feed the carp on liver, and ground corn made in small balls, and sometimes give them chicken refuse.

GROWTH.—The original carp will weigh about ½ pound.

576. *Statement of S. O. Hawkins, Bucks, Columbiana Co., Ohio, Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 17 carp received on November 15, 1880, and 40 subsequently, I put in a pond 20 by 100 feet, with a depth of 3 feet, and a bottom of gravel. The dam broke and allowed the carp to escape into a creek, where they are now rapidly breeding. I have caught and eaten several of them. The water in it is very cold, and is quite swift. If I can get more carp, I will make another pond to cover ¼ acre.

577. *Statement of Theodotus Garlick, Bedford, Cuyahoga Co., Ohio, July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 15 scale carp in 1881, and 50 mirror through Mr. E. D. Potter, Toledo, Ohio, in 1882. We put the mirror carp in a ¼-acre pond, with a mucky bottom. It is supplied with water from a swamp that is fed by never-failing springs.

PLANTS.—Water-lilies (*nymphaea odorata*) grow in the pond. It will shortly be stocked with wild celery (*vallisneria spiralis*).

ENEMIES.—We try to destroy the frogs which inhabit the pond. It contains no other fish than carp.

FOOD.—Irregularly, we feed the carp on wheat and refuse from the table.

GROWTH.—The mirror carp weigh about 1 pound, the scale less, as they have been kept in much cooler water. There are 11 of the original scale carp remaining.

REPRODUCTION.—There is a plenty of young, which, being lately hatched, are very small. Carp are raised as easily here as poultry.

MISCELLANEOUS.—Next spring Mr. Leverett Tarbell, whom I have associated with me, and I will construct a 1-acre pond and from 1 to 2 small spawning and hatching ponds. As I think wild celery (*vallisneria spiralis*) a suitable plant for the carp to feed and deposit their eggs on, we will stock the pond with it, and also with wild rice. It will not be many years before carp culture will be a common occupation here. We have an abundance of water especially adapted to them.

578. *Statement of Henry W. Elliott, Cleveland, Cuyahoga Co., Ohio, Nov. 1, 1883.*

ENEMIES.—My neighbor on drawing off his pond and finding only one large carp instead of the hundreds he should have had, and discovering 7 or 8 muskrat holes in the banks, concluded that muskrats were the cause of the destruction and disappearance of the fish. I have since learned that carp ponds in Virginia, Pennsylvania, and Illinois have been robbed and the fish destroyed by muskrats. The attention of fish-culturists should be quickly drawn to this danger, and the prompt destruction of the muskrats may save much loss in the propagation of carp and goldfish. His nocturnal habit in feeding renders trapping the only practicable method by which to get rid of this pest. The hog-like character of carp in plowing up the bottom and banks of the pond, thereby keeping the water muddy and rendering themselves invisible, enables the entrance to the muskrat's burrow to be concealed until the water is drawn off. The fry and older carp stupidly poke themselves into these burrows, thus making themselves an easy prey. When ice forms, and the carp settle numb and torpid to the bottom, then, in my opinion, the ravages of the muskrat are most to be feared by the fish-culturists; but before that time he should get rid of these pests.*

579. *Statement of J. J. Stranahan, Chagrin Falls, Cuyahoga Co., Ohio, Oct. 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received on November 5, 1880, I gave to Mr. W. E. Walters, who lives $1\frac{1}{2}$ miles from this place. He has a very fine pond, and agrees to furnish free for stocking purposes all who may desire young. He also received a lot in 1881.

GROWTH AND REPRODUCTION.—We had only got about 150 carp out of our pond when, owing to the caving in of the outlet, the work of netting had to be stopped. Those we distributed were very fine, 4 or 5 inches long and, say, $1\frac{1}{2}$ to 2 inches wide; and we think they were all this year's hatch, as we caught no small ones, although our net had a very small mesh. Some of the old fish—the oldest are not over 3 years old—weighed 5 pounds apiece.

MISCELLANEOUS.—Dozens of farmers are constructing ponds for the young that they will receive from Mr. Walters. We expect to have a fine display of carp at our county fair this fall.

EDIBLE QUALITIES.—Mr. Walters caught a scale and mirror carp, and pronounced their edible qualities to be superior to whitefish.

580. *Statement of B. Raney, Franklin Square, Columbiana Co., Ohio, Sept. 5, 1882.*

GROWTH AND REPRODUCTION.—I procured a supply of carp last fall and this spring. They now weigh from $2\frac{1}{2}$ to 3 pounds. They spawned in June, July, and some in August. I think I have about 50,000 young, the most of which are from 3 to $5\frac{1}{2}$ inches long. The fish obtained last November, 1881, were from 2 to 3 inches long.

581. *Statement of G. W. Armstrong, New Lisbon, Columbiana Co., Ohio, Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in the fall of 1880, and the 20 received in 1882, I put in an $\frac{1}{2}$ -acre pond, having a maximum depth of 7 feet, and a muddy and mucky bottom. A continual 1 inch stream of moderately cool water feeds the pond. In summer the water gets very warm.

PLANTS AND ENEMIES.—Water-lilies and other water plants grow in the pond in great numbers. A few turtles have gotten into the pond.

GROWTH.—Each of the 20 original carp remaining weigh about 5 pounds. They have not spawned yet.

582. *Statement of Charles Gamble, Salem, Columbiana Co., Ohio, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 14 carp, which, however, were soon destroyed by the freezing of the water in which I placed them. The second lot, received in the fall of 1882, I kept, during the winter, in a 4-gallon stone.

* For fuller account and mode of capture see U. S. F. C. Bull., 1884, p. 290.

vessel, changing the water once in 48 hours. In the spring of 1883 I put them in a pond that is fed by a spring, having a temperature of 48°.

PLANTS AND ENEMIES.—Calamus and peppermint grow in the pond. Frogs and water-snakes only are also found in it.

FOOD.—From 2 to 3 times a week I give the carp wheat-bread and crackers.

MISCELLANEOUS.—I still have 10 or 12 of the 1882 lot, but have not seen them but once or twice this summer.

583. *Statement of Timothy Gee, Salem, Columbiana Co., Ohio, Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp in November, 1880, and 20 more in November, 1881. I kept them in a pond 160 by 180 feet, with a muddy bottom, and with water 2 to 6 feet deep.

PLANTS.—It contains white pond-lilies.

ENEMIES.—It contains no other fish, but it has some frogs.

FOOD.—Twice a week I give them corn-meal, wheat bran, corn-bread, and celery.

GROWTH.—I still have four of the first lot and ten of the second lot. The first weigh from 8 to 10 pounds each. One of the second lot when dressed weighed 2½ pounds.

REPRODUCTION.—The young are from 2 to 10 inches long, and the pond seems to be full of them. I am offering young for sale now.

EDIBLE QUALITIES.—The family has cooked one or two carp, and think them very fine.

MISCELLANEOUS.—I was walking around my pond in February, 1882, and greatly to my surprise I saw 4 fish, that appeared to be from 12 to 16 inches long, sunning themselves upon the surface of the water. They frequented the same place every day for about 3 weeks, after which I did not again see them for 2 months. Since then I have seen them swimming on the water, and after rains they can be seen jumping 2 or 3 feet above the water. Our pond has proved a great pleasure to our friends as well as to ourselves.

584. *Statement of Rush Taggart, Salem, Columbiana Co., Ohio, July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp received in November, 1880, and spring of 1882, I put in a pond 100 by 125 feet, with a depth varying from 3 to 10 feet. It has a temperature of from 50° to 60°, and it is fed only by springs in the pond. No plants grow in the pond, and it contains nothing that injures or destroys the carp.

GROWTH.—In the winter of 1882-'83 the original carp averaged nearly 3 pounds.

DIFFICULTIES.—Muskrats drained my pond in the winter of 1882-'83 and caused the loss of the carp.

MISCELLANEOUS.—I desire to get my pond again stocked with carp. Carp are being raised with great success in small ponds in this immediate neighborhood.

585. *Statement of H. R. Pardee, Strongsville, Cuyahoga Co., Ohio, Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in November, 1880, I put in a half-acre pond, having a depth of 4 feet and a muddy bottom. Enough spring water flows into the pond, which is adapted to carp culture, to keep it clear and cool. The discharge water is carried off by means of a raceway around the pond.

PLANTS AND ENEMIES.—Lilies, cat-tail flags, and sea-grass roots, or moss grow in the pond. Bull-heads, frogs, and turtles inhabit it.

FOOD.—I give the carp lettuce, cabbage, and meal to toll them into sight, but I have not succeeded.

REPRODUCTION.—Last spring I found 2 small fish that washed through the sluice, which I supposed were carp. They were lodged in the grass, and were each 5 inches long.

MISCELLANEOUS.—Although I have been unable to see any of the carp, I believe they are in the pond. I fished for them with a hook, but got no bite.

586. *Statement of Samuel Gamble, Winona, Columbiana Co., Ohio, Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 13 carp received in the fall of 1880 in a pond, 1 by 8 rods, with a depth of from 1½ to 2½ feet, and supplied with water by a small spring.

ENEMIES.—Frogs infest the pond, and a turtle was also found in it.

DIFFICULTIES.—The ice on the pond was 12 inches thick in the spring of 1881, when the dam broke and lowered the water to a depth of 12 inches. I have not seen the carp since.

587. *Statement of Gustin Havens, Lewis Centre, Delaware Co., Ohio, Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received December 7, 1880, I put in a $\frac{1}{2}$ -acre pond, with a maximum depth of 10 feet and a muddy bottom. It is supplied with a flow of surface water mostly, which during the spring and fall will fill a 2-inch pipe. No water flows into the pond in summer, unless it is very wet. Half of it is shallow.

PLANTS.—Pond-lilies, sweet-flag, and various kinds of swamp-grass and weeds grow in the pond.

ENEMIES.—Frogs and an occasional turtle are found in the pond. No other fish than the carp inhabit it.

FOOD.—In addition to the daily allowance of bread, mill-feed, and corn-meal mush, I give the carp food whenever visitors come. They became quite tame at last, and would eat from the hand and allow us to handle them at pleasure.

GROWTH.—In the fall of 1882, 2 carp weighed, respectively, $5\frac{1}{2}$ and 6 pounds. There are 17 original carp remaining which will average from 5 to 8 pounds.

REPRODUCTION.—The yearling are from 6 to 12 inches long, and this year's young are from 1 inch to 2 inches long. They spawned in June, 1882, stocking the pond with young which were from 4 to 8 inches long before winter.

SALES.—I have sold 32 dozen young to stock other ponds.

EDIBLE QUALITIES.—Thinking my pond well stocked, I took out last fall 2 of the old fish to test them as a food-fish. They were 22 and 23 $\frac{1}{2}$ inches long and weighed $5\frac{1}{2}$ and 6 pounds, respectively. A good judge of fish pronounced them equal in quality to the best creek bass.

DIFFICULTIES.—As I have but one pond, the young fish eat many of the eggs. I purpose providing drainage to the pond I shall build, and shall separate the carp.

588. *Statement of Solomon Boyer, Norton, Delaware Co., Ohio, Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp I received on December 1, 1881, I put in a half-acre pond having a depth of 5 feet and a muddy bottom. Twenty-two acres of land serve as a watershed for it. The water is warm.

PLANTS.—Cat-tail and a 3-cornered rough-bladed grass from 2 to 3 feet high grow in the pond.

ENEMIES.—Only a few green frogs and small turtles inhabit the pond.

FOOD.—Daily I give the carp potatoes, corn, bread, scalded milk, and the refuse from the table in small quantities.

GROWTH.—The original carp are from 18 to 24 inches long, and weigh from $4\frac{1}{2}$ to 8 pounds. I have 16 of them. The leather carp are the largest.

REPRODUCTION.—The young are from 10 to 13 inches long, and weigh from $1\frac{1}{2}$ to 2 pounds.

589. *Statement of Joseph Bechtel, Amanda, Fairfield Co., Ohio, Sept. 16, 1882.*

FOOD.—My carp eat boiled corn, potatoes, beans, milk, and bread.

GROWTH.—I received 24 carp, which are all alive. They measure from 12 to 14 inches in length and weigh from $1\frac{1}{4}$ to $1\frac{1}{2}$ pounds. They are lively.

MISCELLANEOUS.—I cannot say enough in behalf of this new industry. I think every man who has a marshy or wet place would do well to give attention to the cultivation of carp. I am making another pond.

590. *Statement of George L. Converse, Columbus, Franklin Co., Ohio, Oct. 12, 1882.*

DISPOSITION OF CARP RECEIVED.—My constituents of the Columbus (Ohio) district are very desirous for carp. Those you sent me last year were carefully distributed and are doing well. I put them into a small pool, 3 by 8 feet, 2 feet deep, and, as they were called for, I took them out with a net.

591. *Statement of J. L. Stelzig, Supt. City Park, Columbus, Franklin Co., Ohio, July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 24 carp received in 1881 we put in a pond, 80 by 120 feet, with a depth of 6 feet and a bottom of clay. It is fed by a half-inch stream of water.

PLANTS.—Nymphaea alone grows in the pond. No enemy of the carp inhabits it.

FOOD.—We give the carp bread and cheese daily, and potatoes weekly.

GROWTH.—The 15 carp remaining are from 18 to 24 inches long and weigh from 2 to 3 pounds each.

REPRODUCTION.—There are probably 100 young in the pond, which are from 2 to 12 inches long. They are 1 year and 2 years old.

DISPOSITION OF YOUNG.—We removed the young to a half-acre artificial lake.

592. *Statement of L. W. Budd, Dublin, Franklin Co., Ohio, Oct. 12, 1881.*

GROWTH.—November 22, 1880, I received 20 carp, measuring from 2 to 4 inches. On October 10, 1881, I drew off the water from my pond to rid it of catfish, and found that my carp had grown enormously and were almost of one size. Two measured, respectively, 16 and 17½ inches in length and weighed 3½ and 4 pounds.

REPRODUCTION.—[Under date of January 8, 1883, Mr. Budd states that his carp spawned in 1882.—EDITOR.]

593. *Statement of H. C. Tuttle, Burton, Geauga Co., Ohio, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in the fall of 1881 I put in a pond covering about 2 acres, with a maximum depth of 10 feet and a muddy bottom. I subsequently received 60 more. As the carp in the pond died before the spring of 1882 I kept 20 in a tub in a cellar last fall, but they died also. The 24 that I bought this spring are doing well.

PLANTS.—Plants indigenous here grow in the pond. Nothing that disturbs the carp inhabits it.

FOOD.—I give the carp chopped liver and other food.

594. *Statement of M. R. Parsons, Chardon, Geauga Co., Ohio, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in November, 1880, I kept in a spring as my pond was frozen over until April, 1881. I also received 15 in the fall of 1882, which I put in the 1-acre pond with a depth of from 4 to 6 feet and a muddy bottom. The rain water, which alone supplies the pond, is warm and clear in summer.

PLANTS AND ENEMIES.—Lilies and other water-plants on which the carp feed grow in the pond. Turtles and frogs are also found in it.

FOOD.—I do not feed the carp.

GROWTH.—The 8 carp which I put in the pond in the spring of 1881, I saw nothing of till the spring of 1883, when I found 7 of them dead. The pond was frozen over from November until April. The carp averaged 20 inches in length and weighed from 4 to 6 pounds. I have seen no young yet.

595. *Statement of James Cullen, Sec. Cincinnati Ice Co., Cincinnati, Ohio, July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—In each of the winters, 1881, 1882, and 1883, I received 20 carp which I placed in 3 ponds, respectively 10, 20, and 30 acres, having an average depth of 5 feet and muddy bottoms. Canals supply the ponds with water, the amount of which depends upon the weather.

PLANTS AND ENEMIES.—Grass and moss grow in the pond in large quantities, and sun-fish, catfish, and turtles inhabit it in considerable numbers.

FOOD.—We have not fed the carp, supposing the ponds contained a plenty.

GROWTH.—We are satisfied that some large carp are in the pond, but have never caught any.

596. *Statement of Hugo Mulertt, Cincinnati, Hamilton Co., Ohio, July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 13 mirror and 9 scale carp received in the fall of 1880, I put in a pond especially constructed for the purpose, 16 by 30 feet, with a depth varying from 6 to 24 inches and a bottom of rich black soil. About 1 gallon of water at an average temperature of 75° F. flows through the pond per minute. The carp hibernate in a deeper pond.

PLANTS.—Abundance of *anacharis canadensis*, *ceratophyllum demersum*, 3 kinds of *nymphaea odorata*, and duck-weed (*lemnæ*) grow in the pond. The carp are delighted with the latter.

ENEMIES.—There are also 20 grass bass (*pomoxys hexacanthus*) in the pond.

FOOD.—I do not feed the carp.

GROWTH.—The 5 mirror and 5 scale carp remaining average 4 pounds in weight.

REPRODUCTION.—I have raised a great many young. I find that they will attain the first season, without food, a length of from 3 to 6 inches, and at the end of the second year will weigh 1½ pounds.

DISPOSITION OF YOUNG.—I sold and gave away the young.

DIFFICULTIES.—I lost 8 mirror and 4 scale carp. Muskrats disturb the carp when in winter quarters.

MISCELLANEOUS.—The German carp will become a favorite dish with the Americans as soon as they learn how to prepare it for the table.

597. *Statement of Wm. Salway, Supt. Spring Grove Cemetery, Cincinnati, Ohio, Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—The 17 carp received by Mr. Adolph Strauch, late superintendent Spring Grove Cemetery, were placed in a pond covering 5,000 feet of area, with an average depth of 2 feet and a gravelly bottom. The supply of water is small and is moderately cool. There are no plants in the pond.

ENEMIES.—Swans and frogs are to be found in the pond.

FOOD.—I give them bread every day.

GROWTH.—On July 14, I caught 2 carp which weighed 3 pounds each.

MISCELLANEOUS.—I have not been in charge of the pond sufficiently long to know the number of original carp remaining, nor whether there are any young in the pond.

598. *Statement of H. W. C. Muth, Mt. Healthy, Hamilton Co., Ohio, Dec. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—In the latter part of the year 1880 I received 40 German carp. The bottoms of my ponds are of a clay soil; depth, varying from 8 to 12 feet in the deepest parts, the water getting shallower as it approaches the shores. Each of the ponds covers an area of less than an acre. These ponds are supplied with water from the surface, springs, and small streams. The ponds contain no water-plants nor grasses.

ENEMIES.—Snapping-turtles and various kinds of frogs at times get into my ponds. In the blue heron and king-fisher, especially the former, the young carp find a great destroyer. All other enemies I can manage.

FOOD.—In addition to corn, oats, refuse of the slaughter-house, brewery, and kitchen, I give the carp small boiled potatoes.

GROWTH.—The old carp measure 22 inches in length; the young of this year that were in ponds not overstocked vary in length from 10 to 12 inches.

REPRODUCTION.—I number my young carp at 5,000. I cultivate the fish for sale, and have shipped them to all parts of the United States.

EDIBLE QUALITIES.—We have eaten carp both baked and fried. We relished them very much.

PRICE.—My price-list for 1883 has been as follows: German carp (scale, mirror, and leather), 25 for \$3; 50 for \$5; 75 for \$7; 100 for \$8; 10 per cent. off for 500 or more.

599. *Statement of John B. Browne, Nashville, Holmes Co., Ohio, Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 13 carp received in November, 1880, and the 10 in the spring of 1883, I put in a pond $\frac{1}{4}$ acre in circumference, with a maximum depth of 7 feet, and a bottom composed of mud and gravel. In the summer of 1881, the flow of water was that of a $\frac{1}{2}$ inch stream. In the summers of 1882 and 1883 an inch stream flowed through it.

PLANTS.—Cat-tail and calamus grow in the center, and oats and grass on the edges of the pond. The carp destroyed the water-cress.

ENEMIES.—We kill the frogs, turtles, and muskrats that infest the pond. No other fish inhabit it.

FOOD.—In addition to the 3 gallons of wheat-bran and corn-meal that I give the carp daily, they are fed whenever any one comes to see them.

GROWTH.—I have 2 of the original carp, which weigh from 5 to 6 pounds and measure 22 inches each. The others were stolen in the summer of 1882, in spawning time.

REPRODUCTION.—There are thousands of young in the pond, which are from 4 to 10 inches long.

SALES.—I have sold about 300 young.

DIFFICULTIES.—The only trouble is with thieves. I am building a guard-house and will shoot them.

600. *Statement of A. R. Liggett, Nashville, Holmes Co., Ohio, May 8, 1882.*

DISPOSITION OF CARP RECEIVED.—My carp were in splendid condition when I deposited them in my pond December 16, 1881. As I have seen no signs of them since, I have concluded that the water, which flows from a spring, is too cold for them. The quantity is sufficient to fill a 2 $\frac{1}{2}$ inch pipe.

PLANTS.—It may be that the carp have secreted themselves among the moss which grows on the bottom of the pond to the height of 6 inches. There is also plenty of cress growing in the pond.

GROWTH.—Mr. John B. Brown informs me that 8 of the 13 carp deposited in his pond will average 16 inches in length. Mr. John Lee placed 15 carp in his pond November, 1881, and says that 6 of them are from 12 to 14 inches long.

601. *Statement of Joseph Messenger, Granville, Licking Co., Ohio, Aug. 25, 1882.*

GROWTH.—On December 1, 1880, I received a consignment of carp and placed them in a small hastily-constructed pond until the 21st instant, when I transferred the 2 remaining carp to another pond. These having made rapid growth, I am not displeased with the undertaking. One measured 10½ inches and the other 12½ inches. I have no young yet.

602. *Statement of Jennison Hall, Piqua, Miami Co., Ohio, Sept. 12, 1882.*

REPRODUCTION.—There is a party in this city that has 10,000 young leather carp to dispose of—produce of some sent here from Washington some 2 years ago.

603. *Statement of Charles Senseman, West Charleston, Miami Co., Ohio, Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 scale and 10 leather carp received November 20, 1880, I put in a ½ acre pond, with a depth of from 1 to 6 feet. It is fed by a strong vein of spring water, which is turned into the pond at various points whenever the water in it is cooler than the spring water. By this method the growing period is very much lengthened.

PLANTS.—Pond-lilies, wild rice, and water-cress grow in the pond.

ENEMIES.—A few catfish, frogs, and turtles inhabit the pond. I try to free the pond of vermin.

FOOD.—I give them shipstuff, boiled corn, and lettuce once a day. The small carp will come for food which they eat out of the hand, and are as gentle as kittens.

GROWTH.—An original carp that was injured and died in the summer of 1882 weighed 5½ pounds. I found 18 of the original carp on drawing off the pond in June, 1882.

REPRODUCTION.—I estimate the number of young at hundreds or even thousands. They are from 4 to 8 inches long. The condition of the carp is excellent.

604. *Statement of Samuel Wampler, Dayton, Montgomery Co., Ohio, Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I put 27 of the 31 carp received in March, 1881, in a pond covering ¼ acre, with a depth of from 6 inches to 5 feet, and a muddy and gravelly bottom. From 3 to 5 gallons of water at a temperature of 65° in summer, flow through this pond per minute.

ENEMIES.—Snapping-turtles, but no other fish than carp inhabit the pond. I do not feed the carp.

GROWTH.—I saw an original carp the other day which weighed from 3 to 4 pounds. I have been unable to catch any, though I seined my pond 3 times.

REPRODUCTION.—There are several hundred young in the pond, from 4 to 6 inches long, and some less than 1 inch in length. Some of the young weigh from 3 to 4 ounces.

605. *Statement of S. J. Stoner, Sulphur Grove, Montgomery Co., Ohio, Aug. 6, 1882.*

DISPOSITION OF CARP RECEIVED.—December 2, 1881, I received 21 carp in good condition, and placed them in my pond. I have since thrown in feed for them, but could never see any signs of the fish. Therefore, on the 1st day of this month I drew off the water, and, as I feared, found no fish. I have no idea what became of them.

606. *Statement of W. E. Logan, Andrews, Morrow Co., Ohio, Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 leather and 10 scale carp received on December 1, 1880, I put in a pond having a surface area of about 1,000 square yards, a depth varying from 6 inches to 4 feet, and a muddy bottom. As the spring does not furnish enough, I introduce water into the pond by means of a wheel. The temperature of the water at noon is 80°.

PLANTS.—A moss grows from the bottom, but does not reach the surface of the pond.

ENEMIES.—Sun-fish, frogs, and a few turtle are found in the pond. Sun-fish, especially, disturb the carp.

FOOD.—From two to three times a week I give the carp a considerable quantity of wheat-screenings. When I desire to get them to the surface, I give them light bread.

GROWTH.—In the fall of 1882, the original carp weighed from 3 to 5½ pounds. The 3 pound fish were always small in comparison to the ones which weighed 5½ pounds. There are 6 leather carp in the pond. I stocked other ponds near by with 13 of the original carp.

REPRODUCTION.—There were about 3,000 young from the first summer's spawn. They are now from 5 to 12 inches long. There also seems to be plenty of small ones of this summer's spawn from 2 to 5 inches long. A neighbor has young from my original lot, that are from 10 to 15 inches long.

DISPOSITION OF YOUNG.—I put about 300 young in Owl Creek, a tributary of Muskingum River. I also stocked 8 or 10 ponds with the fry.

DIFFICULTIES.—Before the wheel was erected the pond suffered for water. The carp with which I stocked other ponds ate their young.

MISCELLANEOUS.—Our little carp pond is a very interesting addition to the farm, as well as a pleasure to other parties, who come miles to see the carp feed.

607. *Statement of W. B. Lee, Waverly, Pike Co., Ohio, Oct. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—On April 1, 1883, you sent me 12 carp, Mr. Howell, of Toledo, gave me 9 more, and on the 25th of April I bought 40 that averaged from 4 to 6 inches in length. My pond covers 3 acres, has a deep black muck on the bottom, and contains most all kinds of aquatic plants, such as lilies, ferns, grasses, &c. Its depth varies from 1 to 7 feet.

GROWTH.—Some of the carp will now measure from 18 to 20 inches, and weigh from 4 to 5 pounds each.

608. *Statement of R. P. Cannon, Aurora, Portage Co., Ohio, July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 12 carp received on November 5, 1880, I put in a pond, with a depth of 3 feet and a bottom of mud and gravel. All of them were destroyed during the following winter. The pond was covered with thick ice. I think they were injured by the shifting about and delay they received while in Cleveland, Ohio.

609. *Statement of William Moore, Camden, Preble Co., Ohio, July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on November 19, 1880, I put in an 80-rod pond, with a maximum depth of 7 feet, and a muddy bottom. The pond is supplied with creek water. The temperature of the pond to-day is 82°.

PLANTS.—Weeds, moss, wild rice, water-plantain, and a slim trailing vine grow in the pond.

ENEMIES.—Bull-frogs and hard and soft shelled turtles are found in the pond. I try to destroy the turtles by shooting them.

FOOD.—I give the carp wheat-bread, and sometimes make corn-meal mush and soak pop-corn for them. I generally feed them daily.

GROWTH.—I have 2 of the original carp remaining, which average 20 inches in length, and weigh from 4 to 5 pounds.

REPRODUCTION.—There are at least 100 of the first year's spawning from 4 to 8 inches and a thousand from ½ to 1 inch long in the pond. They spawned in 1881.

DIFFICULTIES.—The high water in June, 1882 allowed all the original carp but 2 to escape.

610. *Statement of John Francis, Gillespieville, Ross Co., Ohio, Oct. 24, 1882.*

GROWTH.—On December 8 I received 20 carp, weighing from 2 to 3 ounces each, and put them in a pond prepared for their reception. I seined out 8 or 10 of them on the 13th instant, it being about 10 months since I received them, and found some of the largest ones to be about 16 inches long and to weigh 4 pounds. They are all alive and doing well.

611. *Statement of Lewis Leppelman, Fremont, Sandusky Co., Ohio, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received on November 4, 1879, I put in a small pond, with a depth of 4 feet and a muddy bottom. A 1-inch stream supplies it with water.

PLANTS.—Flags, water-lilies, and other grasses grow in the pond.

ENEMIES.—Nothing that destroys the carp inhabits the pond.

FOOD.—Three or more times a week I give the carp potatoes, corn, liver, and refuse from the table. They are ever ready for food, and seem to relish everything that is given them.

GROWTH.—The original carp are from 15 to 18 inches long. I think I have all of them. On account of grass and mud I cannot see whether there any young yet.

612. *Statement of J. L. Stanley, Freeburg, Stark Co., Ohio, Apr. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the latter part of the year 1882, and a lot on the fourth day of the following April. I broke the ice when I placed the first lot in the pond. Only 1 of the second lot was dead on receipt, and the remainder I placed also in the pond. The water which supplies the pond is clear most of the time, and the stream is no larger than $\frac{1}{4}$ of an inch; yet it keeps both of my small ponds full.

FOOD.—I give the carp bread and boiled rice.

DIFFICULTIES.—I was very unfortunate with my first lot of carp on account of a defect in my dam, and the second lot have also subsequently died. I cannot account for this as the sun-fish and suckers, which I put into the pond after the death of the carp, seem to do well. Tadpoles flourish in the pond, and there is a slight sulphur appearance near the spring.

613. *Statement of D. M. Stusser, Louisville, Stark Co., Ohio, Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp received in December, 1882, I put into a pond 40 by 300 feet, with a depth of from 10 inches to 4 feet, and a bottom of muck and gravel. Springs at the bottom of the pond supply it with water during the entire year. It has no outlet.

PLANTS.—I remove the moss that grows from the bottom of the pond several times each season.

ENEMIES.—Red, or gold fish, sun-fish, frogs, and turtles are found in the pond. I am trying to seine out all but the carp.

FOOD.—I do not feed the carp.

GROWTH.—A carp caught to-day was 24 ounces by actual weight, which indicates that they have wonderful growing qualities. I shall cultivate carp in preference to any other fish. They are likely to give entire satisfaction wherever introduced. My carp have not spawned yet.

DIFFICULTIES.—The first lot of carp received in the winter of 1880-'81 was frozen during the severe winter.

614. *Statement of James Bayliss, Massillon, Stark Co., Ohio, July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I have 3 ponds that were formed by constructing as many dams across a small ravine. The first pond is 20 by 20 feet, and is $2\frac{1}{2}$ feet above the second dam, which forms a pond 20 by 90 feet. The third and lowest pond is $2\frac{1}{2}$ or 3 feet below the second dam, and is 100 by 150 feet. Into this third pond I placed the 15 carp received on November 11, 1880. An average stream of from $2\frac{1}{2}$ to 3 inches of clear, cool water that rushes from a limestone rock in a hill adjacent empties into the first pond. The other ponds receive their supply of water from the first pond. The temperature of the first pond is 55°; second, 60°; and the third, 65°. They are from 3 to 4 inches deep, and have very muddy bottoms.

PLANTS.—A few plants and 1 kind of pond-lily grow in the pond. Sometime a green scum which grows from the bottom accumulates on the surface.

ENEMIES.—Craw-fish, frogs, muskrats, and tadpoles inhabit the pond.

FOOD.—I do not feed the carp.

GROWTH.—Last May 2 of the original carp weighed, respectively, 5 and 7 pounds, and the larger one measured 22 inches.

REPRODUCTION.—There are from 300 to 400 young in the pond, and they measure all the way up to 8 inches in length.

DIFFICULTIES.—A few months after the completion of the ponds, a sudden rise of water washed out a small place in the breast of the dam and allowed some of the carp to escape. These were floundering about in puddles in the meadow below. I replaced 3 or 4, which were all I could find, hoping they would live and do well, but they always kept hid or were in the mud. It was only until the following May, when the pond was very low, that any fish were discovered.

The following day after the 2 original carp were caught, I found that the $2\frac{1}{2}$ -inch holes that had been bored in two pump-logs under the dam to enable me to draw off the water at pleasure had been tampered with, and both were wide open. All the water and many fish were allowed to escape. I put the pond in repair immediately, as my pond is adapted to carp culture. I hope to make it a success.

615. *Statement of David Fosdick, Cuyahoga Falls, Summit Co., Ohio, Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 15 carp. My artificial pond is 7 by 50 feet, from $2\frac{1}{2}$ to 3 feet deep, and has a bottom composed of clay, sand, and gravel. Ten gallons of spring water flow into the pond per hour. In summer the temperature is from 70° to 74° , and when it empties in the pond it is 60° .

PLANTS.—Clover and timothy grow on the banks of the pond.

ENEMIES.—A few frogs only inhabit the pond.

FOOD.—I give the carp bread-crumbs and mashed potatoes daily.

GROWTH.—Each of the 7 original carp remaining weigh about $2\frac{1}{2}$ pounds.

REPRODUCTION.—There are about 500 young in the pond, and they are from 2 to 6 inches long.

MISCELLANEOUS.—It is my intention to make arrangements for a more extensive culture of the carp, and if I find them to be a good food-fish I shall still further increase the number of ponds. Meat is getting high and scarce. People will have to come down to fish. I do not think the supply will equal the demand, although to give the carp the chance they will increase very fast.

616. *Statement of R. H. Lodge, Cuyahoga Falls, Summit Co., Ohio, July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 16 scale carp received in October, 1880, and 17 leather received in the fall of 1882, into an artificial pond, with 27 rods of surface, a maximum depth of 4 feet, and a bottom of clay, sand, and muck. During the warm weather, enough water flows into the pond to maintain a uniform depth. In spring and fall the surplus water passes through a 2-inch pipe. In summer the temperature of the water as it reaches the pond is from 60° to 62° .

PLANTS.—Water-lillies and various kinds of plant and grass grow in the pond.

ENEMIES.—A few turtles and frogs inhabit the ponds. It contains no other fish than carp.

FOOD.—I feed the carp on chopped cabbage, lettuce, and boiled rice. But bread-crumbs and refuse from the picnic tables, which I give them daily in summer, they seem to devour more eagerly.

GROWTH.—The 4 carp remaining will average from 18 to 20 inches long, and weigh probably 4 pounds net. In May, 1883, I had 8 leather carp which were each 1 foot long.

REPRODUCTION.—In the spring of 1883 there were about 2,000 young in the pond. Some of the yearlings are 10 inches long. I do not see any of the young of the leather carp.

DISPOSITION OF YOUNG.—I sold most of the young at \$7 per hundred. When the others are large enough to care for themselves I intend to put them in Silver Lake—a body of water which covers 105 acres.

DIFFICULTIES.—In the spring of 1883 I lost 15 original carp by removing them to a fountain bowl newly plastered with Portland cement.

617. *Statement of S. P. McFall, Newton Falls, Trumbull Co., Ohio, July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 scale carp received about December 1, 1880, and the 20 mirror, received in 1881, I put in 2 ponds, each covering about $\frac{1}{4}$ acre and having muddy bottoms. Both ponds are fed by a very small supply of warm spring water.

PLANTS.—White and yellow pond-lily, water-plantain, arrow-head, and wild grass grow in the pond.

ENEMIES.—Carp alone inhabit the pond.

FOOD.—I give the carp wheat-screenings and refuse from the kitchen daily at sunset.

GROWTH.—In the fall of 1882 the original carp averaged $8\frac{1}{2}$ pounds. I have one mirror carp remaining.

REPRODUCTION.—The young of the scale carp number 700, and are from 1 to 6 inches long.

SALES.—I sold 100 young.

DIFFICULTIES.—About February 1, 1883, all of the mirror, except 1, turned yellow and began dying about February 20. The scale carp were not quite so yellow, but also died about the same time. Only 25 small scale carp and the 1 mirror carp escaped.

618. *Statement of B. G. Schenck, Franklin, Warren Co., Ohio, Sept. 15, 1883.*

DISPOSITION OF CARP RECEIVED.—The 24 carp received about the middle of December, 1882, I put in a pond 54 by 150 feet, with a depth over the upper two-thirds of about

3 feet, gradually increasing in the lower third to about 5 feet at the lower end, where a 5-inch drainage pipe, capable of draining the pond in 7 hours, has been placed. The bottom is an admixture of yellowish-black clay. That it and other conditions are favorable to the development of the carp can perhaps be best judged from the condition of the fish at this time, feeding having been adopted but a short time, and no growth of aquatic plants having been as yet secured. It is fed from a never-failing limestone spring, at a uniform temperature of 58°, and which issues from the ground at a distance of 170 feet from the pond.

PLANTS.—Attempts were made to secure a growth of pond-lilies, but without success, and means will be provided to establish, if possible, a good growth of the common water-grasses of this region.

ENEMIES.—At the bottom of the pond 3 snapping-turtles of an average length of 7 inches were found and summarily dispatched.

FOOD.—I did not feed the carp until about September 1, when small quantities of food, such as wheat, oats, &c., from time to time were given them; and, later, green corn cut from the cob was thrown into the pond near the edge, all of which was eaten with avidity.

GROWTH.—On September 12 the water was drawn off, and 14 fish were found to have survived. All of them were scale carp except 3, which had a $\frac{1}{2}$ -inch stripe on either side, running from the head to the tail, and being devoid of scales. These 3 fish were among the largest of the lot. The actual aggregate weight of the 14 carp was 20 $\frac{1}{2}$ pounds, varying from 1 pound to 2 $\frac{1}{2}$ pounds. This growth has taken place in a pond where there is apparently little or no food. As soon as a proper condition of the pond, as regards the food supply, can be secured, and a more regular and constant feeding adopted, it is believed that even a greater size will be attained.

PONDS TO BE CONSTRUCTED.—I intend to build 2 other ponds, a hatching pond and a carp pond proper. The pond in which my fish are now kept will become the breeding one, to the east of which will soon be constructed the hatching-pond, 30 by 65 feet, and from 6 inches to 2 feet in depth. Below these 2 will be built the carp pond proper, 90 by 275 feet, with a depth of from 1 to 3 feet, and increased from 1 to 6 feet in the ditches and kettles, or collectors, and provided with a proper drainage pipe. The water from the hatching pond is taken from the breeding pond after the temperature has been increased by the sun. From the hatching pond it passes into the carp pond proper.

619.—*Statement of John Hoff, Mason, Warren Co., Ohio, Jan. 18, 1884.*

GROWTH OF CARP.—I paid a visit to the Union village, in our county, in August, to see the carp pond there, and learn something in regard to the care of these fish. I found that they had three sizes in it; the ones they received from you two years ago last November, those that were one year old, and the little ones that had hatched in June and July. The latter were from 1 $\frac{1}{2}$ to 2 inches long. The clever Elder presented me with 5 yearlings that were from 12 to 16 inches long.

PURCHASE OF CARP.—Last fall I purchased, additionally, from Mr. H. W. C. Muth, of Mount Healthy, Ohio, 105 carp for \$8. These were from 5 to 7 inches in length, and were placed in my large pond, located about 50 yards from the house. It is so well located that it has not been frozen completely over this winter, although the thermometer has marked 20° below zero several times. I shall prepare a breeding pond for the yearlings.

620. *Statement of Matthew B. Carter, Shaker, Warren Co., Ohio, Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in the fall of 1880 I put in a 1-acre artificial pond, having a bottom of dirt or clay. It is fed by water which runs through a 2-inch pipe, and is warm in summer. It freezes in winter.

PLANTS.—Wild grasses and some weeds grow in the pond.

ENEMIES.—Frogs and a few turtles alone inhabit the pond.

FOOD.—I occasionally give the carp refuse from the kitchen, and grain. I seldom feed them.

GROWTH.—Each of the original carp remaining weighs 5 pounds.

REPRODUCTION.—There are fully 10,000 young in the pond, and they weigh all the way up to 1 $\frac{1}{2}$ pounds.

MISCELLANEOUS.—Carp can be grown here at less cost per pound than beef, pork, or mutton.

621. *Statement of Samuel Baughman, Springborough, Warren Co., Ohio, Sept. 21, 1883.*

DISPOSITION OF CARP RECEIVED.—About the middle of December, 1881, I received 13 carp, and to them added 14 more received from my neighbors, who also obtained

them of the Fish Commission. I put the fry in one of the two ponds which are already completed. They are each 100 by 175 feet, with respective depths of from 1 to 12, and 1 to 8 feet, and bottoms of loam and clay, the combination of which is evidently favorable to the propagation of the carp. The inner edges of both are walled for a space with stone, as is also the outer wall of the deeper of the two. They are side by side, separated by a narrow embankment, and well protected from any considerable inflow of surface water. Several springs and water flowing from the drains, of a limestone character, feed the ponds. Below these will be completed the hatching ponds, 30 by 200 feet, and from 6 inches to 3 feet in depth. The carp pond proper, the area of which will be about 2½ acres, and the depth all the way up to 20 feet, will be formed by the construction of an embankment about 25 feet in height, with a base of not less than 40 feet. All of these ponds will be provided with proper drainage pipes, screens, collectors, &c.

ENEMIES.—There have been no other fish in the pond since its construction.

FOOD.—The carp have been fed with small grain quite regularly. Hereafter they will be fed as regularly as the stock on my place.

GROWTH.—The old carp are now 18 or more inches in length, and weigh from 3 to 4 or more pounds each. They are healthy in appearance and have grown rapidly, but, as the result of the food I intend to give them in the future, I expect that the growth will be even greater than it has thus far been.

REPRODUCTION.—Little attention was paid to the carp until the following summer after they were received, when it was discovered that the pond contained large numbers of young fry (1882). They are now from 12 to 15 inches in length, and weigh from 1 pound to 2 or more pounds each. The carp spawned again this summer, and the large numbers of fry average from 4 to 5 inches in length.

MISCELLANEOUS.—In addition to the 2 ponds that I have completed and the one now in course of construction, I intend to build a small one to be used for experimental purposes. A number of carp will be selected, carefully weighed, regularly fed, and the quantity of food noted. At the end of the season the carp will be weighed again to determine the increase in weight, thereby ascertaining the income to be derived from the capital invested. Hundreds of young as large as the hand were seen in the pond November, 1882.

622. *Statement of W. H. Carpenter, Springborough, Warren Co., Ohio, Sept. 9, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received on December 31, 1881, were placed immediately in a pond, circular in shape and 80 feet in diameter. The water is supplied from a spring and is from 1 foot to 4 feet deep. The bottom is composed of yellow sand and black mud. It is situated on a high piece of land with a gentle slope to the south.

PLANTS.—Grass and cress grow around the edges of the pond.

FOOD.—In March we saw two or three of the carp and fed them occasionally, but discontinued because they disappeared.

GROWTH.—One of the dead carp was 15 inches long and the other two about 14 inches each. The 3 together weighed 7½ pounds. In 2 days after the dead carp were found we saw 3 more about the same size.

MORTALITY.—On August 29, 1882, I found 3 dead carp that had floated to the edge. Two of them looked as if they might be alive, being without a mark, and the other looked as if it had been dead longer and was somewhat eaten, one fin being gone and the mouth being somewhat torn.

623. *Statement of Frank Knowles, Little Hocking, Washington Co., Ohio, Oct. 15, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the fall of 1881.

FOOD.—They come to their regular feeding place every evening for their daily bread.

GROWTH.—May 1, 1882, the largest were 6 inches long. Some of them now measure 20 inches and will weigh from 3 to 3½ pounds each.

MISCELLANEOUS.—I exhibited a pair of them at our county fair, where they attracted much attention. They failed to spawn this season. I have changed them into another pond with plenty of water, hoping that they will spawn there.

624. *Statement of John Hall, Marietta, Washington Co., Ohio, July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 12 carp received on December 15, 1880, in a pond under the assurance of the owner that there was always a sufficient supply of water. It, however, soon dried up, and I lost them.

625. *Statement of John Lee, Big Prairie, Wayne Co., Ohio, Mar. 21, 1884.*

DISPOSITION OF CARP RECEIVED.—The 15 scale carp received on November 15, 1880, I put in a pond covering $\frac{1}{4}$ -acre, with a depth varying from 1 to 5 feet, and a mucky bottom. A 3-inch tile-drain conducts the surplus water from the pond. Its temperature is 60°.

ENEMIES AND FOOD.—Frogs and turtles, but no other fish than carp inhabit the pond. Almost daily I give the carp bread.

GROWTH AND REPRODUCTION.—The 6 old carp remaining average about 18 inches in length. There are many young in the pond, and they are about 3 inches long.

DISPOSITION OF YOUNG.—I have given away 100 fry.

626. *Statement of J. H. Rumbaugh, Deunquat, Wyandot Co., Ohio, Dec. 12, 1883.*

DISPOSITION OF CARP RECEIVED.—About the 10th of May, 1881, I received 26 carp. I received some since, but lost them. My pond is 25 by 50 feet, with a dept of from $1\frac{1}{2}$ to 3 feet. The bottom is mucky. The pond is supplied with water from a spring rising up in one corner of it. Generally the water overflows, except in hot, dry weather, when it evaporates as rapidly as it comes into the pond.

PLANTS.—The pond contains white and yellow water-lilies. The banks of the pond are covered with red-top grass and white clover.

ENEMIES.—With the exception of some black bass that got into the pond during high water in June, 1882, the pond contains nothing but frogs.

FOOD.—I give the carp dry bread, sweet green corn (which I cut off of the cob), and thick, sour milk. The milk is fed to them by pouring it into a trough placed 6 inches below the surface of the water. The small carp will eat out of the trough like pigs. I have not fed to them a quantity sufficient to keep one hen alive. I have seen carp jump a foot or more out of the water after a sprig of red-top grass, and strip seed off of it.

GROWTH.—One of the original carp on the 7th of October weighed 7 pounds, 10 ounces. There are but 4 of them left.

REPRODUCTION.—About 200 young carp were produced the first season (1881). None were produced the second season (1882). In another pond I put 9 old and 40 young carp, which produced 300 young carp. Eighteen of the carp of 1882 on the 1st of October weighed 73 pounds. The 1883 fish measure about 2 inches in length. With the young carp I have stocked two other ponds, one larger and one smaller than the pond in which I cultivated them.

EDIBLE QUALITIES.—I have eaten carp fried. Unless it be the black bass, I pronounce the carp the best fish I ever ate. Those I ate were rather bony, but I suppose were I to eat a large one I could not raise that objection. The carp I ate averaged $1\frac{1}{2}$ pounds in weight.

OREGON.

627. *Statement of M. C. George, M. C., Portland, Multnomah Co., Oreg., Oct. 16, 1882.*

GROWTH.—A few weeks ago I had for our dinner a carp which you sent in the spring to Captain Kerns. It weighed over 2 pounds, and many of them are much larger than that one.

628. *Statement of David A. Wilson, Tygh Valley, Wasco Co., Oreg., Oct. 2, 1882.*

GROWTH AND REPRODUCTION.—I put the two pairs of carp, 7 inches long, received last fall into a pond about 100 feet square and 3 feet deep; here they have increased in size until they measure 15 inches in length and weigh 3 pounds each. They have raised several hundred young, those first hatched being about 6 inches long.

PENNSYLVANIA.

629. *Statement of C. E. Goldsborough, Hunterstown, Adams Co., Pa., Sept. 1, 1884.*

GROWTH.—Of the 18 carp received on April 18, 1882, but one survived, owing to the pond not being ready. Last spring this one carp was found to have grown from 8 inches to the length of over 2 feet.

DIFFICULTIES.—I received another supply of carp on November 18, 1882, but up to June 26, 1884, when an unprecedented flood allowed my old carp and what other carp there were in the pond to escape into Connewago Creek, I saw nothing of them.

630. *Statement of Philip D. Weaver, Menallen, Adams Co., Pa., Aug. 27, 1884.*

GROWTH.—I received 7 carp not 2 inches long in November, 1881. These carp are now 2 feet long. In one pond I have 1,000 young about 14 inches in length and 5,000 but little less than 2 inches long, and an unlimited number of smaller fry. The old ones are 2 feet long now.

631. *Statement of C. C. Lobingier, Braddock, Allegheny Co., Pa., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 scale carp received on November 3, 1880, I put in a pond 25 by 60 feet, with a depth varying from 15 inches to 4 feet, and a bottom of clay. A $1\frac{1}{2}$ -inch stream of cold spring water supplies the pond.

PLANTS.—Common grapes grow around the pond and out in the water. I put pond-moss and water-cress in the pond repeatedly, but the carp devour them as fast as I put them in.

ENEMIES.—No other kinds of fish, but plenty of water-snakes, bull-frogs, and crabs inhabit the pond.

FOOD.—I give the carp bread and vegetables 3 or 4 times a week. They seem to prefer fish-worms and watermelons to anything else.

GROWTH.—There are 14 carp remaining. One jumped out of the pond and died. They are from 12 to 18 inches long, and weigh 2 or 3 pounds.

REPRODUCTION.—There are more than 100 young in the pond this year, which are from $\frac{1}{2}$ to 2 inches long. I discovered no fry until June, 1883.

DIFFICULTIES.—The water that empties into my pond is too cold for the carp. I think if the water had been warmer my carp would be much larger. The greatest drawback I have to contend with is the numerous snakes and crabs that inhabit my pond.

632. *Statement of J. W. Higbee, Castle Shannon, Allegheny Co., Pa., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 scale carp received on November 10, 1880, I placed in 2 ponds covering, respectively, $\frac{1}{4}$ and $\frac{3}{4}$ acre, having maximum depths of 6 and 8 feet, and muddy bottoms. A 3-inch stream of water at a temperature of 70° flows through the ponds. The average depth is 2 feet. The ponds are constructed so that I can draw off the water.

PLANTS.—Water-lilies and willows grow in the pond.

ENEMIES.—Minnows and bull-frogs inhabit the larger pond. Nothing that disturbs the carp inhabits the smaller pond, which I use as a spawning-pond.

FOOD.—I give the carp stale bread daily, and occasionally give them corn and wheat.

GROWTH.—The 12 carp remaining average about 24 inches in length and weigh about 8 pounds. One measured 22 inches last April. Three of the old carp have scales $1\frac{1}{2}$ inches in diameter.

REPRODUCTION.—There were 292 young hatched last year and thousands this year. The yearlings average 12 inches in length and 1 pound in weight. The fry are from 1 to 4 inches long. I moved the young last spring to the large pond. There is a great difference in the size of the fish of the same age.

DIFFICULTIES.—I have had trouble in killing the muskrats.

MISCELLANEOUS.—If the carp continue to do well I will build another pond. I keep only 9 of the old carp in the breeding pond, and shall keep no more than 6 there next year.

633. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Jan. 5, 1880.*

DISPOSITION OF CARP RECEIVED.—I have my carp in what I call my fountain pond, a circular basin about 24 feet in diameter with a center of stone work with a hollow center into which the fish can go. This basin is paved with brick in the bottom and has a girdle of 5 or 6 feet of boulders along or around the upper edge. It resembles in form an immense wash basin, and in the bottom of it I have a draining arrangement just like a wash-basin in a bath-room. The stone work in the center is surmounted by a patent revolving and pulsating fountain.

The water in this basin is about 3 feet deep, but before placing my fish in it I put a large number of large boulder stones in the deepest part and over them I threw a large amount of a fern that grows in the bottom of my breeding ponds, and also a lot of old dead leaves from the maples alongside the basin. Over the boulders and litter I laid large, flat stones, under which the fish can take shelter; and over these stones I stretched plank and weighted them down with stones. I then raised the water and put in the fish as soon as I got them.

The winter here is so far an unusually open one, with the exception of a few days, when

the ice was frozen to the thickness of from 2½ or 3 inches on shallow ponds. This is all gone, and for some time past the ponds have been, and are now, free from ice.

DIFFICULTIES.—I have found several of my smallest carp dead and also one of the large ones. I have not lost over 8 or 9. To-day, and for a few days past, I observed the smaller ones swimming near the top of the water with something of a wiggling motion, but they take alarm and shoot down when I approach them. I am sorry to see them acting thus, as I feel certain it is not a healthy sign and bodes a loss of more of them. The large ones which I got in the first lot show themselves much the stronger fish, as I have found but one of them dead and one sick. The latter, which I put in a reservoir in the spring-house cellar, has gotten well. The fish I found dead did not show any outward signs of having been injured, and I am quite at a loss to account for their dying.

My new pond is now full of water and is an entire success, not leaking a drop. I made it in exact accordance with views acquired by actual experience of over 20 years.

634. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Jan. 10, 1880.*

DISPOSITION OF CARP RECEIVED.—I put 10 of my largest carp in a separate pond with a bottom very soft and muddy, and I have not seen any dead ones in it as yet. It had a deep hole in the bottom about the size of a wash tub, over which I stretched a plank so as to come down and close it. I had 50 in the first lot and 117 in the second, so with my losses I still have about 140 fish. I do not think the cold weather has caused the deaths, but as it is very common to find large numbers of dead goldfish floating in the winter and spring, the death-rate may be nothing unusual, they being of the same nature as carp. The bottom of the pond has a large amount of litter, such as leaves and dead grass and muck, so I cannot think the fish suffer for want of cover, and I am hopeful of carrying most of them over the winter safely.

DIFFICULTIES.—One of the largest ones had a wound from which I think it died. I find that moving the sick ones to other water does not do very much good; they die as a general and almost universal rule. I cannot say I am discouraged about some of my carp dying, as the number so far does not amount to more than from 18 to 25, and only 3 of them large ones. As they all float when dead, I presume I know the number pretty certain.

635. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Apr. 18, 1880.*

DESCRIPTION OF POND.—My fountain pond is paved, and hence no muskrat can find a lodgment there. In the center is a kind of round tower of rustic masonry and an opening inside about 3 feet in diameter, covered with a large stone, and up through the center of this goes the supply pipe which drives the revolving fountain. On the side of this is a manhole, or place for a man to put his head in, in case of need of repairs—here the carp took up their winter quarters at the base of the pipe. Inside this home is a small opening to drop the water when the fountain is stopped, and out of which spouts a small stream when the fountain is in action. The place is dark and cosy, below the general level of the pond bottom, and suitable for a winter home for carp. Had I possessed a grating of iron the proper size, just too small for a muskrat to pass through, and abundantly large enough for the fish, I feel certain I would not have lost a single fish.

GROWTH.—I found only 9 live, healthy fish out of the two lots you so kindly sent me, and what astonished me most was that they have grown since putting them in. I measured one, and found it full 7½ inches long. They are in splendid condition. They hid in the mud in the most approved manner.

ENEMIES.—The muskrats have almost decimated my carp pond. There is another pond close by that has quite a number of muskrat burrows, and in which we have succeeded in digging out and killing several of the pests. The mild winter favored the raiders, but I have devised a permanent trap for them, and hope to make them scarce in the future.

636. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Sept. 10, 1880.*

DISPOSITION OF CARP RECEIVED.—Last fall I fortunately put 10 carp into a small pond much isolated from the others, situated at a spring in my orchard, and in the bottom of it I sank a bottomless box from 1 foot to 15 inches deep, the top being about on a level with the bottom. Over this I laid a long plank and weighed it down, leaving ample space to allow the fish to go into the box. This pond's bottom was of very deep black muck or greasy mud, in which these 10 fish wintered in safety. The other 8, the only ones that escaped the muskrats, have also a history. In my large new pond there

was a small amount of shallow and rather muddy water and much exposed to the sun's rays.

PLANTS.—I have 2 or 3 kinds of grass that grows very profusely in the bottom of one of my older ponds, and will plant it in the pond where I have my young fish. There is also a kind of saw-grass growing profusely along the edges of some of my small ponds. This I propose taking up in large sods and placing in the shallow water. I have a bridge or covering under which the fish can quietly lay in darkness during the winter season. The valve and draining-pipe are at the lower end and bottom of this ditch; and around the valve is a boxing, with spaces between the slats of $\frac{1}{2}$ inch, opening at side and top, and up through which extends a bail to raise the valve by means of a hook. This is a most perfect mode of preventing the loss of fish by suction when lowering the water. I feel certain of 18 healthy fish at present and hope to winter them safely.

GROWTH.—On draining the water from this pond on the 21st day of August, 1880, I found a large fish and captured it with a dip-net, and to my astonishment it was one of my carp, which by actual measurement was 13 inches long. There being an outlet or connection between this pond and the fountain pond, it was not hard to account for its being there. I put it in the fountain pond with the other 7 until I got sufficient water in the large pond. I then drained the fountain pond and found that the other 7 fish were much smaller but very perfect and healthy. The fountain pond was of a much lower temperature and deeper than the other one in which the large fish grew. I infer from this that temperature has much to do with the growth of the carp. These 7 fish are now in this new, large pen, in the bottom of which I have a large ditch cut in the shallow bottom.

637. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Nov. 4, 1880.*

GROWTH.—On October 29, 1879, one of my carp measured $4\frac{1}{2}$ inches in length. This same carp died on October 4, 1880, and was found to be $16\frac{1}{2}$ inches long.

638. *Statement of George Finley, East End, Pittsburgh, Allegheny Co., Pa., Dec. 7, 1833.*

DISPOSITION OF CARP RECEIVED.—In October, 1878, I received 25 carp about as broad as my thumb and only a few inches long. I put them in 2 small ponds with different exposures and different temperatures in summer. I have also an artificial lake covering from 3 to $3\frac{1}{2}$ acres, 2 other fine ponds, and close ponds.

CONSTRUCTION OF PONDS.—I have had 28 years' experience in fish culture, and as the carp is a still-water fish I think it only necessary to have enough water to keep the pond full. It is not necessary to have large ponds.

FOOD.—I feed the carp largely on stale baker's-bread. And while curd of milk and spoiled cheese are excellent for them, they will eat almost anything that a pig will eat.

GROWTH AND REPRODUCTION.—The following fall after I placed the carp in the pond I found that they averaged $16\frac{1}{2}$ inches in length, and in the fall of 1881 were $19\frac{1}{2}$ inches long and weighed 5 pounds. I have grown carp 9 inches in length from spring to fall, and a 6-inch carp in the spring grew to the length of 16 inches the following fall. I have also 18 months' old carp that are 18 inches long. This rapid growth only occurs when the parent fish are large and spawn early in spring. As you go farther south, where the summers are longer, even a greater size is attained. Last spring a large number of young were seined out of, but thousands of fine large fish, and hundreds of from 12 to 18 inches, were left in the lake. Carp are wonderfully prolific, and, in my opinion, nothing multiplies and grows faster.

EDIBLE QUALITIES.—Carp are palatable, nutritious, and healthy. Its flesh is of excellent flavor, and, like the shad, combines the qualities that go to make a perfect whole.

SUPERIORITY AS A FOOD-FISH.—The German carp being omnivorous is the only variety that can be profitably cultivated as a food-fish. I have given other varieties of food-fish, such as black bass, a long and fair trial, and the experiment ended in disappointment and pecuniary loss. No fish that requires live food alone can be profitably raised as an article of food.

HABITS.—Although they prefer to eat off the bottom, they come to the surface for their food, which they eat as regularly as ducks or chickens. The bread floats on the surface, and is torn and jerked under with the voracity of young sharks. They are like domestic animals to me.

HARDIHOOD.—Although the 12 carp, 6 inches long, which I sent to Florida in a large tin can were 5 days on their journey, they arrived in excellent condition. They stand transportation and rough usage wonderfully well, and, on being kept out of the water a reasonable time, do not die.

MISCELLANEOUS.—Carp, like other fish, take the hook of the angler more readily at some seasons than at others. Sometimes they cannot be induced to touch one.

639. *Statement of Robt. B. Phillips, Squirrel Hill, Pittsburgh, Allegheny Co., Pa., Dec. 7, 1883.*

DISPOSITION OF CARP.—In June, 1882, I obtained from Mr. George Finley 10 small carp, none measuring more than $5\frac{1}{2}$ inches in length and some were even less than that. I placed them in an ice-pond from 40 to 50 feet wide by about 120 feet long, having a maximum depth of 4 feet.

GROWTH.—I did not see the carp again until August, 1883, 14 months after they were put in the pond, when I drew off the water from the pond. All were astonished to see 10 large carp, the largest measuring $17\frac{3}{4}$ inches in length and the others 15, 16, and 17 inches. These were not of the thin, slim kind, but fully $3\frac{1}{2}$ inches thick and flat on the back. The carp were scooped up with a bushel-basket and placed in a small pond for inspection.

MISCELLANEOUS.—I examined the bottom of the pond and found no shelter of any kind in the shape of logs, brush, or stones. They wintered on the naked bottom.

640. *Statement of Samuel Daubenspeck, Brady's Bend, Armstrong Co., Pa., July 24, 1884.*

GROWTH.—The carp received 3 years ago spawned this spring. The old carp are now 30 inches long and weigh 7 pounds each. November 10, 1882, these carp weighed 3 pounds apiece.

641. *Statement of James Somerville, Brady's Bend, Armstrong Co., Pa., Oct. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on May 3, 1881, I placed in an 8-acre pond with an average depth of $2\frac{1}{2}$ feet and a loamy bottom. An inch stream supplies the pond with water at a temperature of 70° F. in summer.

PLANTS.—Rushes and other grasses grow in the pond.

ENEMIES.—A few frogs infest the pond.

FOOD.—I give the carp cracked corn, bread, &c.

GROWTH.—The 2 carp remaining are 22 inches in length and 5 pounds in weight. There are no young yet. Last April I bought 10 more, then 5 inches long but now measuring from 11 to 14 inches in length, and weighing on the average 30 ounces each.

DIFFICULTIES.—More than $\frac{1}{2}$ of the first lot of carp died one week after I received them.

642. *Statement of S. H. Fegely, Kutztown, Berks Co., Pa., Oct. 6, 1884.*

DISPOSITION OF CARP RECEIVED.—Last November I received some carp and put them in a pond prepared for them. A part subsequently escaped during overflows of the water, but 9 remained.

GROWTH.—These 9 carp were weighed in the presence of many visitors who will verify the figures. The weights are as follows: 6 weighed 2 pounds; 2 weighed $2\frac{1}{2}$ pounds; and 1 weighed 3 pounds, making a total of 20 pounds for 9 fish, not over a year old. Two measured 14 inches in length; 4 measured 15 inches in length; and 3 measured 16 inches in length. They were 3 inches across the back and from 5 to 6 across the belly. All are scale carp except one, a mirror carp. A large number of persons saw the carp and all pronounced them very fine. I think this a wonderful result for these magnificent fish.

643. *Statement of John A. Biddle, Williamsburg, Blair Co., Pa., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in July, 1880, I put in a pond near a creek. The temperature of the pond is 72° .

PLANTS.—Moss and water-cress grow in the pond.

DIFFICULTIES.—A heavy flood in May, 1881, broke my dam and allowed all my carp to escape.

644. *Statement of J. B. Miller, Canton, Bradford Co., Pa., Aug. 15, 1883.*

GROWTH AND REPRODUCTION.—I placed some carp in my pond about 3 years ago. On last Saturday, with a scoop-net, I brought up the first time 50 carp, measuring 6 inches in length. I think these were spawned last May. I brought up as many the next haul, and several were 18 inches long, spawned over a year ago. Some of the largest jumped out of the net. The one that was dressed for breakfast weighed $3\frac{1}{2}$ pounds, and its flesh was white and fine and almost free of bones.

645. *Statement of William Daubenspeck, Bruin, Butler Co., Pa., Feb. 12, 1883.*

GROWTH.—The 3 carp from 3 to 5 inches long received from Mr. Findly last May cost me \$2. I placed them in my pond a short time after I received them. I found, after draining

my pond the last of October, that the largest one measured $14\frac{1}{2}$ inches and weighed $2\frac{1}{2}$ pounds, and the others measured respectively from 12 to 13 inches and weighed from 1 to 2 pounds.

646. *Statement of William Thompson, jr., Lemont, Centre Co., Pa., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—Of the 18 carp received on November 16, 1880, I placed 15 carp in a pond 50 by 100 feet, having a maximum depth of 3 feet. It has a muddy bottom, and is supplied by a $1\frac{1}{2}$ -inch stream of warm water. The other 3 carp died before the pond was completed.

PLANTS AND ENEMIES.—Nothing but moss grows in the pond. Frogs and tadpoles inhabit it.

FOOD.—I do not feed the carp.

GROWTH.—We have eaten 3 and suppose there are 12 carp remaining. One taken out July 23, 1883, weighed 3 pounds and 13 ounces and measured $20\frac{1}{2}$ inches in length.

REPRODUCTION.—There are hundreds of young in the pond which are from 1 inch to 6 inches long, the longest weighing about $\frac{1}{2}$ pound each.

DISTRIBUTION OF YOUNG.—I gave 40 of the fry to John J. Thomson, jr., Lemont, Pa., in November, 1882.

647. *Statement of W. R. Shelmire, Avondale, Chester Co., Pa., July 21, 1883.*

LOSS OF THE CARP RECEIVED.—In the spring of 1880 I received about 18 carp, all of which I lost by an accident to my pond.

648. *Statement of C. J. Morton, M. D., Toughkenamon, Chester Co., Pa., July 11, 1881.*

GROWTH.—I have reason to think that all of the carp received in the fall of 1880 are alive and doing well. They glide by me almost every day and appear to be as large as shad. I caught one about 2 weeks ago which measured 16 inches in length.

FOOD.—I feed them every morning and often in the evening on curd and mush, and beans and corn first boiled and then run through a sausage-cutter. I also often dig earthworms for them.

649. *Statement of Samuel S. Conard, West Grove, Chester Co., Pa., Dec. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on May 25, 1880, and the 19 received in December, 1882, by Mr. M. Conard were placed in a pond 40 by 60 feet, with an average depth of $1\frac{1}{2}$ feet and a bottom of mud and gravel. A very small stream from a spring which rises from 200 to 300 yards distant supplies the pond.

PLANTS AND ENEMIES.—Rushes and water-lilies grow in the pond. A few frogs and small turtles get in, but no other fish than carp inhabit it.

FOOD.—I give them bread and sorghum occasionally.

GROWTH.—In 60 days the original carp grew from 3 inches to 7 or 8 inches in length. Those received in December, 1882, were about 2 inches long, and July 26, 1883, measured from 9 to 11 inches, and all doing well. September 1, 1883, the largest was $12\frac{1}{2}$ inches long.

DIFFICULTIES.—By mistake, the supply of water was cut off from the pond in August, 1880, and the first lot of carp perished.

650. *Statement of Joseph Pyle, West Grove, Chester Co., Pa., Dec. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in June, 1880, and 20 more received in November, 1882, I put in a pond covering about $\frac{1}{4}$ of an acre, with a depth of from 1 to 3 feet, and a muddy bottom. In summer, 15 gallons of spring water flow through the pond per minute.

PLANTS.—Water-lilies, cat-tail, a quantity of grass similar to fox-tail, and a species of dock grow in the pond. They relish cat-tail very much.

ENEMIES.—Turtles, a few minnows, and small sun-fish, and a great many frogs inhabit the pond.

FOOD.—I did not feed the carp until August and September, 1882, when I gave them sweet corn in the milky state. When I desire to see them I sometimes give them bread and crackers.

GROWTH.—The 3 original carp average from 23 to 25 inches in length, and 8 pounds in weight.

REPRODUCTION.—There were more than 1,000 young in the pond last season (1882), and I judge there are from 5,000 to 10,000 this season. The yearlings vary in length

from 6 to 15 inches, but have not grown as rapidly as the original carp in the same length of time. This may be due to too many (600 to 700) in so small a space. The young hatched this summer are very fine, and are about two inches long.

SALES.—Last year I sold and gave away about 200, and have the balance in the pond. This season I have sold nearly \$100 worth of carp at 10 cents each.

DIFFICULTIES.—One of the old carp flirted out of the water on the bank, and 6 others disappeared.

EDIBLE QUALITIES.—My table has frequently been supplied with fish of the finest quality. The flesh of the carp is very white, and of the finest flavor.

651. *Statement of P. Curley, Williams Grove, Clearfield Co., Pa., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—November 15, 1880, I received 13 carp, about 2 inches in length, and put them into a pond about 100 yards square, with a mud bottom covered with thick moss. It is fed by one of the best springs in the county, which is cold in summer and warm in winter.

PLANTS AND ENEMIES.—The water contains cresses and other wild grass, and also contains a good many lizards and some catfish.

FOOD.—I have fed the carp once a week with wheat-bread, corn meal baked, cold potatoes, and lights.

GROWTH.—The original carp are now 12 to 14 inches long. I would not sell one at any price.

REPRODUCTION.—About spawning time I could often see 6 at a time. They dart under the moss as soon as they see any one. I cannot tell whether they have any young.

652. *Statement of William Bahme, Newlin, Columbia Co., Pa., July 14, 1884.*

DISPOSITION OF CARP RECEIVED.—I received 41 carp in December, 1880, and have received 20 since. One of my carp ponds has half an acre in it, and the other a third of an acre. The dam is 25 feet thick at the bottom, growing narrow at the top. The greatest depth of the pond is 6 feet, running out to nothing. Part of the bottom is composed of clay and part of gravel and mud. There are on the bottom some great stones, 9 feet long, which are raised up somewhat so that the fish can creep under them; grass has been planted on them, and the roots hang down. Water is supplied from springs, some nearly half a mile away, some a quarter of a mile away, and some in the middle of the pond. The water supply is regulated by a gate, and only so much comes in and so much goes out. During heavy rains we cut it off entirely, so as to prevent the lime and manure water from the fields from coming in. We can shut the gate from our bed-room window in case of night thunder storms. I never let more than 4 inches of water enter. Sometimes the water gets low, especially in winter. Then the minks catch the carp. While we have been at work on the pond the water has been very low, and I have kept two lanterns burning all night on the banks. Many people thought we could raise no carp because our water is cold.

PLANTS.—The plants are spatter-dock lilies, which I fetched from New Jersey; some of our lilies here, and many grasses, partly meadow-grass, through which the carp creep as natural as can be.

ENEMIES.—The cranes, minks, muskrats, snakes, and turtles have made me a great deal of trouble. I caught 87 muskrats in one year and 15 minks. We scraped the pond a few days ago, and it is clean now from all water animals. I found 5 eels. Five of my neighbors got carp, but their carp were all eaten up by snakes.

FOOD.—We fed the carp with boiled corn.

GROWTH.—November 6, 1883, there were 13 in all left, 8 or 9 being of the first lot and the rest of the second lot. They weighed 4 pounds, good weight. To look at them we thought they would weigh 7 or 8 pounds, but I put them in a bag and weighed nearly all of them myself, and 4 pounds was the most.

REPRODUCTION.—I saw young for the first time in my pond July 7, 1884.

EDIBLE QUALITIES.—I am 44 years old, and have fished ever since I was big enough to catch a whipping for fishing for red speckled trout, but never ate any such sweet and rich fish in all my time.

HOW TO CATCH CARP.—I caught some with a little minnow, since which time they are very shy.

653. *Statement of S. P. Graham, Linesville, Crawford Co., Pa., July 21, 1884.*

GROWTH.—Cold water killed all but 2 of the consignment of carp received by my father, George Graham, in 1881. These 2 carp now average about 5 pounds. They have not spawned yet.

654. *Statement of S. Weeks, Supt. W. Pa. Fish Hatchery, Corry, Erie Co., Pa., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp received in July, 1880, I put in a pond 35 by 100 feet, having a muddy bottom, and a depth of from 6 to 18 inches, except 10 by 25 feet in the center, where the water is 3 feet deep. The supply of water in summer, when it has a temperature of 75°, is equal in amount to that consumed by evaporation, and in winter is sufficient to prevent the pond from freezing over.

PLANTS AND ENEMIES.—Flags and water-lilies grow in the pond, and frogs and lizards inhabit it.

FOOD.—I did not feed the carp the first year, but I now give them cooked meal every other day.

GROWTH.—There were 9 carp in the pond last spring, which average 12 inches in length and weigh 1½ pounds.

REPRODUCTION.—The carp spawned for the first time last year, and when I netted the pond last fall only 150 young were found. The fish spawned again this year, but I cannot tell the number of young yet. The yearlings are 3 inches long.

MISCELLANEOUS.—We have given out 27 carp. The remainder we retain as yet. Carp are a very hardy fish and worth cultivating. None better can be grown here for the people. The carp would thrive better if the water in my pond was not so cold.

655. *Statement of J. W. Long, Mount Morris, Greene Co., Pa., Oct. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 mirror carp received June 1, 1880, and the 20 carp received November 15, 1881, I placed in 2 artificial ponds, one containing 2 acres and the other ½ acre. Each has a muddy bottom. A ½-inch stream of spring water and the drainage from a watershed of 30 acres feed the ponds.

PLANTS.—White water-lilies and bulrushes grow in the ponds.

ENEMIES.—Snapping-turtles, many small frogs, but no other fish than carp inhabit the ponds.

FOOD.—I do not feed the carp.

GROWTH.—I have all of the original carp but 1, which, having received an injury, died last fall. They averaged 10 pounds July 28, 1883. They attained a length of 16 inches within less than 5 months after their introduction into the pond.

REPRODUCTION.—My carp spawned when yearlings. I have a few young that are 2 years old which were 20 inches long July 28, 1883. The yearlings then averaged 1½ pounds. The ponds seemed to be full of young. My great success surpassed even my most sanguine expectations.

EXHIBITION OF CARP.—I placed my mirror carp on exhibition at the county fair and received \$70 as a premium thereon.

DIFFICULTIES.—The only obstacle that confronts me is the destruction of the eggs by the carp themselves.

656. *Statement of E. B. Iselt, Spruce Creek, Huntington Co., Pa., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 2 lots of carp of 25 each, and 110 more in October, 1881. My 2 ponds cover, respectively, ½ acre and 1 acre, and have muddy bottoms. The larger pond is supplied with water from the smaller, which is fed by the leakage from a mill race. The temperature of the water varies from 60° to 65°.

PLANTS AND ENEMIES.—Grass grows in the ponds. I try to rid them of the enemies of the carp, but still have a few snakes, frogs, turtles, muskrats, and other fish than carp to contend with.

FOOD.—As there is plenty of natural food in the ponds, the carp do not feed eagerly on the scalded chop that I give them.

GROWTH.—The original carp weigh from 3 to 5 pounds. Of the first 2 lots there are about 30, and of the last lot about 80 remaining.

REPRODUCTION.—There are many young about 2½ inches long in the ponds. They first spawned this summer.

DIFFICULTIES.—It is difficult to keep other fish, turtles, and snakes out of the ponds, and the muskrats from cutting the banks.

MISCELLANEOUS.—I expect to be well paid in a few years for the trouble I have had at carp culture.

657. *Statement of Henry Truman, of Jefferson County Sportsman's Association, Sigel, Jefferson Co., Pa., Aug. 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 60 carp received by the Jefferson County Sportsman's Society in October, 1881, and another lot of from 25 to 30 received in the spring

of 1882, were placed in a pond especially constructed for carp, covering from $\frac{1}{2}$ to $\frac{3}{4}$ acre. It has a depth of from 18 inches to 6 feet, a muddy bottom, and a supply of rather cold water from 3 good springs.

PLANTS.—Swamp-grass, skunk-cabbage, and a variety of plants grow in the pond.

ENEMIES.—Frogs and lizards inhabit the pond.

FOOD.—I gave the carp a variety of food at first, but have fed nothing for a year, supposing they were all dead, as I could see none of them.

GROWTH.—Two carp were washed out of the pond and were found in a small pool below in the spring of 1883. One of them weighed from 3 to 4 pounds and the other about 1 $\frac{1}{2}$ pounds. The carp were seen in the pond for the first time about 3 weeks ago, and from their actions I supposed they were spawning. There are the greater part of the original carp in the pond. They average about 15 inches in length.

658. *Statement of J. J. Carter, Lyles, Lancaster Co., Pa., July 22, 1884.*

GROWTH.—On the 10th of last May I put 60 carp in my pond. They were of last year's spawn, and ran from 1 $\frac{1}{2}$ to 2 $\frac{1}{2}$ inches in length. Just 71 days afterward, having occasion to draw off most of the water, I caught 4 leather carp. The largest measured 11 inches in length, the others from 1 to 2 inches less. This was not guessed or estimated length, but actual measurement with a rule.

659. *Statement of Benjamin L. Garber, Marietta, Lancaster Co., Pa., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on June 8, 1880, I put in a pond 70 by 160 feet, with an average depth of 5 feet, and a bottom of clay and gravel. A 6-inch flow of limestone water from springs $\frac{1}{2}$ mile distant supplies the pond.

PLANTS AND ENEMIES.—Several kinds of grasses and water plants grow in the pond. Turtles, green frogs, and various kinds of common fish inhabit it.

FOOD.—I never feed the carp.

GROWTH.—There are 7 carp remaining. I caught a carp in March, 1883, being about 3 years of age, that measured 21 $\frac{1}{2}$ inches in length, 17 $\frac{1}{2}$ inches in circumference, and weighed 5 $\frac{1}{2}$ pounds.

I am at a loss to know why my carp do not increase.

660. *Statement of W. H. Aiken, New Castle, Lawrence Co., Pa., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in November, 1880, I put in a $\frac{1}{2}$ -acre pond, with a depth of 3 feet, and a muddy bottom. A $\frac{1}{2}$ -inch stream of water, at a temperature of 70°, supplies the pond. The carp received subsequently I placed in public waters. This spring I removed the original carp to another pond.

PLANTS AND ENEMIES.—Water-lilies and wild rice grow in the pond. Frogs, but no turtles nor other kinds of fish, inhabit it.

FOOD.—Daily I give the carp bread.

GROWTH.—In the spring of 1883 there were 13 original carp remaining. They averaged 3 pounds in weight.

REPRODUCTION.—In 1882 there were several hundred young in the pond, but I cannot state the number. This year's increase is large. The young weigh from $\frac{1}{4}$ to $\frac{1}{2}$ pound.

DISPOSITION OF YOUNG.—I placed the fry in public streams.

661. *Statement of Watson N. Dinsmore, New Castle, Lawrence Co., Pa., Nov. 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp from the United States Fish Commission in November, 1882. I had already bought from George Findley, of Pittsburgh, Pa., 7 goldfish, and from Henry Edenburn, West Middlesex, Pa., 27 carp. Last June a flood swept away the pond and carried all the fish except 1 goldfish into the Shenango and Big Beaver creeks. Since June I have built a levee between the rivulet and the pond 1 foot higher than the high-water mark, which I think will protect it hereafter. I have also bought from Mr. Edenburn 42 carp, and from Mr. Findlay 23 goldfish. These, with the 8 carp I have just received from the United States Fish Commission, I shall keep together this winter, but next spring I intend to separate the carp from the goldfish. No water can now get into the pond except spring water from below. The pond lies open to the sun and contains pond-lilies, dock, &c.

662. *Statement of Andrew Lewis, New Castle, Lawrence Co., Pa., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received on November 6, 1880, and those received subsequently, I put in a pond covering 30 square feet, having a depth of

3 feet, and a muddy bottom. The pond is full of water a portion of the year, but it is stagnant in dry seasons. The temperature of the pond was 82° on a very warm day in August.

PLANTS AND ENEMIES.—The pond contains white pond-lilies and other water-plants, with roots extending and the leaves floating upon the surface of the water. Frogs inhabit it.

FOOD.—I gave the carp bread 3 times a week, but now feed them daily.

GROWTH.—I have no original carp, but the 4 carp of the second lot remaining average 12 inches in length and weigh 15 ounces. I have seen no young yet.

DIFFICULTIES.—The water got so shallow in the summer that the carp came to the surface.

663. *Statement of J. W. & E. Grove, Fredericksburg, Lebanon Co., Pa., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 23 carp received in November, 1880, and the 20 received in December, 1881, we put in a pond 40 by 100 feet, with a depth of 5 feet, and a muddy bottom. We allow such an amount of spring water to flow into the pond as will equal that consumed by evaporation. The temperature of the water is from 60° to 65°.

PLANTS.—Water-cress and several species of potamogeton grow in the pond.

ENEMIES.—The pond is inclosed by a tight fence, and is not inhabited by anything that disturbs the carp.

FOOD.—I give the carp 1 quart of corn and 1 pint of wheat-screenings once a week.

GROWTH.—There are only 1 of the original and 6 of the second lot of carp remaining. They seem to grow rapidly. When we received them they were probably only 3 inches long, and in 12 months they measured 12 inches. The original carp is now about 20 inches long and weighs from 8 to 9 pounds. The other 6 average from 4 to 5 pounds. They have probably not spawned yet. I have seen no young yet.

DIFFICULTIES.—Before we enclosed the pond by a high tight board fence it was infested by muskrats and turtles. During the winter the former destroyed all of the original lot but one. In the spring, while drawing off the water from the pond, we found a large snapping-turtle, to which we attributed the destruction of the greater part of the second lot.

We desire more carp, as our pond is now in a good condition.

664. *Statement of Jacob G. Heilman, Jonestown, Lebanon Co., Pa., July 27, 1883.*

DESCRIPTION OF CARP RECEIVED.—The 9 carp received on June 3, 1880, I put in a mill-pond covering about 5 acres, with an average depth of about 5 feet and a bottom composed principally of mud. A large stream, at a temperature of 70° in summer, supplies the pond with water.

PLANTS.—The pond contains water-lily, dock, and a tall, rank grass that grows a seed.

ENEMIES.—Suckers, minnows, catfish, eels, and pike inhabit the pond.

FOOD.—I give the carp no artificial food, as I consider the supply of natural food sufficient.

GROWTH.—I have taken 3 of the original carp which measured, respectively, 24, 18, and 14 inches in length. The largest weighed 7½ pounds.

REPRODUCTION.—I cannot estimate the number of young in the pond.

MISCELLANEOUS.—My dam is the last one on the Little Swatara, a prolific fish stream well adapted to the propagation of carp. I shall do all in my power to give the carp a permanent foothold, which, when gained, will result in the stocking of the entire stream, running a distance of about 15 miles.

665. *Statement of H. W. Jarrett, Emaus, Lehigh Co., Pa., Sept. 29, 1883.*

GROWTH.—The carp 12 I received November 29, 1882, have done well. Yesterday I found 3 leather carp 12½ inches long and weighing from 1½ to 1¾ pounds each, beautiful in color and in shape.

666. *Statement of D. N. Kern, Shimerville, Lehigh Co., Pa., May 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 9 scale carp in the spring of 1881, and 20 mirror carp November 12, 1881. My pond is situated near the source of a fine creek.

GROWTH.—November 25, 1882, my carp were 18 inches long and weighed 3 pounds.

REPRODUCTION.—The carp have done very well, and they produced young last summer.

THE CREEK STOCKED.—In August, 1882, in consequence of a very heavy rain, my pond rose 7 inches and overflowed. Some large and some small carp escaped into the creek below. Some time after the dam broke a man caught, with a dip-net, from the creek at some distance below my pond, 50 young carp and 1 large one.

667. *Statement of J. M. Courtright, Wilkes Barre, Luzerne Co., Pa., Nov. 9, 1882.*

DISPOSITION OF CARP RECEIVED.—Last fall I received 20 carp and put 16 in my pond, but kept 4 in my fish-box until spring before I put them in. They got very tame. I cannot see them this fall; am afraid something has caught them.

668. *Statement of C. W. Heydrick, Carleton, Mercer Co., Pa., Jan. 27, 1883.*

VITALITY.—Yesterday I received a consignment of 20 carp in a bucket containing about one gallon of water, one-half of which was frozen. Fifteen were in good condition. Five of the fish were firmly imbedded in the ice, and when released were apparently dead. I at once changed them into a bucket of fresh water and by careful manipulation I succeeded in restoring all, so that they are now out of danger. One of them was pretty near gone. It showed no signs of life for over 3 hours after I received it. I opened its gills with a needle and inflated its lungs by blowing in its mouth, and then placed it under water and manipulated it to imitate the operation of breathing—this operation I repeated several times at intervals for three hours until all were restored.

669. *Statement of B. F. Milford, Centretown, Mercer Co., Pa., Sept. 29, 1882.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1881 I received 26 small carp and put them in a pond 75 by 150 feet, with a muddy bottom. Thirteen of them died in the winter.

GROWTH.—This spring they were about 3 inches long. On September 22d I examined them again and found that the remaining 13 averaged 14 inches in length and 3 pounds in weight.

670. *Statement of J. C. Offutt, Leeburg, Mercer Co., Pa., Oct. 9, 1882.*

GROWTH AND REPRODUCTION.—I have a nice lot of young carp which number from 300 to 400. They were hatched about the 25th to the 28th. My success surpasses all expectation. The 1 or 2 old ones are regular old whales.

671. *Statement of Henry Edenburn, West Middlesex, Mercer Co., Pa., Sept. 16, 1882.*

REPRODUCTION.—My fish are doing well. I have 2,000 young ones in my pond at this time.

672. *Statement of A. Spanogle, Lewistown, Mifflin Co., Pa., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in June, 1883, and the 20 received last fall I placed in a pond 45 by 85 feet, having a depth of from 3 to 4 feet and a muddy bottom. I have made an addition to the pond of 35 square feet, and also from 1 to 2 feet in depth where the water leaves the pond.

PLANTS.—Frog-spittle grows in the pond and various kinds of grass around its edges.

ENEMIES.—I have caught most of the suckers and minnows that inhabit the pond.

FOOD.—I feed bread and curd occasionally. They do not want artificial food at this season of the year as there is enough natural food in the pond.

GROWTH.—I caught 2 carp in the fall of 1882 that weighed, respectively, 5 and 7 pounds. I have seen 6 of the original carp at one time, but as I cannot draw off all the water I am unable to give the exact number. They are in a healthy condition. There are young fish in the pond, but it is not known whether they are carp or not.

673. *Statement of G. H. Steinmetz, Norristown, Montgomery Co., Pa., Nov. 5, 1883.*

GROWTH.—Some time since I shot a carp which proved to be 25 inches long and to weigh 7½ pounds. At the time of the shooting it was near the shore in the long grass and weeds looking for vegetable matter.

HABITS.—I do not think it of a carnivorous nature, as I have seen no attempt on its part to catch minnows. On opening the stomach I found the food in a very much decomposed state, consisting of a dark pulpy mass with a few pieces of worms. I consider the carp a vegetable feeder.

674. *Statement of Maurice C. Luckenbach, Bethlehem, Northampton Co., Pa., Dec. 1, 1883.*

GROWTH.—In March of this year I put a few carp into a small pond as an experiment. They were between 3 and 4 inches in length. I saw, so to say, nothing of them, excepting occasionally one would be seen to leap out of the water, when it was learned that they were of fair size. A few days ago several came to the surface dead from impure water running into the stream from a powder-mill. We immediately netted out the remaining live ones, 5 in all. I weighed 2 of the dead ones, evidently a male and female. They weighed $1\frac{1}{2}$ and 2 $\frac{1}{2}$ pounds. The growth of the fish astonished everybody. They were evidently mirror carp, as they had no scales on the sides, only along the backbone and a few scattered at the tail and belly.

675. *Statement of Robert Crane, 112 South Fourth St., Philadelphia, Pa., Feb. 23, 1884.*

DISPOSITION OF CARP RECEIVED.—The carp received in the fall of 1882 have done handsomely.

ENEMIES.—Snapping-turtles, water-snakes, fish-hawks, &c., took some of the carp.

GROWTH.—Our pond is in good condition, and the carp in it, some 35, wintered and came out this spring in good shape. They did not grow much during the winter. October 24, 1883, I estimated them to weigh about $1\frac{1}{2}$ pounds and to average about 14 inches in length.

676. *Statement of Milton P. Peirce, 14 South Del. Ave., Philadelphia, Pa., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 30 carp received in 1879 and the 2 lots received subsequently I put in several small ponds, originally prepared for trout but quite unsuitable for carp. The natural temperature is 50° F., which can be regulated as well as the flow of water. The quantity of water that flows into the pond is a little more than is consumed by evaporation.

PLANTS.—Lilies (*nymphaea odorata*), *myriophyllum*, and other plants grow in the pond.

ENEMIES.—A few small, common frogs inhabit the pond. I shoot the water-snakes, snapping-turtles, minks, and kingfishers when they appear.

FOOD.—I give the carp no artificial food. But when preparing them for market or table, I shall place them in wire-bottom vats, and feed them on boiled sugar-corn.

GROWTH.—The 5 original carp remaining are from 15 to 18 inches in length. Other ponds which I built expressly for carp contain 2-year old carp which average over 2 feet in length.

REPRODUCTION.—In the ponds which are supplied by cold water I have a large number of young all the way up to 12 or more inches, and much larger ones in the ponds built especially for carp.

DISPOSITION OF YOUNG.—I have stocked other ponds with fry.

DIFFICULTIES.—Some of the original carp were stolen, and others killed by minks, kingfishers, and snakes.

RESUSCITATION OF APPARENTLY DEAD CARP.—From a lot of 1,200 carp one of my assistants threw out 110 which he supposed to be dead. I do not think they were dead, but only torpid, for one was left floating in the tank when it was replaced in the store. A small boy called who was going on the street-cars to a distant part of the city [Philadelphia]. The mechanics gave him the supposed dead carp, which he wrapped in a piece of paper and placed in his pocket to show to his chum. After reaching his destination and playing awhile, the two boys passed into a room where the goldfish tank stood, when he thought of his carp. The boys thought they would give the lady of the house a surprise, and so placed the carp in the tank. An hour or two later the lady discovered a strange fish swimming in her aquarium in an erratic manner, and, upon inquiry, learned from the boys the almost incredible facts. Two weeks later she called and related them to me, saying that the carp was well, lively, eating readily, and growing rapidly.—March 31, 1882.

677. *Statement of Milton P. Peirce, 323 Walnut St., Philadelphia, Pa., Sept., 18, 1884.*

GROWTH.—Carp were placed in a pond at League Island in January, 1883, and when deposited were about 4 inches in length, having been hatched the summer before. Several specimens were captured to-day, not one of which was less than $3\frac{1}{2}$ pounds in weight and 19 inches in length. The heaviest one weighed 4 pounds and 10 ounces, and measured 21 inches in length and 14 inches in girth. It was claimed that the fish grow large and thrive without any special care.

EDIBLE QUALITIES.—I have recently eaten carp, plainly fried, with no trimmings except a little butter. I consider them second only to the salmon family.

678. *Statement of Edward W. Taxis, 60 N. Sixth St., Philadelphia, Pa., June 6, 1884.*

CARP IN THE DELAWARE.—A carp 15 inches long was taken in a gill-net in the Delaware River yesterday morning. With goldfish and others it now sports in the tank at my office. The fact that several of them have been caught in the Delaware this season is conclusive evidence that, with proper protection, they will multiply indefinitely, and thus add another to the many sources of American food supply.

EDIBLE QUALITIES AND GAMINESS.—The carp does not equal the black bass either in gaminess when hooked or in its table qualities. When hooked it is somewhat resistant, and when properly served for food is far from being despicable.

679. *Statement of Gus. A. Wimmer, Philadelphia, Philadelphia Co., Pa., Sept. 22, 1882.*

FOOD.—When a boy I resided with my uncle on a large farm near Liepsic in Saxony. My uncle had 3 good-sized ponds in which he raised nothing but carp, and which he fed to a large extent on the scrapings of the sheep-pen. The carp appeared to be very fond of these pellets, few of which ever reached the bottom of the pond. I have seldom seen carp shoot around in the water as lively as those did when catching this food. The same experiment has been tried with the carp in one of the ponds in Paoli, Chester Valley, with the same result. My uncle stated that the carp secured much nourishment therefrom and grew fat thereby.

GROWTH.—The carp placed in a pond in Chester Valley about one year ago have been found to weigh 1½ pounds.

680. *Statement of John Cockrane, Shamokin Dam, Snyder Co., Pa., Sept. 8, 1884.*

GROWTH AND REPRODUCTION.—The 20 carp received about 2 years ago now weigh from 3 to 4 pounds each, and measure from 14 to 16 inches in length.

I have about 2,000 young, from 1½ to 4 inches long, to sell. They are beauties.

681. *Statement of Samuel Barclay, Lavansville, Somerset Co., Pa., July 16, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 scale carp received in December, 1880, I put in the milk-trough in the spring-house, as my pond was not completed. A few only survived the winter. The 15 received in April, 1882, and the 15 received in March, 1883, I placed in a pond 60 feet wide by 11 rods long, tapering to a point. It has a depth all the way up to 7 feet, and a bottom of mud and sod. It is usually supplied by 1½-inch stream of spring water, but in wet seasons the flow is sufficient to run over the entire width of the dam to the height of 1½ inches. There are brushes in the shallows of the pond. The water is warm in summer.

PLANTS.—Glade-grass grows in the pond, and I intend to plant creek-bulrushes in it.

ENEMIES.—A few common frogs and 1 full-grown snake, but no turtle nor other fish than carp, inhabit the pond. But in another pond are found catfish, sun-fish, suckers, and plenty of snakes, snapping-turtles, and muskrats.

FOOD.—I do not feed the carp.

GROWTH.—The few original carp remaining average 16 inches in length and are as large as shad. I saw 7 of the other old carps swimming among the brush yesterday afternoon. They appeared to be about 14 inches long and to weigh from 2½ to 3 pounds each. I do not expect any young this season.

MISCELLANEOUS.—I intend to prepare the other pond for carp, as its water seems especially adapted to them. It is 6 feet deep. I have several sites on which ponds could be easily constructed.

682. *Statement of Zina A. Lindsey, Montrose, Susquehanna Co., Pa., Jan. 19, 1884.*

DISPOSITION OF CARP RECEIVED.—The carp I received last spring I put in my pond. In a few days I looked for them and could not find them. I found, however, 2 large spotted lizards. I killed them, but that did not save the carp. Next time I will put them in a box protected by wire screens and feed them until they are large.

683. *Statement of D. O. Bower, Laurelton, Union Co., Pa., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received on June 2, 1880, I put in a half-acre pond, with a depth of from 2 to 5 feet, and a bottom of clay and gravel. A flow of one square foot of mountain spring water passes through the pond. The water is fresh during the summer, and warm in the winter.

PLANTS AND ENEMIES.—Six different kinds of plants grow in the pond. It contains no other fish, turtle, nor frogs, but I think minks sometimes visit it.

FOOD.—Daily, I feed the carp on lettuce, sweet corn, boiled rice, wheat, and various kinds of vegetable, but they would not eat much.

DIFFICULTIES.—When 9 inches long the carp were stolen by minks, I suppose. If I can get more carp, I will make my pond larger and more secure.

684. *Statement of J. C. Grundy, Lewisburg, Union Co., Pa., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in the fall of 1880 and the 20 received in 1882 I put in a pond covering 30 square feet, having a depth of from 3 inches to 3 feet, and a muddy bottom. The water is warm, and only about 1 inch flows through it in dry seasons.

ENEMIES.—Frogs, but no other fish than carp, inhabit the pond.

FOOD.—I give the carp bread and lettuce once a week.

GROWTH.—The 7 of the second lot of carp remaining average about 3 pounds. They are doing remarkably well and grow rapidly. Carp will be the cheapest food that can be raised. I have seen no young yet.

DIFFICULTIES.—Muskrats destroyed all of the original carp.

685. *Statement of Samuel Speechley, Coal Hill, Venango Co., Pa., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received on November 13, 1880, I placed in about an $\frac{1}{4}$ -acre pond, having a depth of from 2 to 6 feet and a muddy bottom. A spring supplies the pond with water.

PLANTS AND ENEMIES.—Grass grows around the edges of the pond. Frogs inhabit it.

FOOD.—I feed stale bread occasionally.

GROWTH.—There are from 8 to 10 carp remaining, which are from 15 to 18 inches long and weigh from 3 to 5 pounds.

REPRODUCTION.—There are a great many young in the pond, which are from 4 to 8 inches in length and weigh from $\frac{1}{4}$ to $\frac{1}{2}$ pound. I drained the pond in August, 1882, when many young from 1 to 4 inches in length were to be seen.

686. *Statement of P. R. Gray, Franklin, Venango Co., Pa., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp I received I put in a pool in a small run, where there were some small chubs. The carp all died in a short time after being placed in the pool.

687. *Statement of George M. Ramsay, M. D., Clokey, Washington Co., Pa., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 8 mirror carp received on July 7, 1880, the 15 scale carp received in November, 1881, and the 50 leather carp received in the fall of 1882 I placed in a pond having a diameter of about 60 feet and a muddy bottom. Hard limestone water from a small spring feeds the pond, which is from 70° to 85°.

PLANTS AND ENEMIES.—The pond is full of swamp-grass, turtles, muskrats, snakes, frogs, but no other fish than carp inhabit it.

FOOD.—I give the carp bread occasionally.

GROWTH.—The one original mirror carp remaining is 24 inches long and very fat. The 3 scale carp remaining are fully as large as the 1 original mirror carp, and are also 24 inches in length. There remain 40 leather carp of the third lot, which are from 16 to 18 inches long.

DIFFICULTIES.—Mud-turtles destroyed all of the original carp but one, and all of the second lot but 3. Craw-fish, muskrats, and turtles, are very troublesome.

MISCELLANEOUS.—I am at a loss to know why the carp do not propagate.

688. *Statement of John S. Knox, East Finley, Washington Co., Pa., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp sent in November, 1880, were frozen when received. In 1882 I received 20 more, and placed them in a pond 40 by 70 feet, with a depth of 6 feet and a soft clay bottom. A small stream supplies the pond with a sufficient supply of fresh water.

PLANTS AND ENEMIES.—Swamp-grass grows in the pond. It contains no other fish. I killed 3 turtles which I found in it.

FOOD.—I give the carp bread daily.

GROWTH.—The carp average 8 inches in length. Last spring there were 6 remaining.

In the fall of 1882, the gentleman in whose pond I placed my carp bought 26 carp 4 inches in length. They now average 12 inches in length and 16 ounces in weight.

689. *Statement of John Gardner, Eldersville, Washington Co., Pa., July 28, 1884.*

GROWTH.—A year ago I placed in a pond supplied with spring water 40 scale carp, measuring from 3 to 5 inches in length. On June 9, 1884, I drew my pond and found 36 fish from 8 to 16 inches long. I have seen no young yet.

690. *Statement of J. Shan Margerum, Washington, Washington Co., Pa., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 mirror carp received on October 27, 1880, I put in a pond 30 feet in diameter, having a depth of 3 feet and a miry bottom. A 2-inch stream from a never-failing spring supplies the pond. It never freezes over in winter.

PLANTS.—Blue grass grows around the edges of the pond.

ENEMIES.—Nothing that disturbs the carp inhabits the pond.

FOOD.—The carp come to the surface for bread and cheese, which they take like pigs. I feed weekly.

GROWTH.—The 13 carp remaining are from 22 to 25 inches in length and weigh from 6 to 8 pounds. Last September they weighed $4\frac{1}{2}$ pounds, and the largest was 20 inches long. The carp are much admired.

REPRODUCTION.—There are bushels of young in the pond, which are from 2 to 14 inches long. They first spawned in 1882. The largest weigh from $1\frac{1}{2}$ to 2 pounds. Carp culture has been very successful here where they have been unmolested by other fish, muskrats, and turtles.

DISPOSITION OF YOUNG.—I have stocked other waters with the fry.

DIFFICULTIES.—The cause of the death of a few carp this spring is unknown, unless it be that there were too many fish in the pond for the quantity of water.

VALUE.—They may be grown with but little labor, expense, or risk, and at a profit that will make their cultivation very remunerative, especially to farmers, who are often seriously inconvenienced to procure fresh meat, and to whom the fish would be a most useful and agreeable substitute. There is no reason why every neighborhood in the country should not contain a well-stocked pond that would furnish cheap and nourishing food to the people. The growth of the fish is so rapid, and their fecundity is so great, that they can be raised with very little cost, and hence can be sold at a great profit. Many of the farmers have shown their enterprise by rearing the improved breeds of chickens, turkeys, ducks, and geese, and they could raise fish, when once prepared for it, with less cost and labor.

EXHIBITION OF CARP.—I have just exhibited the three varieties of carp at our county fair. The specimens varied in length from 1 to 22 inches, the age of the latter being 2 years. There are some only 1 year old, while others were apparently of only a few weeks' growth.

691. *Statement of E. P. Gibbons, West Brownsville, Washington Co., Pa., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 15 carp received in November, 1880, and the 2 mirror carp that I subsequently bought I put in 2 ponds, respectively 40 by 75 feet and 40 by 90 feet, with a depth of 3 feet in the centers, getting shallower nearer the shores. The mud is thick on the bottoms. A $1\frac{1}{2}$ -inch stream of brook and half that quantity of spring water supply the ponds. In mid-summer the temperature is 84° .

PLANTS.—Both of the ponds are bordered with swamp-grass. A dense growth of water-fern is in the smaller pond, while the larger one is bare of vegetation.

ENEMIES.—An abundance of frogs inhabit the pond, but it contains no other fish than carp.

FOOD.—The water-fern in the smaller pond affords the carp a plentiful supply of food. The carp in the larger pond eat ravenously and are fed daily on table refuse and garden vegetables, and weekly on beef blood.

GROWTH.—There are 4 original carp remaining. In the summer of 1881 the carp increased in size from $2\frac{1}{2}$ or 3 inches to 16 inches, and in the summer of 1882 only 2 inches had been added to their length since the former season. In that time they gained much in weight. They now measure from 18 to 20 inches in length.

REPRODUCTION.—The 800 young that were spawned last year are from 6 to 10 inches long. The ponds are now swarming with this summer's young.

DISPOSITION OF YOUNG.—I have disposed of 300 young to stock other ponds.

DIFFICULTIES.—I fear the frogs, which it seems I am unlikely to free the ponds of, eat the spawn. All but the 4 original carp fell a prey to muskrats, turtles, and water-snakes that formerly infested my ponds.

MISCELLANEOUS.—Before carp can be cultivated successfully their enemies must be subdued. Their culture is attended with little difficulties, and the pleasure, to say nothing of the profit, far outweighs the trouble.

692. *Statement of Duncan McAlister, Sardis, Westmoreland Co., Pa., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 pairs of carp received in 1879 I put in a pond covering about $\frac{1}{2}$ acre, with a depth of from 6 inches to 6 feet, and a muddy bottom. It received a plentiful supply of moderately cool water from a large spring and from some underdrains from fields.

PLANTS AND ENEMIES.—Common grass grows in the pond. The carp were placed in a pond with other fish, but I have now rid it of enemies.

FOOD.—I gave the carp bread, daily.

DIFFICULTIES.—During the winter of 1879 and 1880 my carp did well, only 3 out of the 20 dying, but in June, 1880, some boys seined my pond and destroyed all my fish, leaving a good many dead ones on the banks and adjoining field.

I desire more carp, as I have enlarged and cleaned out the pond.

693. *Statement of John H. Riddel, Dallastown, York Co., Pa., Nov. 3, 1882.*

GROWTH.—The carp that Mr. William Neff got last fall now weigh $1\frac{1}{2}$ pounds.

694. *Statement of John B. Gemmill, New Park, York Co., Pa., Oct. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 21 carp in November, 1881, and 15 January 3, 1883. I put the first lot in a pond sloping gradually to 5 feet in depth, with a muddy bottom. It is supplied with 4,000 gallons of water daily. I put the other lot in pond number 2, which is 45 by 120 feet, with a muddy bottom.

PLANTS AND ENEMIES.—It contains bulrushes and various grasses. There are no other fish, but some frogs, and I killed two snappers in pond number 1.

FOOD.—We occasionally give them corn-bread, corn-dough, boiled potatoes, raw potatoes, and boiled sweet-corn. They grow right along on good, natural food, of which there is plenty.

GROWTH.—There are 11 left of the first lot, which average in weight from 3 to 4 pounds each. The largest weigh $4\frac{1}{2}$ pounds, and measure 17 inches in length. In May I caught one which is now as large as a Susquehanna shad—say 5 pounds. There are no young yet. November 2, 1882, the carp were from 13 to 15 inches long, and weighed from 1 to $1\frac{1}{2}$ pounds.

HOW TO CATCH CARP.—I caught one in May with hook and line and common angling-worm. They bite elegantly.

MISCELLANEOUS.—There is no trouble in raising carp in water of the right temperature. I intend erecting two more ponds, and am satisfied carp-raising will be a success with me.

695. *A. C. Krueger, Wrightsville, York Co., Pa., July 22, 1884.*

CARP IN SUSQUEHANNA RIVER.—A carp weighing about 4 pounds was taken in a set-net below the Columbia dam on the Susquehanna. It had doubtless escaped from some private pond, but may have been in the river some time.

696. *Statement of David Strickler, York, York Co., Pa., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 8 carp on June 3, 1880, 16 scale carp in fall of 1880, and in the fall of 1881 40 more carp. The 36 sent Mr. John T. Williams in the fall of 1880, and the 20 sent my son in the fall of 1882 were put in my ponds with the carp sent directly to me. The smaller pond is 83 feet long and from 5 to 25 feet wide; the larger 114 feet long and from 10 to 52 feet wide, having a depth of from 6 inches to 6 feet, and a muddy bottom. This summer about 10 gallons of water flows through the ponds per minute. In the smaller pond the temperature at the inlet is 64° and 72° at warmest part; the temperature of the larger pond at the inlet is 74° , at warmest part from 78° to 80° , and at the bottom 72° .

PLANTS.—Water-lilies and various kinds of plants and grass grow in the pond.

ENEMIES.—Small frogs, water-snakes, eels, and many tadpoles but no turtles nor other fish than carp inhabit the larger pond. I still fight the eels, water-snakes, and frogs. In the lower pond, bass, catfish, and eels are found.

FOOD.—I give the carp wheat, corn, corn meal, shipstuff, cheese, boiled vegetables, and house flies.

GROWTH.—Last April, the remaining carp of the original lot weighed $2\frac{1}{2}$ pounds. Of the 52 received by Mr. Williams and myself in 1880, 36 remain, and only from 8 to 10 of the last 3 lots. I have seen no young yet.

CARP IN THE SUSQUEHANNA.—Last fall a mirror carp was caught in the Susquehanna River, near the Maryland State line, and weighed $1\frac{1}{2}$ pounds, and measured 15 inches in length. It was very lean, having been in a box without food during the entire winter. I obtained it at a price of \$2.50, to mate with my old carp, but I now fear they are not mates.

DIFFICULTIES.—My carp would have done much better had not the water in my ponds been so deep and so cold. A salmon that was in the pond before I placed the carp in devoured 6 of the original carp within 24 hours. The other 2 disappeared, and were not again seen until the following fall, when they were found in my lower pond with bass, catfish and eels. I cannot account for the disappearance of so many from the other lots of carp unless eels and water-snakes destroyed them. Eels are very difficult to get rid of, and the only way in which I succeeded was, after draining the pond, to let it remain dry for 3 months. It is said that they will crawl up an embankment to get into a pond.

MISCELLANEOUS.—I have spent much money and time upon carp culture, and I now have my ponds in a better condition than ever before. I intend to construct another one this fall. My water is suitable now, but the same cannot be said of the ground. The carp cannot escape from the pond, and floods never interfere.

697. *Statement of David Strickler, York, York Co., Pa., Dec. 6, 1883.*

GROWTH.—I have not drawn my ponds, but will give a full report when I do. I have 2 fish that may weigh 4 or 5 pounds. I think they made more growth the past summer than before, owing to being in a better pond.

698. *Statement of John T. Williams, Jr., York, York Co., Pa., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 31 carp received in October, 1881, I put in a pond 30 by 50 feet, with a depth of from 1 to 5 feet, and a bottom of clay and rock.

ENEMIES.—Catfish, sun-fish, and common frogs are found in the pond. I do not feed the carp.

GROWTH.—The carp average 11 inches in length. There are no young yet.

DIFFICULTIES.—Poachers visit the pond. I cannot drain the pond to the bottom.

RHODE ISLAND.

699. *Statement of Alex. G. Sanford, Warren, Bristol Co., R. I., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 75 carp about November 1, 1881. My pond is 100 feet long by 50 feet broad, and flows back 300 feet in length by 25 feet in width during about 9 months of the year. It has a muddy bottom.

PLANTS AND ENEMIES.—It contains lilies, flags, and several other kinds of water plants. It also contains frogs, and we have seen small turtles and small eels in it.

FOOD.—No food has been given, the pond seeming to contain enough.

GROWTH AND REPRODUCTION.—I should think there were about 50 original carp from 1½ to 2 pounds weight each. The young when last seen were about ¼ of an inch long.

SOUTH CAROLINA.

700. *Statement of J. M. Cane, Etiko, Barnwell Co., S. C., Oct. 11, 1881.*

FOOD.—I feed the carp, received last January, daily on bread and find that they are very fond of it.

GROWTH.—They have grown very fast and are now about 20 inches long.

EDIBLE QUALITIES.—I have taken one out of my pond and find it to be a very nice table fish, I believe the very best fish I ever tasted.

HOW TO CATCH CARP.—I caught a carp with a hook baited with corn-bread, though I must say that they are not easily caught in that way.

701. *Statement of S. B. Massey, Chester C. H., Chester Co., S. C., 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in January, 1880, I placed in pond fed by springs and having a blue muddy bottom.

GROWTH.—The 20 original carp are now from 6 to 8 inches long and weigh from $\frac{1}{4}$ to 1 pound each.

MISCELLANEOUS.—Our native black perch and blue catfish are far superior as pond fish and can be cultivated with better results than the carp.

702. *Statement of F. Miller, Hartsville, Darlington Co., S. C., Oct. 14, 1881.*

DISPOSITION OF CARP RECEIVED.—February 15, 1881, I received 17 young carp in good condition and immediately placed them in a pond previously prepared for them. This pond was about 30 by 40 feet, and was excavated so as to slope gradually from very shallow water at the edge to 4 feet deep in the center. The water is supplied from a branch, which though a very small stream has been unailing. The pond is inclosed with high palings and is protected in the usual manner from undesirable fish and other intruders.

PLANTS.—It is partially shaded by trees growing around and in it, and around the edges is a green border of rice and other water-plants.

FOOD.—I did not fail to put in the pond a plentiful supply of food consisting of cooked hominy and bread crumbs. Recently I have been delighted to see the fish. I succeeded in bringing them to the surface by throwing upon the water the common house flies which have been caught in a fly-trap and scalded. These, floating upon the water, attract the fish which I now bring up every day by the same means. They make a fine sight, swimming on the surface to get the bait.

GROWTH.—About the original number seem to be there and they have grown well. They were very lively and shy, but are becoming tame, as they are accustomed to the sight of visitors.

MISCELLANEOUS.—I feel sanguine that the carp will do well in such water as my pond contains, and I confidently expect good results with sufficient time.

703. *Statement of M. S. Walker, Edgefield C. H., Edgefield Co., S. C., 1883.*

DISPOSITION OF CARP RECEIVED.—I placed in a pond the 15 carp received in December, 1881, and the 21 received in January, 1883. The soil of the pond is muddy.

PLANTS.—The pond has fine vegetation.

GROWTH.—On November 1, 1882, I drew my pond and found only 4 carp, weighing about 4 pounds each.

REPRODUCTION.—A great many young carp could be seen in April and May. They are doing fine.

704. *Statement of S. W. Bookhart, M. D., Blythewood, Fairfield Co., S. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 22 carp in January, 1883. My pond is from 3 to 5 feet deep, has muddy bottom, and is located on a spring branch which supplies a small quantity of water of moderate temperature.

PLANTS.—It contains lilies and various water-grasses.

ENEMIES.—There are a few perch which are intruders, and also some turtles. Our greatest difficulty will be from the depredations of turtles and moccasins.

FOOD.—I have given them no food, as they did not seem to need any.

GROWTH.—I have seen only one. That was caught in the stream below my pond last week. It measured 14 inches.

MISCELLANEOUS.—We are preparing 2 more ponds for other varieties of carp. From close observation of other people's ponds I can say from personal knowledge that the scale carp is the best fish for our culture that we know of.

705. *Statement of T. Henry Stokes, Alba, Greenville Co., S. C., Apr., 1883.*

EDIBLE QUALITIES.—I regard the carp as a splendid table fish. It was so pronounced by a large number of ladies and gentlemen who partook of the fish on two separate occasions.

MISCELLANEOUS.—I have taken much pains in feeding my carp. I call them up with a small bell. They are very gentle.

706. *Statement of W. C. Cleveland, Greenville C. H., Greenville Co., Sept., 1881.*

DISPOSITION OF CARP RECEIVED.—I placed the mirror carp received last February in a mill-pond covering about half an acre.

FOOD.—They were never fed on anything, except a little corn bread occasionally thrown to them.

GROWTH.—When the fish were about 8 months old I drew the pond and found about half the number placed therein. I was greatly surprised to find that they had grown from 2 inches to 18 inches in length in 8 months. They were about the same size, and weighed over 3 pounds.

707. *Statement of Alex. McBee, Greenville C. H., Greenville Co., S. C., Oct. 28, 1881.*

ENEMIES.—My pond has eels, catfish, and perch in it; they have destroyed most of the fish.

GROWTH.—I received in January last about 20 carp from 1 to 2 inches long. When I drew off my pond I caught 9 carp, 5 scale and 4 mirror, that measured 17 inches each and weighed from 4½ to 4½ pounds. I have them now in a nice pond in which there are no other fish, and by feeding them I hope to have fish that will weigh from 12 to 15 pounds. Why, my dear sir, they will, if well cared for, grow almost as fast as pumpkins.

708. *Statement of H. C. Markley, Greenville, C. H., Greenville Co., S. C., June 16, 1882.*

GROWTH.—I have some carp 14 months old that average from 10 to 14 inches in length. They are fine for their age.

709. *Statement of John W. Wood, Greenville C. H., Greenville Co., S. C., Jan. 11, 1882.*

DISPOSITION OF CARP PURCHASED.—The 200 scale carp which I procured last May from Griffin, Ga., at a cost of \$35 per hundred, I placed in 2 ponds on small branches of clear, sweet spring water. The ponds are well located, every part being exposed to the sun and free from all impurities. They are kept free from other fish.

FOOD.—The ponds abound in natural food, and I feed the carp on meat scraps, crumbled crackers, and corn bread.

GROWTH.—My carp are growing finely. In May they were 1½ inches long, and now they average from 18 to 20 inches in length.

710. *Statement of W. T. Wood, Greenville C. H., Greenville Co., S. C., Jan. 21, 1883.*

GROWTH.—The scale carp received on May 29, 1881, were about 1 inch long. The following August they measured from 8 to 10 inches in length, and in July, 1882, they spawned being then 14 months old. In September, 1882, they measured from 18 to 25 inches in length.

MISCELLANEOUS.—My scale carp have surpassed in growth the mirror carp of this vicinity.

711. *Statement of Edward M. Boykin, M. D., Camden, Kershaw Co., S. C., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp three years ago and put them in a friend's pond, but they were lost. I received 30 more later, and put a part of them in a fine piece of water 2 acres in extent, varying from 2 to 8 feet in depth. It is supplied with from 130 to 150 gallons of water per minute from a constant spring.

PLANTS.—It is filled with aquatic grasses peculiar to southern inland waters.

ENEMIES.—The loss of the first lot was attributed to craw-fish that certainly had attacked them.

FOOD.—We give them bread principally.

GROWTH.—Eighteen months after depositing the first lot in my friend's pond it was drawn off, and there was a fine carp found weighing 5 pounds. This was the only one left of the lot, and was given to the agricultural department at Columbia, S. C. The pond was drained and cleared out and 15 or 20 small fish were put in, which are doing well.

MISCELLANEOUS.—I have just finished a pond at my residence for breeding carp with the intention of giving it special attention. With ordinary attention success is certain. Some 25 years ago I paid considerable attention to fish-ponds, dealing with our native varieties. It was very beautiful and very interesting but did not pay. It was all very well while the fish were all the same size, but breeding predaceous fish in close waters is impossible.

712. *Statement of J. A. Wright, Laurens C. H., Laurens Co., S. C., Aug. 16, 1881.*

FOOD.—I have not fed the carp more than a dozen times since they were put in the ponds in February last.

GROWTH.—I dragged my pond yesterday and caught 3 carp, one of which was 14 inches long and the most beautiful thing I ever saw. These fish were not more than 3 inches in length when planted. They seem to be very fat.

713. *Statement of H. L. Machem, Line Creek, Laurens Co., S. C., Feb. 9, 1882.*

GROWTH.—I received 18 carp about 5 inches long in December, 1880, and placed them in my pond early the following January. I drew off the water from the pond about a month ago, and by seining caught 17 carp which averaged a fraction more than 4 pounds. The largest carp weighed 5½, and the smallest 3 pounds. They were beauties.

714. *Statement of G. L. Martin, Line Creek, Laurens Co., S. C., June 26, 1882.*

GROWTH.—Mr. H. L. Machem took from his pond, June 23, a carp weighing 5 pounds and measuring 19 inches in length and 13 inches around the largest part of the body.

REPRODUCTION.—This gentleman thinks he has thousands of young ones.

EDIBLE QUALITIES.—The fish was prepared and a party of six gentlemen invited to dine the next day. After partaking to their satisfaction it was their unanimous vote that it was a good table fish, and that the reports to the contrary are without foundation in fact.

715. *Statement of M. L. Kyzer, Barr's Landing, Lexington Co., S. C., 1883.*

GROWTH.—In April, 1883, I received 20 carp which were about 2 inches long. They have done well and are now from 12 to 15 inches long, and will weigh from 2 to 3 pounds. I am well pleased with them and think they are a success.

716. *Statement of A. D. Bates, Batesburg, Lexington Co., S. C., 1883.*

DISPOSITION OF CARP RECEIVED.—I placed the 12 carp received in 1879 in a pond covering ½ acre, with a maximum depth of 8 feet and a black, muddy bottom.

GROWTH.—In 1881, two years after I received my carp, I drew off my pond and found 8 of the original ones. They were 25 inches in length and weighed from 6 to 7½ pounds.

REPRODUCTION.—When I drew off my pond I also found 40 small carp about 14 inches long and weighing 1½ pounds each. I replaced 15 in the pond, and on draining the pond in the spring of 1882 I found all I had put back weighing from 6 to 10 pounds each. There were also 400 young that weighed from ½ to 1 pound. My carp spawned about April 20, 1883.

DISPOSITION OF CARP.—After drawing the water in 1881 I ate all the large carp and gave away the young ones except 15.

SALES.—I have sold 460 carp for \$223.50.

717. *Statement of A. D. Bates, Batesburg, Lexington Co., S. C., Oct. 20, 1883.*

DISPOSITION OF CARP.—When I drew my pond, April 11, 1883, I took 11 of the fish and put them in a highland pond in front of my house. This pond covers from 6 to 7 acres when full, is supplied by rain, and has a maximum depth of 3½ feet. During the hottest days in summer the water in the pond is unpleasant to the hand. I also placed in this pond 9 of the young carp which I first saw in my other pond April 20.

GROWTH.—A few days ago I took the 11 carp out of my highland pond, as it was nearly dry. The carp weighed 1 pound each when put in this pond and remained there 6 months. A few days ago these fish weighed from 6 to 7½ pounds each. The largest one of the 9 young carp now weighs 3 pounds, this remarkable growth being attained in 6 months. Another one of these 6 months' old carp measures 17 inches in length and weighs 2½ pounds.

718. *Statement of N. G. Cooner, Batesburg, Lexington Co., S. C., 1883.*

DISPOSITION OF CARP RECEIVED.—I placed the 5 carp received in 1881 and the 20 received in 1882 in a pond covering ½ of an acre, having a depth of 5 feet and supplied by spring water.

REPRODUCTION.—I now have numbers of young carp.

719. *Statement of Gen. Paul Quattlebaum, Leesville, Lexington Co., S. C., July 30, 1884.*

DISPOSITION OF CARP RECEIVED.—I placed in my pond the 38 scale carp received in February, 1883, and the 20 carp received in June, 1883, as well as 27 carp belonging to the State Fish Commission received on February 16, 1883.

GROWTH.—The scale carp were from 12 to 15 inches long in 1883.

REPRODUCTION.—Some of the State Fish Commission's fish spawned as early as April 12, 1883, and there are young in the pond that are from 10 to 12 inches long. The young fish hatched early last May are now 5 or 6 inches long.

CATCHING CARP WITH A HOOK.—I use a beardless hook for two reasons. It can be taken from the mouth of a fish with greater ease and does less injury. I often catch carp for visitors to examine, and then return them to their native element. They may also be removed to other ponds in good condition. For catching small fry I use no cork; for large fish I prefer one, with lead enough on the line to sink the hook a few inches in the water, but they will take it at any depth. Late in the afternoon or early in the morning is the best time in warm weather. When the sun is shining brightly, and its rays strike deep down into the waters, the carp retires from his feeding-grounds and remains at rest until the shade of the evening lures him from his quiet retreat. On warm cloudy days, when trained to artificial feeding, the carp may be caught at any hour, but less readily about noon. It is a waste of time to angle for them in cold weather. It is well known that the carp declines all food in freezing weather, and that the appetite varies with the temperature of the water to a certain degree. In my ponds, near Leesville, I can catch either kind of carp as above stated from April to December. I train them to come to the surface of the water for food so as to enjoy the pleasure of seeing them scramble for it. The cheapest of light bread, made of middlings or shorts, expressly for the fish, is what I use. The same answers for baiting the hook, but a piece of waffle, cut the right size for the fish you desire to catch, is better, being tougher and not so easily taken from the hook by the fish. I first collect the fish together by throw- ing in a handful of small bits of bread—say one-half inch square—then I drop in my hook, attached to a strong line at the end of a suitable cane, and in less than a minute I am almost sure to bring a carp to grass. More time is generally consumed in putting the bait on the hook and taking the fish off of it than in luring him to take the bait.

CONSTRUCTION OF A CARP POND.—The man who builds a dam across a small stream and lets all the water, often increased by floods of rain, flow in and through the pond and over an ordinary waste-weir, is greatly deceived if he thinks he has a pond at all adapted to hatching or even raising carp successfully. My pond is supplied with water from a pond at its head, in which I do not propose to rear fish of any kind. The upper pond has an outlet through a ditch of sufficient capacity to let all the surplus water pass along the side of the lower or carp pond. The rain water from the hillside is cut off by a ditch running near the margin of the pond, and all the water that enters it is conducted below the dam. This ditch, together with a little canal on the other side of the pond, and a plank fence from one to the other at the dam form a complete bar to turtles and other depredators that would like to enter such rich pastures. I was very particular to construct the inlet as well as the outlet, so that a fish can neither enter nor escape, deeming it, however, of more importance that all other fish should be kept out than that a few carp should escape; for if the depredators be kept out the pond will be soon over- stocked with young carp.

720. *Statement of A. Y. W. Glymph, Glymphville, Newberry Co., S. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp about 1878. My pond is 25 feet deep; has sandy and rocky bottom. It is subject to overflow by Brand River. This has occurred twice since I put the carp in.

PLANTS.—It contains a plant which is called here bonnet.

ENEMIES.—There are trout, suckers, catfish, bream, white and black goggle-eye, and minnows.

FOOD.—I have given them none.

GROWTH.—I have not caught any carp yet, but I see some very large ones.

721. *Statement of J. N. Rutherford, Wallhalla, Oconee Co., S. C., 1883.*

ENEMIES.—I am annoyed a great deal with muskrats, which make the carp very shy, though I do not think they eat the carp.

FOOD.—I feed my carp on bread, corn, potatoes, cabbage, lettuce, fruit, blackberries, and grapes, all of which they eat very greedily.

MISCELLANEOUS.—I am well pleased with my prospects in carp culture. I cannot find but 9 fish of the 20 which I deposited in my pond in December, 1881.

722. *Statement of James A. Peterktn, Fort Notte, Orangeburg Co., S. C., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in December, 1880, and put them in a pond covering 2 acres with water averaging from 2 to 15 feet in depth. It is supplied by a small stream which flows continuously.

PLANTS.—There are several varieties of grass around the edge.

ENEMIES.—There are small perch and frogs in abundance, and it is impossible to get rid of them.

GROWTH.—We had one for dinner in June which weighed 10 pounds and measured 24 inches in length. There are still 8 to 10 of them.

REPRODUCTION.—I am not able to say how many young they have produced; not very many as I think that the perch destroyed them. I still hope that I have some young ones.

DIFFICULTIES.—I built a separate pond for them, but the weir rotted out before I knew it and the carp escaped into the main pond, which is the reason for their not doing better. I have no doubt that they will do well in this section if properly managed.

723. *Statement of E. H. Bates, Maynard, Pickens Co., S. C., July 31, 1883.*

FOOD.—I train my carp to come for food at the sound of a bell. I was first enabled to do this by throwing flies on the surface of the water. In this way they learned to be gentle.

GROWTH.—The carp received February 9, 1883, are doing well and are from 6 to 10 inches long. I purpose constructing one or two more ponds.

724. *Statement of A. P. Butler, Commissioner of Agriculture, Columbia, Richland Co., S. C., Oct. 18, 1880.*

GROWTH.—I have the most encouraging reports of the carp distributed last November. Some are 10 inches in length and weigh 1 pound.

725. *Statement of C. J. Huske, Superintendent of Fish and Fisheries, Columbia, Richland Co., S. C., Oct. 31, 1881.*

DISPOSITION OF CARP RECEIVED.—I received a supply of fish last winter and placed them in a pond situated on a 4-acre lot, which had been purchased for carp culture. About as large an area as is now covered by water can be taken in and the pond made twice its present size.

GROWTH.—I drew the pond off September 27 and found about 170 fine carp from 10 inches upward, the largest being 21½ inches in length and weighing 4½ pounds. We expect the fish to spawn next spring; and with the number of stock fish we now have we may look for a large supply of young fish for distribution annually.

726. *Statement of C. J. Huske, Columbia, Richland, Co., S. C., June 1, 1882.*

DISPOSITION OF CARP RECEIVED.—Without a single exception where parties have been prepared to take their carp, they were delivered in good condition. Last year we distributed 2,200 and this year 4,500. Those distributed a year ago have done so well that our citizens feel that they can undertake carp culture with reasonable hope of success. Four express shipments all came through from Washington in fine condition and the carp were shipped throughout the State at a cost of 3 cents apiece. Very few died on our hands.

GROWTH.—The State carp ponds at Columbia, which have been enlarged during the winter, contain 200 carp 2 years old, weighing from 2 to 5 pounds each.

727. *Statement of C. J. Huske, Columbia, Richland Co., S. C., Aug. 18, 1883.*

REPRODUCTION.—The carp have done well in this State. Where they were distributed 2 or 3 years ago the ponds are now full of young. All the neighboring farmers have seen the practical results of their introduction, are highly pleased, and are determined to have carp ponds on their farms. The number of applications is daily increasing, and it will be difficult to estimate how many the total will be at the close of the season.

728. *Statement of W. P. Hoy, Millville, Spartanburg Co., S. C., 1883.*

GROWTH.—I am highly pleased with the carp. I drew my pond on April 25, 1883, and the fish were from 4 to 6 inches long. I measured them again in August, when they were 14 inches long, having grown 8 inches in less than 4 months.

729. *Statement of G. W. Tuck, Shoally, Spartanburgh Co., S. C., July 7, 1883.*

DISPOSITION OF CARP RECEIVED.—About the middle of last February I procured 15 small carp and placed them in a pond prepared especially for their reception; then for 4 months I saw no trace of them, and concluded I was only raising frogs in abundance.

GROWTH AND REPRODUCTION.—About June 15, I succeeded in capturing one of the original 15 carp, which, to my surprise, measured 13 inches in length and weighed 2 pounds. I also have to-day at least hundreds and perhaps thousands of young carp from $\frac{1}{2}$ inch to $2\frac{1}{2}$ inches long.

730. *Statement of S. P. Garrison, Fort Mill, York Co., S. C., 1883.*

DISPOSITION OF CARP RECEIVED.—I placed the carp received in 1881 in a $\frac{1}{4}$ -acre pond having a depth of from 1 to 4 feet.

REPRODUCTION.—There are a large number of young in my pond.

731. *Statement of R. E. Guthrie, Guthrieville, York Co., S. C., June 3, 1881.*

ENEMIES.—All of my carp but 2 were evidently destroyed soon after they were planted. The animals that did this work were "cooters," eels, and some other enemies of the finny tribe.

GROWTH.—I drew off my pond June 3, and found that the 2 carp remaining had made a growth of 10 inches in length and were very thick and chubby. A few days ago we caught a carp 14 months old that was $17\frac{1}{2}$ inches long, 5 inches broad, $2\frac{1}{2}$ inches thick, and weighed 3 pounds. This fish was from 3 to 4 inches long when planted.

EDIBLE QUALITIES.—To set the matter as to the edible qualities of carp finally at rest, Mr. John P. Hinson, of Guthrieville, S. C., and myself determined to test the matter with the frying-pan. Accordingly, Saturday last was appointed as the day for preparing one of the carp for the table and submitting it to the palates of a number of gentlemen competent to judge of the eating qualities of the finny tribe. The carp tested was of the mirror variety. It was cleansed by scalding, similar to the process of cleaning catfish. Upon cleaning, it presented as fine an appearance as a dressed shad. Served and placed on the table, it is the equal of any fish we have ever eaten and superior to the flavor of the many popular varieties. The eight persons who partook of it gave but one expression as to its merits as food, and that was that in respect to the texture of the flesh and flavor it is equal to any fresh-water fish known to our streams. Some of those who tried this fish had doubts as to the carp's eating qualities, but by this test these doubts were removed. It is palatable and all that could be desired by the lover of the red-horse and brook trout. The opinion seemed to prevail that these species somewhat resemble the carp in flavor.

732. *Statement of John I. Hinson, Guthrieville, York Co., S. C., Oct., 1881.*

GROWTH.—I drew off my pond July 15 for the purpose of transferring my fish to another pond, and found 19 of the 20 carp planted last January. These were between 3 and four inches long when placed in the pond, and I find they have grown remarkably, the largest being 16 inches long and 6 inches broad and the smallest 10 inches in length.

FOOD.—I feed the carp regularly and have accustomed them to a feeding place, to which they repair at a given signal.

733. *Statement of Wm. B. Tewel, Rock Hill, York Co., S. C., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received some carp about 3 years ago, but lost all except 2 or 3, as I had to bring them a good way. I received 20 more 2 years ago and put them in a pond 50 by 300 feet, and 3 or 4 feet deep. It has a muddy bottom. There is very little water in summer, and it is warm.

PLANTS AND ENEMIES.—It contains wire-grass and bulrush. There are also a few perch and frogs in it.

FOOD.—I give them wheat, hominy, and bread.

GROWTH.—Two weeks ago I caught 3 which were about 22 inches long, and 37 from 10 to 12 inches long, and transferred them to another pond. The only difficulty has been a lack of water.

734. *Statement of John C. Witherspoon, Rock Hill, York Co., S. C., 1883.*

GROWTH.—The carp furnished me in December, 1881, have grown beyond my expectation. None have died save one in April, injured by a muskrat. It would weigh 2 pounds and had eggs in it. I caught one in August which weighed $2\frac{1}{2}$, which also had eggs in it. Some of the larger fish would weigh from 4 to 5 pounds.

TENNESSEE.

735. *Statement of A. Campbell, McKenzie, Carroll Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in the fall of 1880 I placed in a pond covering 50 or more square yards, with a depth of 5 feet and a clayey bottom. It is only fed by rain water.

PLANTS AND ENEMIES.—There are no plants in the pond. There are toads, but no other fish than carp in it.

FOOD.—I give the carp corn, wheat, and bread occasionally.

GROWTH.—The 5 original carp remaining average from 12 to 15 inches in length.

DIFFICULTIES.—A flood of water allowed all the carp to escape except 5. On one of these there is an excrescence which causes it to appear as if its back is broken.

736. *Statement of E. C. Lewis, Sycamore, Cheatham Co., Tenn., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 pairs of carp I received in November, 1880, I put in a newly-constructed pond 20 by 50 yards, with a depth of from 3 to 4 feet and a muddy bottom. A small stream of spring water, the temperature of which varies with the atmosphere, runs through the pond.

PLANTS AND ENEMIES.—Cresses, lilies, and grasses grow in the pond. Turtles and frogs inhabit it.

DIFFICULTIES.—In the spring of 1881 I found only one carp, and that has since disappeared. I cannot account for this, as I killed all the turtles, &c., that I could find when I drained the pond. I have speculated as to whether the carp found in the spring of 1881 might have been the young of the old carp.

MISCELLANEOUS.—I now have 3 ponds, and desire another trial at carp culture.

737. *Statement of John Burger, Celina, Clay Co., Tenn., Dec., 1883.*

GROWTH.—I took from my tank this week a 2-year old carp which weighed 9 $\frac{3}{4}$ pounds. This is the largest carp known to have been taken from any tank in the country.

738. *Statement of A. J. and W. B. Baird, Nashville, Davidson Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—We put the 5 pairs of carp received in November, 1880, in a pond 50 by 80 feet, with a depth of from 1 to 5 feet, and a rocky bottom covered with mud to the depth of 6 inches. About a 1 $\frac{1}{2}$ -inch stream from 2 springs feeds the pond. It has a temperature of 60°.

PLANTS.—In May the surface of the water is covered by a green spore, which in June develops in a 2-leaved plant $\frac{3}{8}$ inch in diameter. It has a root an inch long, which extends downward.

ENEMIES.—No other fish than carp inhabit the pond. Occasionally a frog and turtle are seen, but an effort is made to rid the pond of them.

FOOD.—The carp provide for themselves, but we give bread when we desire to see them.

GROWTH.—A carp caught last September weighed 4 $\frac{1}{4}$ pounds. They will now weigh from 6 to 7 pounds. We have all of the original carp except the one we ate.

REPRODUCTION.—There are an abundance of young in the pond which are from $\frac{1}{2}$ to 10 inches in length. The 10-inch carp are a year old. We have been so successful in the culture of carp that we have constructed a pond 5 times as large as the old one. They are both well stocked.

MISCELLANEOUS.—We went to the pond this evening, and in a few minutes took a bountiful supply for the table. We had company, and all pronounced the carp excellent. Any complaint as to quality must certainly be founded in not knowing how to prepare them for the table.

739. *Statement of Dr. J. H. Callender, Nashville, Davidson Co., Tenn., Dec. 9, 1880.*

FOOD.—Every care has been taken of the carp. I have fed them regularly and have not allowed any one to disturb them. Consequently they are very tame and come at a call for their food.

GROWTH.—The carp distributed here last year are doing remarkably well. Then they did not exceed 1 $\frac{1}{2}$ inches in length and looked very puny. The other day I caught 5 of my smallest carp, each of which weighed 1 $\frac{1}{2}$ pounds, and livelier and finer looking fish could not be found. They have not spawned yet.

740. *Statement of George B. Crockett, Nashville, Davidson Co., Tenn., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp received in November, 1880, were placed in a natural pond of Dr. John-B. Crockett, Brentwood, Williamson County, Tennessee. The pond covers about $\frac{3}{4}$ acres, with a varying depth, and a muddy and sandy bottom. It is supplied by rain and part of the year by spring water.

ENEMIES.—No other fish than carp inhabit the pond.

MISCELLANEOUS.—The pond is so large and deep that I have seen none of the carp since they were placed in it, though I have visited it often since. Others, however, have seen them.

741. *Statement of Duncan B. Dorris, Nashville, Davidson Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 4 pair of carp received 3 years ago I put in a small pond. They were frozen to death by an unexpected cold snap. Nearly all of them who have received carp have been wonderfully successful. The climate of Tennessee is especially adapted to their culture.

742. *Statement of George Eberhardt, Nashville, Davidson Co., Tenn., Aug. 3, 1884.*

GROWTH AND REPRODUCTION.—The 50 or 60 young carp received about 2 years ago have grown to an enormous size, and the increase in the numbers of young is beyond belief.

743. *Statement of H. B. Gray, Nashville, Davidson Co., Tenn., Aug. 3, 1884.*

REPRODUCTION.—In April, 1884, I placed in my pond 5 scale and 4 leather adult carp. A few days ago I seined my pond and found 500 young, averaging in length from 3 to 6 inches, while at least 50 of them measured 10 inches in length.

EDIBLE QUALITIES.—The flesh of carp is excellent food, especially when they are allowed to remain in a small pond of clear spring water before serving for the table.

744. *Statement of Frank W. Green, Nashville, Davidson Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 17 scale carp received in February, 1879, in a pond 48 by 98 feet, walled around with cemented stone and having a depth of 5 feet and a bottom of solid rock. Over the bottom sediment has accumulated to the depth of from 8 to 10 inches. Rain water flows into the pond over blue grass sward. Enough is collected to last during dry seasons, and when all the small streams dried up 2 years ago my pond afforded a sufficient supply of water for from 300 to 400 head of stock, besides furnishing water for perishing plants.

PLANTS.—A vegetable mold forms on the surface very fast, and is eaten by the carp almost as rapidly as formed.

ENEMIES.—A few bull-frogs infest the pond. I have no means of ascertaining how the catfish that were in my pond when I put the carp there were destroyed. In the spring of 1882, from 3 to 6 catfish could be frequently seen floating upon the surface in a disemboweled condition, while their bodies were not decayed. I think the carp destroyed them.

FOOD.—I put in my pond the solid food of the refuse from my table and kitchen. The carp eat and thrive like pigs. The success of carp culture is in knowing how to feed them.

GROWTH.—Each of the 12 original carp remaining are 17 inches long and weigh 6 pounds.

REPRODUCTION.—There are thousands and thousands of fry in the pond. One-half bushel of young can be caught at one haul of a seine. They range in size from 1 to 15 inches. Parties whom I supplied with carp in 1881 now have their ponds full of young. My success shows that any one can have a carp pond where rain falls. My fish spawned the second summer after I received them.

DISPOSITION OF YOUNG.—I gave the Fish Commissioner of Tennessee 3 barrels of fry, which, I suppose, contained thousands. I have also sold \$600 worth of young, and exported them all over the State. I sell them for \$25 per hundred, or 25 cents each.

HARDIHOOD.—I sent 50 carp from 6 to 8 inches long to Newberry, S. C., and although they were 4 days on their way, they reached their destination in safety. I ship 25 in a 6 gallon tin bucket made for the purpose.

HOW TO CATCH CARP.—In catching carp you do not have the trouble of digging worms and catching minnows; you simply bait a hook, attached to a leader, with stiff flour dough in such a quantity as will cover it entirely. They take it as soon as it

reaches the water. They bite as freely as trout or perch, always catch clear, and never swallow the hook.

745. *Statement of George Hart, Nashville, Davidson Co., Tenn., Aug. 14, 1884.*

HOW TO CATCH CARP.—Yesterday I caught from my pond, with a net, 3 carp, one of which was 18 inches long and 10 inches around, and was only 2 years old. The rest of the carp were so lively and jumped so high that I was unable to take more.

746. *Statement of Ira P. Jones, Nashville, Davidson Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 25, 1880, I received 10 carp which I gave to John C. Ferris, esq., of this county. It required some little time for him to prepare his bass pond for the carp, and I think he only placed 6 in the water. He has since removed, and I am not able to give any of the facts as to the result of this experiment.

The 20 carp received December 2, 1880, I gave to Mr. S. M. Wilson, Tennessee Ridge, Houston County, Tennessee, which he put in a pond 15 by 30 feet. During the heat of the following summer the water was dried up and the carp all lost.

MISCELLANEOUS.—Generally the carp you have sent to this part of Tennessee have grown rapidly and in some cases multiplied largely, showing that the water and the climate are well adapted to them. Mr. Frank W. Green, of this city, has been very successful, being able to sell many fry for more than a year and a half.

747. *Statement of Louis C. Lischy, Nashville, Davidson Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in the winter of 1881 I put in a pond nearly circular in form, with a diameter of about 100 feet, a depth of 6 feet in the center, and a clay bottom. Water from a spring branch is turned into the pond at will. The water freezes to the thickness of 2 or 3 inches during some winters.

PLANTS.—A few willows and various kinds of grass grow around the edges of the pond.

ENEMIES.—A few frogs, but no other fish than carp inhabit the pond.

FOOD.—I do not feed the carp.

GROWTH.—I have all of the original carp unless some were carried off in the recent very destructive overflow. The carp as seen in the water appear to be from 12 to 15 inches long.

REPRODUCTION.—The young in the pond are plentiful and are of various sizes.

DIFFICULTIES.—I find it difficult to prevent overflows.

748. *Statement of J. E. Warner, Nashville, Davidson Co., Tenn., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in 1881 I placed in a pond 25 by 50 feet, having an average depth of 4½ feet and a rocky bottom. About 150 gallons of water, at a temperature of 53° F., flows through the pond per minute.

PLANTS.—Mosses alone grow in the pond. It is inhabited by nothing that disturbs the carp.

FOOD.—I feed the carp entirely on vegetable food, about twice a week.

GROWTH.—The 6 original carp remaining average one pound and are about 11 inches long.

REPRODUCTION.—There are many young in the pond, which average about 3 inches in length.

DISPOSITION OF YOUNG.—I have given away some of the fry.

DIFFICULTIES.—The spring water that supplies the pond is too cold and pure for carp. Water-snakes trouble them.

749. *Statement of A. F. Whitman, Nashville, Davidson Co., Tenn., Aug. 13, 1883.*

DISPOSITION OF CARP RECEIVED.—The 26 carp received in November, 1880, I placed in a pond 25 by 250 feet, having a depth of 2½ feet and a smooth, rocky bottom covered with mud to the depth of from 6 to 10 inches. From 10 to 20 gallons of spring water per minute flow through the pond in dry seasons and from 100 to 200 gallons in spring. It has a temperature of from 55° to 60°.

PLANTS AND ENEMIES.—Plants grow only on the edges of the pond. A few frogs, but no other fish than carp inhabit it. There were turtles formerly in it, but none now.

FOOD.—I feed the carp on bread irregularly, generally when my friends desire to see them.

GROWTH.—There are from 18 to 20 of the original carp remaining. I caught one last summer that weighed fully 3 pounds. They do not seem to have increased much in weight since.

REPRODUCTION.—There are from 50 to 100 young of last year's spawning, but I cannot estimate the number of this year's. The yearlings weigh from 14 to 16 ounces. This year's fry were 2 inches long in June.

DIFFICULTIES.—Several of the carp were destroyed by turtles the first year. In the spring of 1881 I found one with 2 inches of its tail eaten off. It is difficult to keep my pond from leaking.

750. *Statement of B. F. Woodward, Nashville, Davidson Co., Tenn., July 22, 1883.*

DISPOSITION OF CARP RECEIVED.—I placed the 6 carp received in December, 1881, in an open cistern in a green-house. The cistern is 6 by 34 feet, is 5 feet deep, and has a loose gravelly bottom. It is kept full by rain-water, which has a temperature of 70° today, and never less than 45°. The pond contains no plants.

ENEMIES.—One bull-frog inhabits the cistern.

FOOD.—I feed the carp on bread and worms from potted plants. I occasionally throw leaves of various plants in the cistern.

GROWTH.—I have never weighed them, but suppose the 6 carp remaining will weigh from 10 to 12 pounds each, and average more than 1 foot in length.

MISCELLANEOUS.—I intend to move the carp to a pond next year.

751. *Statement of Marcus J. Wright, Nashville, Davidson Co., Tenn., Aug. 14, 1884.*

GROWTH.—A carp weighing 5 pounds was recently taken from one of the pools at the State capitol, when the pools were being cleaned.

752. *Statement of John F. Guntrel, Colesburg, Dickson Co., Tenn., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 5 pairs of carp received in December, 1880, I placed in a newly constructed pond, but, unfortunately, the first hard rain broke the dam and allowed all of them to escape. Since then I have rebuilt my dam and increased the number of the ponds. The upper pond covers $\frac{3}{4}$ of an acre, and has withstood the heavy rains for the last 2 years. The middle one covers about $\frac{1}{2}$ of an acre, and the lower about $\frac{1}{4}$ acres. The upper and lower pond have each one spring, but the greatest amount of water is supplied by 500 acres of land which serve as a watershed. My observation during the last 2 years has convinced me that the ponds retain a sufficient amount of water during the entire year. The maximum depth of the ponds is 9 feet, and gets shallower nearer the shore. The bottoms of the ponds are composed of heavy yellow and red clay mixed with iron ore.

PLANTS.—Plants indigenous here grow in the pond.

FOOD.—The drainage from the large watershed is sufficient to sustain quite a number of carp.

753. *Statement of S. J. Alexander, Macon, Fayette Co., Tenn., July 3, 1883.*

DISPOSITION OF CARP RECEIVED.—The scale carp received in January, 1881, and the leather carp in November, 1881, were placed in a new pond 15 months ago. I have another pond, from $\frac{1}{2}$ foot to 8 feet deep, which contains lilies but no moss. In it I have black and blue catfish, buffalo, suckers, trout, and 5 kinds of perch. I expect to make another pond for carp this summer, and place the three ponds and grass lot under a wire fence, with shade trees.

FOOD.—Both old and young carp come to the surface of the water for bread.

GROWTH.—Mr. J. A. Clay Reed caught with a seine, November 1, 1882, a carp that was 20 $\frac{1}{2}$ inches long. Mr. John F. Porter, Galloway, Tenn., transferred his leather carp in October, 1882, to his new pond, when one of the fish was 16 $\frac{1}{2}$ inches long.

REPRODUCTION.—Last summer (1882) I saw only 4 young ones. But I now have quite a quantity of young carp from 1 to 6 inches long. Last Saturday I crushed four soda crackers and threw the same on the surface of the water for them. For 15 minutes the young carp could be seen taking the food and lining the water for a space of from 5 to 20 feet.

754. *Statement of William H. Fariss, Macon, Fayette Co., Tenn., Sept. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 scale carp received on January 7, 1881, and the lot of leather or king carp received subsequently I put in a pond which is 450 feet in circumference and 75 feet front. It has an average depth of 6 feet, and a bottom composed of mud and gravel. Cold water from a 1-acre watershed feeds the pond.

PLANTS.—Herd-grass and clover grow in the pond. No other fish than carp inhabit it.

FOOD.—I give the carp wheat, grain, and refuse from the table from 3 to 4 times a week.

GROWTH.—I have 12 original carp, each of which weighs about 5 pounds.

REPRODUCTION.—I have only seen from 5 to 6 young, which weigh from $\frac{1}{4}$ to $\frac{1}{2}$ pound each.

EDIBLE QUALITIES.—I have eaten 2 carp, the edible qualities of which were very fine. They are much sought after here.

DIFFICULTIES.—I lost 6 original carp the summer I received them.

755. *Statement of J. W. Newborn, Macon, Fayette Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 24 carp received in January, 1880, and those received subsequently, I put in a still-water pond, 40 by 60 feet, having a depth of 5 feet and a muddy bottom. The pond contains no plants.

ENEMIES.—A few catfish and perch were in the pond before I received the carp.

FOOD.—Irregularly I feed grits, corn and flour-bread, cooked vegetables, &c.

GROWTH AND REPRODUCTION.—The 10 original carp remaining average from $1\frac{1}{2}$ to 2 pounds. It is impossible to tell the number of young there are in the pond.

MISCELLANEOUS.—Carp can be raised as easily as pigs or chickens. It is possible for every one, even in this inland country, to have fish as plentiful as barn-yard fowls by constructing a carp pond. I paid a visit to Mr. S. J. Alexander's carp pond a few days since to see his carp fed. His pond is small. As the carp had never received a scare it was a treat to see how gentle they were, rolling-and tumbling in full view on the surface of the water in their scramble after food.

756. *Statement of Joe I. Rogers, Trenton, Gibson Co., Tenn., Apr. 25, 1883.*

GROWTH.—The carp which I placed in my 3 ponds October 10, 1880, now measure 22 inches in length and average 5 pounds in weight. My fish did not spawn last summer. I feed them with meal.

757. *Statement of Rogers & Sons, Trenton, Gibson Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—We received 10 carp on November 10, 1880, 130 on November 28, 1880, and 10 on October 12, 1881. We placed the carp in 3 ponds, each of which has a muddy bottom. The first pond covers $\frac{1}{4}$ of an acre, having a depth of 6 feet and a flow of 25 gallons of water per minute, at a temperature of 60°. The second pond covers $2\frac{1}{2}$ acres, with a depth of $5\frac{1}{2}$ feet, and 30 gallons of water flowing through it per minute. Its temperature is also 60°. The third, a breeding pond, covers $1\frac{1}{4}$ acres, and has a depth of $2\frac{1}{2}$ feet, and a temperature of 80°. They contain no plants.

ENEMIES.—Catfish, perch, bull-frogs, and snapping-turtles inhabit the pond and have given the carp some trouble.

FOOD.—We give the carp corn-bread, meal, wheat, and mill-sweepings every two days.

GROWTH.—We moved 100 of the old carp to the breeding-pond this spring. They were from 18 to 24 inches long, and weighed from $2\frac{1}{2}$ to 5 pounds. Our carp are healthy and are doing well.

REPRODUCTION.—The carp spawned this year for the first time. We estimate the number of young at 50,000, which average 5 inches in length, and weigh from 3 to 4 ounces.

758. *Statement of John F. Hamberd, Newmansville, Greene Co., Tenn., Mar. 21, 1883.*

REPRODUCTION.—The carp placed in my pond 18 months ago are increasing fast.

759. *Statement of J. D. Hyberger, Timber Ridge, Greene Co., Tenn., May 27, 1882.*

GROWTH.—I have just made an examination of the carp received in November, 1881, and find 9 remaining in my dam. They were 3 inches long when received and have now attained an average length of 9 inches and a weight of $\frac{1}{2}$ pound each. Their increase in size for the 6 months is almost incredible. They are perfect beauties, and I am more than pleased with them.

760. *Statement of T. Marshall Williams, Morristown, Hamblen Co., Tenn., April 21, 1882.*

GROWTH AND ENEMIES.—The carp received last fall were placed in a pond covering $\frac{1}{4}$ acre and having a depth of 5 feet, but they were not again seen until last March.

Their growth even during the winter months was rapid. The 4 which escaped the maw of the mallard duck that infested the pond did well, and grew at an astonishing rate up to a few days ago, when a kingfisher killed 2 of them.

761. *Statement of J. T. Low, Saulsbury, Hardeman Co., Tenn., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 33 carp received from a gentleman in Mississippi in January, 1881, and the 25 received from the U. S. Fish Commission in February, 1881, I put in a pond covering about an acre, with a depth of 15 feet and a muddy bottom. It is formed in a ravine below a spring, and has a daily supply of 20 barrels of water. There is no surplus water except when it rains. It did not freeze over last winter. The pond contains no plants nor other fish than carp.

FOOD.—I give the carp bread and meal weekly.

GROWTH.—Each of the 20 original carp remaining weigh from 4 to 6 pounds. I have taken 2 that weigh 6 pounds each. I have given 8 of the old carp to a neighbor.

REPRODUCTION.—The pond is well stocked with young, which are from 4 to 6 inches in length.

DIFFICULTIES.—I found 2 dead carp in the pond, which appeared to have been snagged.

MISCELLANEOUS.—Every farmer who does not live near a river or lake should have a carp pond.

762. *Statement of H. B. Wright, Saulsbury, Hardeman Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The total number of carp received and placed in my pond in January, 1881, by myself and others was 65. The pond is crescent-shaped, and covers 1½ acres. It is 18 feet deep in the center, and the spring water that flows in it is less in summer than that consumed by evaporation. The temperature varies with the depth of the water, and is lukewarm in summer at the ends of the pond where the water is shallow.

PLANTS.—A few bulrushes grow in the pond.

ENEMIES.—Bull-frogs, catfish, perch, suckers, &c., inhabit the pond.

FOOD.—I feed the carp mostly on bread, but not oftener than twice a week.

GROWTH.—I judge from the appearance of the carp remaining that they will weigh 10 or more pounds. My carp are perfectly healthy, and grow like pigs.

REPRODUCTION.—There are a great many young in the pond, which weigh from 1½ ounce to 2 pounds.

EDIBLE QUALITIES.—We skin them and fry in lard; not cotton-seed oil. They eat pretty well to those unused to the fine fish of North Carolina waters. A neighbor says they are as good as he ever ate. I think they will be a blessing to the country.

763. *Statement of J. M. Hudson, Paris, Henry Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp received in November, 1880, I put in a ½-acre pond having a muddy bottom. Its maximum depth is 6 feet, and it gets shallower nearer the shores. I intend to increase the depth of the water by raising the levee. Rain water alone feeds the pond.

PLANTS.—Five or six large oak trees and a small clump of willows grow in the pond. A variety of grapes and weeds is to be found upon the adjoining hill.

ENEMIES.—An abundance of bull-frogs, toads, and some snakes, but no other fish than carp, inhabit the pond.

FOOD.—I have not fed the carp, supposing there was a sufficient quantity of natural food in the pond.

GROWTH.—In July, 1882, there were original carp remaining, some of which were more than 2 feet long. They have grown rapidly. I have not counted them since, but frequently see from 2 to 3 at a time. I have seen no young yet.

DIFFICULTIES.—My pond dried up in the summer of 1882, but since then the pond has and will continue to have a sufficient supply of water. I found 5 dead carp floating on the surface of the water in July, 1882, and I once thought that they were injured by a thief while attempting to gig them with a sharp stick.

764. *Statement of J. N. Thompson, Paris, Henry Co., Tenn., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—The 22 carp received in 1881, I put in a ¼-acre pond having an average depth of 3 feet, and a muddy bottom. Rain-water alone supplies the pond.

ENEMIES.—Mud-turtles, frogs, &c., inhabit the pond.

FOOD.—I give the carp corn-bread, sometimes 3 times a week, and then again only twice a month.

GROWTH.—The carp will average about 4 pounds. I have caught no young yet, and do not know how many there are.

DIFFICULTIES.—My pond broke twice, and each time allowed some of the carp to escape.

MISCELLANEOUS.—I desire more carp to stock my other pond. I think they are the fish for the ponds of this country.

765. *Statement of S. M. Wilson, Tennessee Ridge, Houston Co., Tenn., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on November 19, 1880, I placed in a pond covering from 1 to 1½ acres, having a depth of from 1 to 5 feet, and a muddy bottom. Water flows into the pond in spring until it reaches a depth of 7 feet. It has a warm temperature.

PLANTS AND ENEMIES.—All sorts of swamp weeds and grasses indigenous here grow in the pond. A few bull-frogs, but no other fish than carp, inhabit it. There are no turtles.

FOOD.—An abundance of food washed from the adjacent hillsides. I gave them no artificial food.

GROWTH.—The carp were only from 3 to 5 inches long when I placed them in the pond, and in 8 months averaged from 3½ to 4 pounds and were from 14 to 16 inches long. They were fat and grew rapidly.

DIFFICULTIES.—My pond was very low during a very dry season 2 years ago, and a poacher, seeing the carp, killed them.

MISCELLANEOUS.—Could I get more carp, I am certain I could cultivate them successfully.

766. *Statement of J. M. McAdoo, McEwen, Humphreys Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 7 carp received in the winter of 1880 I put in a ½-acre pond having a depth of 5 feet. It is supplied with rain water which gets warm in summer.

PLANTS AND ENEMIES.—Moss collects on the surface of the water. Perch, frogs, and a few turtles inhabit the pond.

FOOD.—I give the carp the sweepings of a corn and flour mill.

GROWTH.—The carp were 2 feet long and weighed 6 pounds each a year ago. I saw one a few days ago that was about 3 feet long and weighed about 12 or 15 pounds. I have seen but 3 of the carp since they were put in the pond. The 2 carp that I caught were full of eggs, but I have seen no young yet.

767. *Statement of A. G. Keisling, Bull Run, Knox Co., Tenn., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I placed 10 carp of the lot received March 8, 1883, in a box or pen made of plank and the other 10 in a 1-acre pond. It has 5 feet of water at its maximum depth, getting shallower toward the shore. The water in my pond passes through a weir from a mill-race. Eight days after the carp were received I removed those in the pen to the pond. I saw some of them occasionally, but not since May 1.

ENEMIES.—I fear that the kingfishers and two ducks, and perhaps turtles, all of which I have caught in the pond, have destroyed the carp.

FOOD.—From time to time I have placed food in the pond but have never seen the carp take it.

768. *Statement of Cullen & Newman, Knoxville, Knox Co., Tenn., June 11, 1881.*

GROWTH.—The 20 small carp received in the latter part of December, 1880, have within 6 months attained a weight of 1½ pounds. I notice that some grow much faster than others.

769. *Statement of Curtis Cullen, Knoxville, Knox Co., Tenn., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 received in the fall of 1880, and the 20 received subsequently, I placed in a pond having a diameter of 100 feet, a depth of from 1 to 5 feet, and a muddy bottom. The water is warm and the supply small. None has flowed into the pond for 3 months. I intend to construct a windmill to supply it with a sufficient quantity of water.

PLANTS.—A large supply of water-grasses grow in the pond.

ENEMIES.—I kill all the frogs I can, and dip out all their eggs which I see. I have taken out of the pond all other fish except carp.

FOOD.—I give the carp bread, cabbage, cooked potatoes, and refuse from the table daily, about sunset.

GROWTH.—One of the 11 original carp remaining weighed 5 pounds in March. The largest will now weigh from 6 to 6½ pounds.

REPRODUCTION.—This is the first year that the carp have spawned. The pond seems to be alive with young, which are from 2½ to 3 months old and measure from 4 to 5 inches in length.

DIFFICULTIES.—The pond has suffered for want of water. I lost 5 carp by placing them in a barrel when draining my pond.

MISCELLANEOUS.—I propose constructing a 5-acre pond this summer, and I will supply it with carp from the pond in which they are now kept. Carp are fine fish and every farmer should raise them for his table.

770. *Statement of S. M. Clayton, Cyrtston, Lincoln Co., Tenn., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 6 carp received on November 1, 1880, in a ½-acre pond with a depth of from 6 inches to 4 feet, and a muddy bottom. It has been increased to an acre. The supply of water depends upon the seasons. At this date the water does not run out of the pond. My ponds number 4, and were made last fall.

PLANTS.—Grasses grow on the edges of the pond. I need some better plants in it.

ENEMIES.—Branch minnows, frogs, turtles, and occasionally snakes are seen in it.

FOOD.—Once a day I give them refuse from the garden and kitchen, coarse ground corn and wheat, and green corn. They are also fond of biscuit.

GROWTH.—Without giving the original carp any artificial food they weighed 4 pounds each, and were 18 inches long in 10 months after being placed in my pond. There are only 4 of the old carp remaining. Last fall each of them weighed 10 pounds, and will now weigh 12½ pounds.

REPRODUCTION.—When hatched the fry are very small, and were it not for the head and eyes it would be difficult to see them. My carp commenced spawning in the spring of 1882, when 2 years old, but not being properly fixed, I only managed to keep about 2,000 of the fry. They now weigh 3 pounds, and are yearlings. There are many 6-inch young in the pond. The carp have spawned but once this year.

SALES.—I sold \$115 worth of young, and have 600 left.

MISCELLANEOUS.—I have my spawners in a pond to themselves, as the other fish would devour their eggs. The eggs are adhesive and cling to anything they touch. All that fall to the ground are lost. In a warm place the eggs, which can be moved from one place to another, will hatch in from 6 to 12 days. I put brush and broom sedge in to catch the eggs. They seem to prefer the latter.

771. *Statement of John Y. Keith, Jackson, Madison Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 pairs of carp received in November, 1879, and the 20 pairs received in 1881, I put in a 2-acre oblong-shaped pond, having a depth of from 2 to 6 feet, and a bottom composed of white and pipe clay. It is supplied only with water from the surrounding watersheds, and it has a temperature of 70° in summer.

PLANTS.—Water-lily, water-cress, calamus, yon-a-pin, water-mint, and flags grow in the pond.

ENEMIES.—Striped bass, black perch, red perch, yellow cat, and a few turtles and bullfrogs inhabit the pond.

FOOD.—I give the carp wheat and rye screenings, baked corn bread, vegetables, and sometimes shelled corn once a week.

GROWTH.—There are 7 pairs remaining of the carp first received, and 18 pairs received in 1881. There are 3 sizes of the old carp: the largest are from 7 to 9 pounds; the next largest from 3 to 4½ pounds, and the next from ½ to 2 pounds each.

REPRODUCTION.—There are a great many young of all sizes in the pond.

DISPOSITION OF YOUNG.—I have given young carp to my neighbors who have small ponds.

HOW TO CATCH CARP.—My carp bite at the hook.

DIFFICULTIES.—Poachers visit the pond and turtles also destroy the carp.

772. *Statement of E. A. Lindsey, Jackson, Madison Co., Tenn., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received in 1880 and the 8 received in 1881 I placed, in a newly-constructed pond, 80 by 100 feet, with a clay bottom. The

natural drainage which supplies the pond with water has practically failed for two seasons.

PLANTS.—There are no plants in the pond.

ENEMIES.—Nothing of any consequence disturbs the carp.

FOOD.—I give the carp lettuce, bread, and mush every 2 or 3 days.

GROWTH.—The few original carp remaining average about 20 inches in length.

REPRODUCTION.—There are great numbers of young in the pond, and they weigh all the way up to 1 pound.

SALES.—I have supplied 3 of my neighbors with young.

DIFFICULTIES.—My pond does not properly hold water, and has suffered for the want of a sufficient supply. I purpose remedying the latter defect by means of a windmill and well.

773. *Statement of D. H. Parker, M. D., Medon, Madison Co., Tenn., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a total of 45 carp in November, 1880 and February, 1881. I placed them in a $\frac{1}{4}$ -acre pond, having a depth of $3\frac{1}{2}$ feet, a muddy bottom, and 40 gallons of very cold spring water flowing through it per hour.

PLANTS.—A few pond-lilies, but no plants of any consequence, grow in the pond. Nothing that disturbs the carp inhabits it.

FOOD.—I give the carp bread, cabbage, and cooked Irish potatoes twice a week.

GROWTH.—The 8 original carp remaining weigh from 1 to 6 pounds. The leather carp are much the larger. I am satisfied that carp thrive a great deal better in stagnant than in spring or running water. My daughter has about 20 carp in stagnant water that are growing finely. I have seen no young yet.

DIFFICULTIES.—The kingfisher is the greatest enemy of the carp.

774. *Statement of H. F. Parker, Medon, Madison Co., Tenn., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp received in October, 1880 and in January, 1881, I placed in a $2\frac{1}{2}$ -acre pond having a depth of from 1 to 6 feet and a very soft, muddy bottom. Six gallons of very cold water from never-failing springs in the pond flow through it per minute.

PLANTS.—Swamp-grasses grow in the pond where the water is 2 or 3 feet deep.

ENEMIES.—Bream, speckled perch, goggle-eye perch, catfish, bull-frogs, toads, and a few turtles inhabit the pond.

FOOD.—I give the carp stale-bread crumbs.

GROWTH.—The original carp weigh from $2\frac{1}{2}$ to 3 pounds. I have seen no young yet.

DIFFICULTIES.—Turtles and muskrats disturb the carp.

MISCELLANEOUS.—The carp do not go into the mud in winter. I placed 2 carp in a small pond, but could never tame them. They are very shy—the wildest fish I ever saw.

775. *Statement of W. Hugh Brown, Spring Hill, Maury Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in December, 1880, and 20 in November, 1881 remained for 12 months, without any increase, in a small pond having a muddy bottom. They then got in an adjoining pond covering from 4 to 5 acres, and having a depth of from 6 inches to 12 feet, and a muddy, rocky, and gravelly bottom. The pond is supplied by a large spring. Large quantities of water, which in summer is moderately warm at the top but cold at the bottom, flow in and out of the pond. The carp can find water to suit them in the various temperatures of the pond.

PLANTS.—The carp seem to enjoy, and I frequently see them in the moss that grows in such great quantities in the pond.

ENEMIES.—White perch, white bass, large bull-frogs, turtles of every variety, quantities of muskrats, snakes, and mosquitoes in great profusion inhabit the pond.

FOOD.—As the carp find every thing in the pond that they desire, I give them no food.

GROWTH.—I have 9 of the original carp. I have never caught any, but from appearance judge that they weigh from 20 to 25 pounds each.

REPRODUCTION.—I do not know the number of young in the pond, but I am certain that there has been a great increase. They weigh from $\frac{1}{2}$ to 1 pound.

MISCELLANEOUS.—My pond is finely adapted to carp culture.

776. *Statement of Rev. F. A. Thompson, Spring Hill, Maury Co., Tenn., May 21, 1884.*

DISPOSITION OF CARP RECEIVED.—I received 9 leather carp in November, 1880, and kept them in a box in the pond until March, 1881. I received 25 more in November,

1881. I placed them in a $\frac{1}{4}$ -acre pond, having a muddy bottom and a depth all the way up to 4 feet. The pond is supplied by a stream of spring water, 2 feet wide and 1 inch deep, except in winter, when the supply is greater. It contains no plants.

ENEMIES.—Small minnows, frogs, and muskrats inhabit the pond, but there are no turtles at present.

FOOD.—I never fed the carp till last fall. I gave them about $1\frac{1}{2}$ quarts of cooked corn-meal daily through the winter, but do not feed them now, as I have enlarged my pond.

GROWTH.—When I turned the carp into the pond in March, 1881, they weighed about 2 ounces, and were as large as a man's finger. In June, 1881, 3 months after they were taken out of the box, I drew off the water from the pond and caught the largest of the carp, which weighed 2 pounds and was more than 1 foot long. It was, however, accidentally killed by some boys throwing at a muskrat. I drew off the water again on November 8, 1881, and caught a carp (not the largest) which was 22 inches in length and weighed 7 pounds. This truly wonderful growth was attained without any food having been given the carp. There was little difference in the sizes of the 8 carp remaining at that date (November, 1881). I now have 13 old carp remaining. In March 1883, the original carp averaged from 10 to 12 pounds; one in particular weighed $11\frac{1}{2}$ pounds. I suppose they weigh from 13 to 14 pounds. The young of 1882 weighed from 1 to 2 pounds in March, 1883, at which time 76 yearlings were taken out.

REPRODUCTION AND DISPOSITION OF YOUNG.—I placed about 3,000 young, from 3 to 6 inches long, in a newly constructed pond, covering 2 acres, this spring (1884). They grew very rapidly during the spring, and by this time are much larger than when I placed them in the pond.

EDIBLE QUALITIES.—We have eaten a few carp fried. Some liked them, while others thought they had a taste of mud. They are not equal to trout, perch, cat, &c.

DIFFICULTIES.—My carp have been healthy with the exception of an occasional sore, as if injured. Floods broke my new pond and allowed some of the young carp to escape.

MISCELLANEOUS.—I intend to use the old pond for breeding purposes exclusively. I am able to draw off the water at any time. I have another small pond, 6 by 60 feet, just below a clear spring, and in which I intend to place the carp I desire to eat. I will feed them on nice food, which, with pure water, I trust will make them edible at any season of the year. I desire some carp of the scale variety.

777. *Statement of Francis Pride, Cedar Hill, Robertson Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 14 scale carp received on November 20, 1879, and 50 mirror, received subsequently, I put in 2 of the 5 apartments of my pond, having muddy bottoms and depths of from 1 to 4 feet. Forty gullions of cold, clear spring water flow through them per minute.

PLANTS AND ENEMIES.—Plants indigenous here grow in the pond. Native trout, black bass, a few turtles, and many frogs inhabit the other apartments of the pond.

FOOD.—I give the carp bread, curd, and various kinds of vegetable food two or three times a week.

GROWTH.—The 5 original carp are each about 2 feet long, and weigh from 10 to 15 pounds. A scale carp at 2 years old weighed $7\frac{1}{2}$ pounds, and was $17\frac{1}{2}$ inches in circumference, and $22\frac{1}{2}$ inches long. The carp have been healthy.

REPRODUCTION.—This is the first year that the carp have spawned. The fry are innumerable, and, as they were hatched in June and the early part of this month, they are very small.

DIFFICULTIES.—As I could not keep the trout and the carp apart last year, the trout devoured many of the young carp. I have some of the carp so situated now that the trout can not disturb them. The last lot of 20 carp disappeared during the winter.

778. *Statement of George W. Walker, Springfield, Robertson Co., Tenn., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—The 6 carp received in December, 1880, I put in a pond covering about $\frac{1}{2}$ an acre, having a muddy bottom. The water is from 5 to 6 feet deep on the north and west sides of the pond for $\frac{1}{2}$ of the entire pond, and is only from 15 to 20 inches deep on the east and west sides. Rain water supplies the pond, which is subject to a rise of 2 feet.

PLANTS.—The pond contains no plants, but around its edges grow swamp-grasses.

ENEMIES.—Since I drained the pond in 1880, and in 1881 when it drained itself, it has contained no other fish than carp. I kill the frogs and turtles as they appear.

FOOD.—The carp receive sustenance from the drainage of a barn-yard, in addition to the corn-bread I feed them.

GROWTH.—The carp remaining is about 18 inches long, and is of good size.

DIFFICULTIES.—My pond was dried up in May, 1881, and I found 3 of the carp floundering about in the mud. I moved them to a pit 10 feet square, 10 feet deep, with 4 feet of water in it. One morning in September I found one dead, while the others were lively and ate heartily. On the following morning I found another one dead. These 2 were the largest ones, being 9 inches long, proportionately large and fat. I removed the carp remaining to the pond, but have not fed it since. As I did not find but 3 carp when the pond was dried up in May, 1881, I think the others buried themselves in the mud which was then very soft, and 15 inches deep.

779. *Statement of N. Blackwell, M. D., Bartlett, Shelby Co., Tenn., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on November 12, 1880, and 20 more on November 25, 1881, I put in an artificial pond covering about $\frac{1}{2}$ acre, with a depth of 4 feet, and a muddy bottom. The rain water which alone supplies the pond gets quite warm in summer.

PLANTS.—No plants grow in the pond, but a variety of weeds and grasses grow around its edges.

ENEMIES.—Frogs, but no other fish than carp inhabit the pond.

FOOD.—I feed the carp on flour-bread daily.

GROWTH.—The original carp remaining average about 5 pounds. All of the 30 carp that I received are in the pond except the 3 which I ate.

REPRODUCTION.—The carp did not spawn until they were 2 years old. A great number of young are in the pond. The yearlings are 13 inches long and weigh 2 pounds.

DISTRIBUTION OF YOUNG.—I supplied some of my neighbors with fry.

780. *Statement of N. F. Le Master, 19 Madison st., Memphis, Shelby Co., Tenn., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—The 24 carp received in December, 1880, and the 12 received on January 1, 1883, I placed in a pond having a diameter of 100 feet, a depth of 4 feet, and a muddy bottom. The pond is so constructed as to retain all the water that may flow into it, except in exceedingly wet seasons.

PLANTS.—The pond is almost surrounded by swamp-willows, and around its edges grow 3 varieties of succulent grasses.

ENEMIES.—A few speckle perch and numerous bull-frogs inhabit the pond.

FOOD.—I give the carp meal, corn-bread, pumpkins, and birds, and in winter I feed them about once a week.

GROWTH.—There are about $\frac{1}{2}$ of the original carp remaining. They are from 18 to 24 inches in length, and from 4 to 6 inches in width, and weigh from 4 to 6 pounds. My carp are quite thrifty and grow very rapidly. Some of the last I received have grown 6 inches in as many months. I have seen no young yet.

DIFFICULTIES.—Pouchers visited the pond and caught some of the original carp while I was absent from home.

781. *Statement of John G. King, Bristol, Sullivan Co., Tenn., Sept. 21, 1883.*

DISPOSITION OF CARP RECEIVED.—My carp were received November 26, 1881. They are in a pond of 3 acres, with a muddy bottom and fed by a large and pure limestone spring, the temperature being the same summer and winter.

GROWTH.—They weighed 2 pounds and 5 ounces, and were 15 inches long September 5, 1882. They now weigh from 8 to 12 pounds each.

REPRODUCTION.—I think they have spawned, as there are young in the pond, though they may be branch minnows.

782. *Statement of Dr. Thomas W. Roane, Covington, Tipton Co., Tenn., June 27, 1884.*

DISPOSITION OF CARP RECEIVED.—I placed the 40 carp received in November, 1881, and then 2 to 2 $\frac{1}{2}$ inches long, in a pond 90 by 150 feet. The pond is supplied with an abundance of spring water, and is dug in a rich alluvial soil—the bed of an old pond filled up 20 years ago.

PLANTS.—The pond contains an abundance of vegetable growth.

FOOD.—I feed the carp occasionally on bread, fruit, vegetables, wheat, corn, and oats in the sheaf, all of which they devour greedily. They are now very tame. They come to feed in the afternoon, and eat bread, potatoes, cabbage, grain, and refuse from the kitchen greedily. They are to be seen sporting and leaping out of the water, biting off the succulent grass stalks with a snap of the jaws that sounds like pigs feeding.

GROWTH.—I never saw them or perceived any indication of their presence in the water until about June 1, 1882, when to my surprise and delight I found numbers of

them playing and feeding among the rank grass in shallow water. Their size amazed me, and at first glimpse of their backs I thought some one had put large catfish in my pond; but closer observation convinced me that these were my little carp, now grown to enormous fellows from 8 to 10 inches long and as thick as my two hands. I now have carp in my pond all the way up to 7 and 8 pounds.

REPRODUCTION.—The pond is crowded with young carp to such an extent that the old carp have no chance to take the bait, as the young instantly consume it whenever placed in the pond. The carp have multiplied and grown enormously.

DISPOSITION OF YOUNG.—I have supplied a few of my neighbors with young.

EDIBLE QUALITIES.—Each year I have had on my table one or two of the original carp, and consider them superior to any of our native fish. Their flesh is excellent, and the fattest I ever saw.

HOW TO CATCH CARP.—Last year I caught carp with worms, mush, and cotton ball, same as we use on a trot-line to catch buffalo-fish.

MISCELLANEOUS.—I am of opinion that carp spawn twice a year, May and September. I intend to enlarge my pond this summer.

783. *Statement of M. T. Peebles, Rose Hill, near Johnson City, Washington Co., Tenn., Nov. 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 17 live scale carp December 22, 1882, but they presented evidence of bad treatment on the way. The next day I placed them in my pond, which has an admirable bed of mud on the bottom and appears well adapted to the life and growth of carp. My diary, kept with the most exact care, shows that 13 of the 17 had died before January 10, 1883. Careful and repeated observations from that time to the 1st of June, 1883, failed to discover the least trace of the 4 remaining. Consequently, on the 3d of April, 1883, I obtained from a gentleman in Nashville 28 carp, ranging in length from 6 to 10 inches, but the entire lot perished on the way. From June 20 to August 20 the temperature of the water stood at 82° to 85° F. It did not fall below 65° until the middle of October.

ENEMIES.—I did not make sufficient provision for their spawning, and did not protect them from their natural enemies. The pond was full of frogs and tadpoles, which destroyed the spawn and young fish.

GROWTH.—On the 30th of June, 1883, a little more than 6 months from their receipt, I drained the pond and found 4 fine fish from 8 to 10 inches long. Up to this time they had not been fed at all; but from this time on I fed them regularly every evening until the 12th of September, when I again drained the pond and found that the 4 fish had greatly increased in size.

REPRODUCTION.—The 28 dead carp which I received from the Nashville gentleman were from 6 to 10 inches in length, and had undoubtedly been hatched in May or June, 1882. They were 10 or 11 months old at this date. I cut them open and examined them microscopically. Seventeen of them were females and 11 males. It was perfectly manifest that the best of the 17 would have spawned within six weeks.

In the latter part of June I noticed that my spawning and hatching pond of shallow water was very muddy early in the morning. This continued for two or three mornings. I suspected that the 4 remaining fish were there and had commenced spawning, and the draining of the pond June 30 proved their presence. On draining the pond the second time, September 12, I found, in addition to the 4 fish, a "little kettle" of beautiful young carp, ranging in length from 1½ to 2½ inches. There were, however, but 20, the frogs and tadpoles having undoubtedly destroyed spawn, and perhaps some young. Here is at least one instance of scale carp spawning in Tennessee at the age of one year. Besides, the young carp were larger and better fish on September 12 than the original 17 received from the Fish Commission December 22, 1882. If size is a fair index to age, these 4 had undoubtedly spawned before they were 1 year old. In order to investigate more fully, I prepared a small pond 6 by 18 feet in size, with a depth of 14 inches, and placed 12 of the 20 small fry in it. The water is absolutely under control; it is 14 inches deep in the center, and tapers back to an inch in depth. Here I can observe them every day and at any hour. I propose to demonstrate, therefore, that three generations of scale carp can be produced inside of 24 calendar months. The young fish, only 2 inches in length September 12, are now, November 24, from 4 to 5 inches in length.

784. *Statement of J. S. Warren, Jonesboro', Washington Co., Tenn., June 14, 1884.*

GROWTH.—There are many ponds in this vicinity in which carp, placed a year ago last November or December, are now from 22 to 24 inches in length, so I am informed. I have seen no carp, though 2 ponds are less than a mile from me. I have hunted several times in one of the ponds but could not see the fish, which were rendered shy by unruly visitors.

785. *Statement of C. M. Ewing, Dresden, Weakley Co., Tenn., Sept. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1881 I received 3 carp, the remainder of the shipment having died on the way. By some mistake they had laid over at Nashville, Tenn. I gave the 3 to Mr. John W. Jeter, who put them in his pond. This summer the pond overflowed and washed out one of the fish, which his boy found, brought home, and put into a tub of cold well water, but it subsequently died.

GROWTH.—On examination, it was found to weigh about 4 pounds and to contain a considerable quantity of well-developed eggs.

EDIBLE QUALITIES.—It was eaten and pronounced by him a very palatable fish. He said that he would have preferred losing the finest swine on his place.

786. *Statement of John McGavock, Franklin, Williamson Co., Tenn., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 14 carp received in 1880 I placed in a pond covering about an acre, with a depth of from 3 to 4½ feet, and a black, muddy bottom. A bold spring of moderately cool water supplies it.

PLANTS AND ENEMIES.—Plants indigenous here grow in the pond. Frogs inhabit it.

FOOD.—I give the carp corn-bread and green clover once or twice a week.

GROWTH.—The 14 original carp average about ½ pound. I have seen no young yet.

MISCELLANEOUS.—I am constructing a larger pond, and desire some scale carp.

787. *Statement of Thomas R. Fulloss, Rock Hill, Williamson Co., Tenn., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received in November, 1880, I put in a ½-acre pond, having a maximum depth of 5 feet and a muddy bottom. At this date the water is quite warm, and about 5 barrels flow through the pond per day, while in spring the flow is 50 barrels. I put brush in the pond for the carp to spawn on. It contains no plants.

ENEMIES.—Bull-frogs inhabit the pond.

FOOD.—I give the carp bread and Irish potatoes daily. They became very gentle in 1882, and when we fed them could be dipped out of the water.

GROWTH.—The 4 original leather carp remaining average 26 inches in length, and weigh about 7 pounds.

REPRODUCTION.—There are about 1,000 young in the pond, which weigh all the way up to 2½ pounds. They first spawned in the spring of 1882.

DISPOSITION OF YOUNG.—I have given some of the young to my neighbors.

DIFFICULTIES.—I had to move the old carp to a smaller pond to prevent the eggs being devoured by the young carp.

788. *Statement of P. Peyton Carver, Mount Juliet, Wilson Co., Tenn., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—The 10 carp received on November 26, 1880, and the 2 lots of 17 each received subsequently I kept for 2 years in a pond covering 12 square feet, with a depth of 12 inches and a muddy bottom. I then removed them to a ½-acre pond having a depth of from 1 to 6 feet. A stream of from 4 to 6 inches from 2 cold freestone springs situated, respectively, 100 and 200 yards from the pond supplies it with water.

PLANTS AND ENEMIES.—Plants indigenous here grow in the pond. During the first 2 years the small pond was inhabited by bull-frogs. Trout and bream got into the pond this year during an overflow.

FOOD.—I give the carp corn and worms.

GROWTH.—The 3 original carp remaining average from 3 to 4 pounds. The second lot, which I suppose to be leather carp, only weigh from ½ to ¾ pound. The third lot are as large as the second.

REPRODUCTION.—The carp did not spawn while in the small pond. But there are many young in the large pond. The other day I caught at one dip with a net 8 by 12 inches 9 young, each weighing ½ pound.

DIFFICULTIES.—As the 2 ponds lie near and adjacent to one another, it is difficult to prevent other fish from getting into the carp pond.

TEXAS.789. *Statement of L. M. Hitchcock, Palestine, Anderson Co., Tex., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp in January, 1881, and put them in a small pond from 1 to 5 feet deep with muddy bottom. There is a small flow of spring water tinged with iron and sulphur. There are no plants in it.

ENEMIES.—It contains small perch, and turtles sometimes get in.

FOOD.—I give them corn-meal and sometimes crackers.

GROWTH AND REPRODUCTION.—I do not know how large the old ones are, but they are of good size. The water is muddy. I cannot say how many young there are, but quite a number.

DIFFICULTIES.—There has been no trouble except from snakes and turtles.

790. *Statement of Hon. J. P. Fowler, Bastrop C. H., Bastrop Co., Tex., Sept. 6, 1883.*

GROWTH.—Carp sent to this county by you have made a rapid growth and done well beyond all expectation, though so far as I am informed none have yet commenced to breed.

791. *Statement of Wm. H. Coulson, sr., McDade, Bastrop Co., Tex., July 15, 1882.*

GROWTH.—The 18 carp received January 17, 1882, 5 months since, were then from 3 to 4 inches long. To-day I measured one and found it 17 inches long. They are the wonder of this county. They are in a tank, and I call them up with a little brass bell every day and feed them.

792. *Statement of James Boyd, Belton, Bell Co., Tex., Feb. 6, 1882.*

GROWTH.—I received 20 carp on January 31, 1881, and placed them in a pond 12 miles from this place. They now average about 18 inches in length.

793. *Statement of I. N. Lerich, San Antonio, Bexar Co., Tex., Jan. 13, 1882.*

GROWTH.—The carp, measuring from 2 to 4 inches in length when received on June 29, 1881, now average from 12 to 13 inches and weigh from 1½ to 2 pounds each. The water, food, and climate of this country seem especially adapted to the rapid development of the carp.

794. *Statement of R. K. Chatham, Bryan, Brazos Co., Tex., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881, and have received some since. I have an artificial pond covering 1½ acres, with a depth of from 1 to 6 feet, and muddy bottom. During heavy rains the water flows through it abundantly. It contains no plants.

ENEMIES.—It contains perch, but no frogs nor turtles.

FOOD.—We have given them wheat and corn-bread, and sometimes cabbage and lettuce, but we have not fed them regularly.

GROWTH.—I think I have them all and that they will weigh 12 pounds each. They are about 24 inches in length.

REPRODUCTION.—I do not know how many young there are, but they are from 15 inches in length down.

MISCELLANEOUS.—I have scarcely given them any attention at all.

795. *Statement of J. S. Towlkes, Bryan, Brazos Co., Tex., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp about 2 years ago and put them in a tank 50 by 200 feet, with a sandy bottom. It is supplied with about 5 inches of rainfall and contains native grasses.

ENEMIES.—It contains catfish and perch.

FOOD.—I give them bran and refuse grain occasionally.

GROWTH.—The few seen seem to be about from 15 to 20 inches in length.

DIFFICULTIES.—I think the catfish have done the more serious injury. Carp seem to do well in all new tanks.

796. *Statement of L. J. Storey, Lockhart, Caldwell Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881, and 20 more in January, 1882. In January, 1883, I received 14 for another pond. The pond number 1 has from 2 to 6 feet of water, muddy bottom, and covers an acre. Number 2 has from 1 to 4 feet of water, muddy bottom, and covers a ¼ acre. Both are fed by springs, the temperature of which at the inlet is 74°. The pond number 2, situated 100 yards from the spring, is 82°.

PLANTS.—The ponds contain water-cress, of which the carp are very fond.

ENEMIES.—In pond number 1 there are surface minnows and some large frogs, while in number 2 there are frogs, a few small turtles, but no minnows.

FOOD.—Once a day we give them mush made of shorts mixed with corn-meal, and also scraps from the table.

GROWTH.—The old ones are 24 inches long, large and beautiful. I suppose there are 30 or 35 of them in pond number 1. Those sent in January, 1883, are now from 8 to 12 inches long. These, with 5 of the old ones, are in pond number 2.

REPRODUCTION.—In pond number 2 there are thousands of young. This year's young hatched out about the middle of June, and are now from 1 to 3 inches long, while some are as broad as two fingers. I think the minnows ate up the spawn in pond number 1.

MISCELLANEOUS.—I have become very much interested in them, and want to make it a success. I will draw off the first pond this summer, and try to get rid of the minnows.

797. *Statement of Eldridge C. Dickinson, Rusk, Cherokee Co., Tex., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in February, 1880, and 20 more through our State commission. My pond covers $\frac{3}{4}$ of an acre, and averages 2 feet in depth, and has a black, muddy bottom. It is fed by a spring near by with an abundance of water, and is quite cold.

PLANTS.—It contains several grasses, and a kind of flag somewhat like cat-tail, with large and numerous roots.

ENEMIES.—The pond contains perch, minnows, frogs, and turtles. I drained the pond in 1880 and destroyed all kinds of native fish, so as to make way for the carp. In 6 months the water was alive with young perch and minnows. In May, 1883, I drained it again and found perch, minnows, turtles, frogs, and craw-fish in quantities. Some of the perch will weigh nearly a pound. Having no connection with other streams, I do not know how they got in. I kill the turtles with a gun, and manage to keep them pretty well exterminated.

FOOD.—I give them shelled corn and corn-meal once in a week or two.

GROWTH.—When I drained the pond this spring, in May, I found all of the old ones. They were 15 inches long and from 2 $\frac{1}{2}$ to 3 $\frac{1}{2}$ pounds in weight.

REPRODUCTION.—They have produced no young yet. In May of this year I examined the spawn in as many as a dozen. It was in a large mass of white or yellowish substance, the eggs not being fully defined. I thought from its appearance that it would mature some time during July or August and produce large quantities of young fish, if the native fish do not devour the spawn.

MISCELLANEOUS.—The most serious difficulty has been to keep the minnows, perch, frogs, and turtles out. I am building a new 2-acre pond, favorably located, with muddy bottom and an abundant supply of water. It is isolated, and it will have nothing in it but the carp to start with; so that I can fully test the possibility of keeping it clear of other fish and turtles.

798. *Statement of G. White, McKinney, Collin Co., Tex., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1879, and put them in an artificial pond 200 yards long, 50 yards wide, and from 2 to 8 feet deep. For 6 months it is fed by a continuous stream of water, but during 6 months receives no water.

PLANTS AND ENEMIES.—It contains moss, flags, and some grasses, and also catfish, perch, turtles, and frogs. The catfish, perch, and turtles, which could not be kept out, destroyed the young one season.

DIFFICULTIES.—We have no constant-running streams for refilling ponds when they have been drawn off. In our heavy floods it is almost impossible to keep the carp from being washed out. During the flood in September, 1880, I lost them all. Thirteen of them were caught on the shoals below, which weighed from 2 $\frac{1}{2}$ to 3 pounds each. We cooked and ate 2 of them, which were of good quality.

799. *Statement of Max Albrecht Konz, Weimar, Colorado Co., Tex., Apr. 7, 1882, in behalf of Joachin Mernitz, Middle Creek, Fayette Co., Tex.*

GROWTH.—The carp received in December, 1881, are now each 18 inches long, and are in a very fine condition. They spawned on March 10, 1882.

800. *Statement of Eugene Potthart, Weimar, Colorado Co., Tex., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1880. My pond covers an acre, is not over 7 feet deep, and has a bottom of yellow loam. It is supplied with rain water, the temperature of which sometimes reaches 90°.

PLANTS AND ENEMIES.—There are no plants except the common water-grasses, and no fish, frogs, or turtles in it.

FOOD.—We feed them with old flour-bread and some corn.

GROWTH.—There are 5 of the original lot left, which would weigh between 6 and 7 pounds each. Some of those which died weighed 3½ pounds on the 17th of August, 1881, when I had had them but 7 months.

REPRODUCTION.—The young from last year's spawning are from 18 to 20 inches long and from 2½ to 3 pounds in weight. The young of this spring are about 4 to 5 inches long.

DIFFICULTIES.—I lost 15 during the first year, which died in the pond. The worst difficulty is the negroes with their hooks and lines.

801. *Statement of George C. Manner, Dallas, Dallas Co., Tex., July 19, 1882.*

DISPOSITION OF CARP RECEIVED.—I received 20 scale and 20 leather carp in January, 1882, which were from 3 to 4 inches in length, the leather carp being the larger. I placed the scale and leather carp in separate ponds.

ENEMIES.—I took out of the pond all the little minnows I could find, and especially hundreds of craw-fish, which I feared would devour the carp.

FOOD.—The carp are now fed daily, and have lost their timidity to such an extent as to come to the feeding-spot by the dozen, and even to eat out of my hand.

GROWTH.—No trace of the carp was seen, except a change in the appearance of the water, it always being muddy, until June 15, 1882, when I caught a carp more than a foot in length. At this I was amazed, as I did not think they were longer than 8 inches. They are from 12 to 18 inches long. There are no young yet.

HOW TO CATCH CARP.—It had been reported to me during the month of May and the first of June that fish had been seen jumping out of the water in my pond. To satisfy myself of the truth of this report, on June 14 I threw into the pond a hook baited with boiled potatoes. As the bait was always eaten off I suspected craw-fish. On the next day, June 15, I used a worm as bait, and within a minute after dropping the hook in the water I caught a carp more than a foot long. The carp was hooked in the side of the jaw, and after carefully removing it I replaced the fish in the water.

HABITS.—A few days ago I saw a leather carp from 17 to 18 inches long, with two-thirds of its body out of the shallow water, rooting in the mud for the distance of from 8 to 10 yards. It then turned into deeper water, where it continued the same operation, reminding me of the rooting of a hog.

802. *Statement of Jas. C. Michener, Hutchins, Dallas Co., Tex., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I lost about half of the first lot of carp bringing them from Austin in cans, but I received some more last February. I have an artificial pond at the head of a spring, which is from 2 to 4 feet deep.

PLANTS AND ENEMIES.—It contains duck-meat and English water-cress, and also small catfish and sunfish.

FOOD.—I gave them corn-mush and corn-bread daily at first, but only rarely since the grass and weeds have grown.

GROWTH.—They are at present about a foot long.

803. *Statement of W. A. Kendall, Pilot Point, Denton Co., Tex., Jan. 10, 1882.*

GROWTH.—On April 1, 1881, I placed in my pond 18 carp from 2 to 4 inches long. I drained the pond on August 1, 1881, to rid it of the catfish that were in the pond before I placed the carp there, and found only 7 of the original number. But each one was 14 inches long; and as soon as this fact became known others at once commenced preparations for their culture. I will be able to report in another year that this new industry is a grand success in Northern Texas.

804. *Statement of E. N. Gray, San Diego, Duval Co., Tex., Oct. 27, 1882.*

GROWTH.—I have 3 tanks, in one of which there is a carp 16 inches long, weighing 3½ pounds. It is the only one I have left of 13 received last January.

ENEMIES.—I had a lot of geese and ducks in the tank where I put the carp and I suppose they ate up all the rest, as the carp were very small, being only 2 inches long.

805. *Statement of J. B. Chalmers, Ennis, Ellis Co., Tex., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 23 carp about 4 years ago, and 24 more about a year ago. I have kept them in 2 ponds containing 1 acre and 1½ acres, respectively. These tanks are fed by rain water and are screened.

PLANTS AND ENEMIES.—They contain some lilies, and also catfish, perch, and frogs innumerable.

FOOD.—I have never fed them. They appear to do well without much care.

GROWTH.—I think the oldest will weigh 20 pounds.

REPRODUCTION.—The tanks appear to be full of young from 3 to 4 inches long.

MISCELLANEOUS.—I am satisfied they are the fish for this country. I believe salmon and trout would also do well, and intend trying them in another tank.

806. *Statement of Arthur O'Keefe, Honey Grove, Fannin Co., Tex., June, 1880.*

FOOD.—My carp are quite gentle, seeming to care little for the appearance of man, and even coming slyly up to nibble at a biscuit held in the hand. A few blasts of a tin horn and the scattering of a handful of bread on the water bring them by hundreds to its surface, when they eagerly seize their food.

GROWTH.—Most of the carp are about 5 inches in length, though there are many both larger and smaller in the lake, which was first stocked with 70 carp last year.

807. *Statement of Samuel Johnson, Savoy, Fannin Co., Tex., Apr. 24, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received on January 10, 1882, I placed in a body of water that is capable of sustaining thousands.

FOOD.—I gave the carp biscuit, meal, salad, bread, refuse from the table, and worms. They are perfectly gentle and come to the feeding place at the rattle of a sheep-bell. I feed them every day as I do chickens.

GROWTH.—The smallest carp that I received was 1½ inches long and has now attained a length of 4 inches, while some of them measure 8 inches. They grow like pigs when given a plenty of buttermilk. I can make them average from 5 to 6 pounds by summer if I feed them well.

808. *Statement of G. Hillje, Schulenburg, Fayette Co., Tex., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1880. My pond covers 1½ acres, is 9 feet deep in the deepest place, and has a bottom of loam and mud. There is no water flowing through it except when a heavy rain causes it to overflow. Its temperature is 90° at dinner-time.

PLANTS.—It contains *Nymphaea odorata*, *Acorus calamus*, *Typha latifolia*, *Phragmites communis*, and some others.

ENEMIES.—There are perch, craw-fish, frogs, and turtles in it.

FOOD.—I fed them every morning and evening with bread and Irish potatoes; sometimes with watermelons and pumpkins.

GROWTH.—I have 17 of the original lot. In December, 1882, the largest one measured 24 inches and weighed 11 pounds. The smallest one measured 14 inches and weighed 5 pounds.

REPRODUCTION.—They had produced 176 young up to December, 1882. These young are now about 10 to 12 inches long. They have not spawned this season. I left half of the young with the original lot and put half in another pond.

DIFFICULTIES.—In 1881 my pond dried up, and I had to keep them in a box 2 months. As there are no springs it is sometimes difficult to keep the pond full of water. We are now having a dry summer, and I think I will have to buy a hydraulic ram to lift water out of the creek into the ponds.

809. *Statement of Christopher Steinmann, Swiss Alp, Fayette Co., Tex., Oct. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1880, and have received 14 since. I kept them in a pond of about ½ an acre, averaging 4 feet in depth and with a black, muddy bottom. The pond contains a spring, so that there is water flowing out of it all the time, and it is quite cold.

PLANTS.—It contains all kinds of grasses. One grows to the height of 4 feet, and has very thick, fleshy roots.

ENEMIES.—There are minnows and bull-frogs, but no turtles in it.

FOOD.—I give them boiled corn and bread twice a week.

GROWTH.—The 11 that remain will weigh from 8 to 10 pounds each. They have not produced any young yet.

810. *Statement of P. Haschke, Winchester, Fayette Co., Tex., Sept. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—Of the carp which were sent to me only 8 arrived alive. Five of them are still doing well. I kept them in a tank. This season has been very unfavorable, the driest for 22 years.

ENEMIES.—I find a great many minnows in my tank, and do not know whether they are carp, perch, or catfish, though I have caught a full-grown perch and a full-grown catfish.

GROWTH.—My carp have grown and done well, the largest measuring 17½ inches in length and 14½ inches in belt.

811. *Statement of M. S. Finch, sr., Wortham, Freestone Co., Tex., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp in December, 1880, and put them in a tank covering 3 or 4 acres, with a depth of from 2 to 12 feet, and a muddy bottom. It never overflows except when we have heavy rains. It gets quite warm in the summer.

PLANTS.—It contains Bermuda grass.

ENEMIES.—The pond contains craw-fish, which I have about made up my mind are catching the carp, and so I am catching the craw-fish. There are a few turtles.

FOOD.—I have given them corn and scraps of bread from the table, but not regularly.

GROWTH.—Last year they weighed from 5½ to 7½ pounds. I suppose they will weigh at least 10 pounds now.

REPRODUCTION.—In April, 1882, there was a large school of young, which are now 12 to 15 inches long. There are too many of them, and I have been catching them to eat and to give away to stock other tanks. I gave away hundreds of them in 1882, and this year I have stocked other tanks and sold about 500.

EDIBLE QUALITIES.—I commenced eating carp in 1882, and have been eating them ever since. We fry them, and they are very good.

MISCELLANEOUS.—The whole secret of my success is that I had a new tank and no other fish could get in to destroy the eggs.

812. *Statement of J. P. Lee, Wortham, Freestone Co., Tex., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp in December, 1880, and put them in a pond covering an acre with a depth of 4 feet and a bottom of clay and sediment. No water flows through it, and it contains no plants.

ENEMIES.—There are catfish, white perch, frogs, and snapping-turtles in it.

GROWTH.—The year after they were put in 3 were seen, which were then 15 inches long. I have not fed them and have seen no young.

MISCELLANEOUS.—They do well in this country when in new tanks by themselves, and poorly when put with other fish.

813. *Statement of Thomas Longbotham, Wortham, Freestone Co., Tex., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the fall of 1880. My pond is from 2 to 8 feet deep, covers 2 acres, and has a sandy bottom.

ENEMIES.—There are perch, catfish, frogs, and turtles also in the tank.

GROWTH.—They weigh at present about 8 pounds each.

MISCELLANEOUS.—I have not fed them, because there were other fish in the tank, but do not know how many there are. I have never seen any young, and if there were any the other fish probably destroyed them. I have built a new tank expressly for carp, and would like to have some more.

814. *Statement of A. N. Snapp, Wortham, Freestone Co., Tex., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp about 3 years ago, and, having no suitable tank, put them in a small tank, which soon dried and the carp died. The carp which our neighbors got at the same time have done well. I have now made 3 tanks, from 1 to 3 acres each, and from 10 to 15 feet deep, for carp.

815. *Statement of S. A. Cook, Denison, Grayson Co., Tex., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp, 3 or 4 years ago, and have kept them in a pond 20 by 600 feet, 6 feet deep, with a muddy bottom. It is supplied with the rain-water drawn from about 40 acres.

PLANTS.—It contains Bermuda grass and weeds.

ENEMIES.—It contains catfish and perch. I fear the other fish have destroyed my carp; the catfish weigh about 5 pounds now.

816. *Statement of J. V. Cockrell, Sherman, Grayson Co., Tex., Oct. 21, 1882.*

GROWTH.—We have just weighed some of the carp received February 12, 1882, and find them ranging from 2 pounds to 4 pounds and 7 ounces. Mr. James H. Dunn weighed one October 12, 1882, which turned the scales at 4 pounds and 7 ounces, the largest one yet weighed, though several have weighed 4 pounds. This seems almost incredible, but these weights are verified by our best citizens. I frequently visit the pond of Mr. Wallace, near this place, who received 21 carp in November, 1880. The fish feed in very shallow water, hence I was able to estimate their true weight. The smallest carp weighs 2 and the largest 4 pounds. An offer of \$10 apiece has been made for 2 or 3 of these fish, but refused. It is expected that they will spawn this spring.

MISCELLANEOUS.—All these fish, or quite a number of them, will spawn next spring, which will insure an abundance of fry for next year. Nearly all of our small streams go dry in July and August, which has made it necessary for almost every farmer to make a pond of water for his stock, and it is in these small ponds, covering from $\frac{1}{2}$ acre to 10 acres, that these fish grow so well and seem to be so much at home. The high temperature of our waters during the summer months seems peculiarly adapted to their growth and development. They will add much to the food supply of Texas.

817. *Statement of M. S. Klum, Sherman, Grayson Co., Tex., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—Five of the carp sent me in May, 1881, reached me alive, and I received some more in February, 1882. My pond covers about an acre, and is from 1 inch to 5 feet deep. It is fed entirely by surface water, but occasionally I let in some from another pond to make up for evaporation. It is exposed to the sun, and gets very warm.

PLANTS.—I put some plants in the water about a month ago, and they disappeared in a few days.

ENEMIES.—The pond contains a few sun-perch and catfish. Bull-frogs, turtles, &c. are plenty. There is occasionally a bass. The ducks have been the worst enemy that I have known; but no doubt the turtles, frogs, cranes, &c. destroy many fish.

FOOD.—I have given them no food, but they have done well on what they could find.

GROWTH.—When I drained my pond in February, 1882, I found 3 of the original lot, which were about 16 to 18 inches in length. They had grown 15 inches in about 10 months. My fish have grown faster than any fish I have ever seen. Some of my neighbors have carp that have not grown like mine, their springs and wells being impregnated with minerals to such an extent that catfish and perch will only live one or two days in the water.

REPRODUCTION.—I watched continually during the summer of 1882 for young carp, but I could find only young perch. But in January, 1883, I drained the pond again and I found the 3 old ones and 1,500 young carp. They were from 4 to 9 inches long. I have never seen one as small as those I first received, which were only $1\frac{1}{2}$ inches long. I refilled the pond and turned them loose again. I have not seen a single young carp this summer, though I find plenty of young perch near the edge of the water. When I drained my pond in the winter I threw out all the native fish.

SALES.—I have sold a few at 10 cents apiece and given some to my friends. I have never eaten any, preferring to give or sell them to those who want carp.

818. *Statement of Mrs. M. A. Wallace, Sherman, Grayson Co., Tex., Sept. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 21 carp in December, 1880. The pond in which I put them covers $\frac{1}{2}$ an acre, is about 4 feet deep, and has a clayey and sandy bottom. The water is at a temperature of 91 degrees to-day.

ENEMIES.—There are no plants nor other fish than carp in it. There are some frogs and turtles, of which I have killed 3.

FOOD.—I feed them every day with corn-bread, and sometimes with corn and lettuce.

GROWTH.—I still have 15 of the original lot, and think they would weigh from 8 to 10 pounds each. They are about 30 inches long.

REPRODUCTION.—They have produced a good number of young. The young are now of all sizes, the size of your finger up to the length of your hand.

SALES.—I have sold some to supply other ponds. My only difficulty has been to catch them.

819. *Statement of A. H. Wilkins, Whitesborough, Grayson Co., Tex., July 21, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in January, 1881, and put them in a pond 4 by 10 feet, and 3 feet deep. In April last I changed them to a pond of spring water covering $\frac{1}{2}$ an acre, 8 feet deep, and with a muddy bottom.

PLANTS AND ENEMIES.—It contains flag, or cat-tail. There are top swimmers, frogs, and turtles in the pond.

FOOD.—I give them bread 3 times a week.

GROWTH.—The 9 that I have left would weigh from 4 to 6 pounds each.

REPRODUCTION.—They produced no young last year, but at this time the young are innumerable and are from 1 to 2 inches in length.

DIFFICULTIES.—The most serious difficulty has been with the turtles.

820. *Statement of S. P. Morgan, Gladewater, Gregg Co., Tex., June 12, 1882.*

GROWTH.—I placed the carp received on January 11, 1882, in my pond on the following day. I caught one on June 7, 1882, and to my surprise it measured 11 inches in length and weighed a pound. The carp were only from 2 to 5 inches long when received, and this great growth was attained in this short while without any artificial food. The carp is one of the finest fish we have.

821. *Statement of C. C. Gibbs, Houston, Harris Co., Tex., Sept. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp which I received I put in a tank located in a mountainous country, where there are very heavy rains at times. The serious freshets of last year I think overflowed my tank to such an extent as to carry the carp all away.

822. *Statement of W. J. Hutchins, Houston, Harris Co., Tex., May 12, 1883.*

DISPOSITION OF CARP RECEIVED.—In January, 1882, I received 20 young carp from 2 to 3 inches long, and placed them in an artificial pond dug in my garden, 15 by 25 feet, and about 5 feet deep. The pond is kept full with water from the water-works.

FOOD.—The fish were fed regularly with wheat-bread and bran, with some rice and corn-bread, also lettuce, mustard, cabbage-leaves, &c.

GROWTH.—They appeared to grow very well, and in November some of them were nearly or quite 12 inches long. I have now a full supply of young carp.

823. *Statement of W. H. Carter, Marshall, Harrison Co., Tex., Mar. 22, 1884.*

GROWTH.—I took from my pond to-day 3 carp 20 inches long. I planted 20 minnows January 7, 1882.

824. *Statement of Mrs. S. A. Teel, Kyle, Hayes Co., Tex., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 18 carp in December, 1880, and 17 January 17, 1882. My pond is 5 feet deep, 60 by 50 feet in dimension, and has a bottom of black dirt. It is supplied with about 50 barrels of spring water per day, which is moderately cool.

PLANTS AND ENEMIES.—It contains water-cress and native grass. There are also turtles, craw-fish, frogs, and minnows in the pond.

FOOD.—This consists of corn-bread, biscuits, and vegetables.

GROWTH AND REPRODUCTION.—I think I have about 14 of the original lot which would weigh from 6 to 8 pounds each. They have produced a great many young, which are of all sizes and weights.

DIFFICULTIES.—They may have been preyed upon by turtles, but I expect the pond to pay me well.

825. *Statement of R. C. Spinks, Crockett, Houston Co., Tex., July 13, 1882.*

GROWTH.—The carp received in January were placed in my pond on the 25th of that month. I have just drained my pond and find them to measure 12 and 13 inches. I have only lost 2.

FOOD.—They are very fond of Bermuda grass, and have lived on that alone, as I have fed them none at all.

826. *Statement of S. S. Walker, Groesbeck, Limestone Co., Tex., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp which I received in 1881 I put in the tank of Mr. J. A. Gardiner, near Mexia, and have since learned that they are doing well and increasing very fast.

827. *Statement of Oscar Wiley, Groesbeck, Limestone Co., Tex., Feb. 9, 1883.*

GROWTH AND REPRODUCTION.—The carp are doing well and multiplying rapidly. I have them in great quantities and am much pleased with them. They grow so fast I think I shall be able to commence using them this spring.

828. *Statement of Volney Metcalfe, Kosse, Limestone Co., Tex., June 28, 1880.*

DISPOSITION OF CARP RECEIVED.—The carp received in the fall of 1879 I put in a well having 4 feet of water in it. I connected the well with a tank by means of a small ditch, in order to fill the well with water, and left the ditch open so that the water would not stagnate. I put 5 of the carp in the tank.

FOOD.—I feed the carp on corn-bread and vegetables, such as tomatoes, squash, &c., all of which they eat. They seem to like the squash best, preferring it baked. Corn-bread is their favorite diet, and by feeding them at the same place every day they become accustomed to look for it. All we have to do when we wish to see them is to tie a piece of stale bread to a string and float it on the water, when they come up all around it, and scramble for it like hogs for corn.

GROWTH.—The carp remaining are now 4 inches wide and a foot long.

DIFFICULTIES.—Several of the carp appeared to be sick when received, and died soon afterwards.

829. *Statement of H. M. Munger, Mexia, Limestone Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp about 3 years ago and put them in a tank 10 feet deep, with a clayey bottom. It is supplied with drainage water from 200 acres of land. It contains several kinds of plants.

ENEMIES.—It contains perch and catfish.

GROWTH.—I caught a carp about 27 inches long.

MISCELLANEOUS.—As the pond is on my ranch, 16 miles away, I have never fed them, and can't say how many remain or whether they have produced any young.

830. *Statement of J. M. Waller, Mexia, Limestone Co., Tex., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1881. My tank covers 3 acres of land, is from 1 to 12 feet deep, and has a bottom of very soft mud.

ENEMIES.—Catfish, perch, and some turtles are in the pond.

GROWTH.—The old ones are now about 2 feet long.

REPRODUCTION.—They have produced a good crop of young, which are from 8 to 12 inches in length.

DIFFICULTIES.—The most serious difficulty has been to catch them. They are very likely to follow high water over the waste-way and escape. We have found them on the prairie below after a freshet.

831. *Statement of A. P. Brown, M. D., Jefferson, Marion Co., Tex., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 75 carp in 1879 and have received more since that time. My pond is 30 by 75 feet, 1 to 6 feet deep, and has a muddy bottom. It is supplied with the rain water which falls on 20,000 square feet of roofing.

PLANTS.—It contains Bermuda and crab grass, and the ponds of my neighbors contain Bermuda, crowfoot, crab, and common water-grasses.

ENEMIES.—There are no enemies in the pond.

FOOD.—I give them bread, and sweepings from freight cars, such as corn, oats, &c. The fish, when regularly fed, are very gentle and follow their feeders all around the pond.

GROWTH.—I have 5 or 6 of the original lot, which are about 23 inches long and weigh from $4\frac{1}{2}$ to $5\frac{1}{2}$ pounds each.

MISCELLANEOUS.—I believe carp to be a success in all waters of this section not impregnated with iron, copper, or sulphur. Most of the parties to whom I have delivered

carp report very satisfactory results, especially those who have given the fish one-half of the attention they deserve. Some of the ponds where the fish grow rapidly have no young. In other ponds they have multiplied rapidly, while in still others there is no increase of young, but a loss of some of the old ones.

832. *Statement of B. C. Hinnant, Daingerfield, Morris Co., Tex., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 50 carp in the fall of 1879. My pond covers $1\frac{1}{2}$ acres, is from 2 to 16 feet deep, and has a muddy bottom, and is fed by springs. There is but little water overflowing. In the summer months the water gets very warm on top, but is cold at the bottom.

PLANTS.—It contains pond-lilies that have a broad leaf, but no grasses.

ENEMIES.—It contains perch and frogs. I try to keep the frogs out.

FOOD.—I give them corn-bread once or twice a week.

GROWTH.—I suppose the old ones might weigh about 4 pounds each.

REPRODUCTION.—I had a large lot of young carp last summer. I have several thousand of them still for sale, that are from 5 to 10 inches long, and will spawn next spring. I have given away some and sold several hundred at a very small price. The ones that hatched this year are now from 1 to 3 inches long.

DIFFICULTIES.—The greatest difficulty has been to keep the snakes and frogs out.

833. *Statement of G. A. Vinn, Corsicana, Navarro Co., Tex., Aug. 25, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received on January 16, 1882, I put in a tank, and saw no more of them till late in May. My tank overflowed, and I found they had gone. I put a screen across the waste-way. About 20 days ago we had a very heavy rain and part of the dam gave way. I found one carp 12 inches long lodged against the screen. Last night there was another lodged against the screen, measuring 14 inches. I would not take \$5 apiece for what remains if I could get no more. I cannot raise meat half so cheap.

834. *Statement of L. T. Wheeler, Corsicana, Navarro Co., Tex., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp January 10, 1881, and have since received from different sources 80. My pond covers an acre, and has a depth of from 6 to 20 feet, and a muddy bottom. It is supplied with rain water only. This is discharged by a sluice, and protected with wire screen. The water gets quite hot in summer. I am now constructing large ponds to raise carp for market. We make our ponds by solid dirt embankments across ravines. They are simple in construction and furnish an ample supply of water. Many ponds contain from 5 to 10 acres.

ENEMIES.—I am troubled only with frogs and sun-perch. It is almost impossible to construct a pond that will keep them out.

FOOD.—From March to November I feed them twice a day on bread, vegetables, wheat, barley, millet seed, &c.

GROWTH.—The oldest, of which I have lost none, are more than 3 feet long, and weigh from 20 to 25 pounds each. In this climate they weigh from 6 to 8 pounds when one year old.

REPRODUCTION.—It is impossible to tell how many young there are, they are so numerous. They are of all sizes. They begin spawning about May 10, and continue to spawn till November 1. They spawn in shallow water, and I am preparing a special pond with shallow water for propagation.

SALES.—Carp are worth from $12\frac{1}{2}$ to 15 cents a pound here in the market, and there is a very large and increasing demand. I can sell \$300 to \$500 worth next spring. It is better than market gardening, as it is all profit. I have succeeded beyond my most sanguine expectations.

835. *Statement of L. T. Wheeler, Corsicana, Navarro Co., Tex., July 1, 1884.*

PONDS AND ENEMIES.—I have now had $3\frac{1}{2}$ years' experience in the raising and hatching of German carp, and it may be that my experiments may be worth something to others, particularly in the South. All still-water ponds should be as deep as possible so as to prevent stagnation and to insure a certain supply of water when the rainfall is alone to be depended upon. As it is next to impossible to keep out native fish, I had to resort to partially artificial means to hatch and protect carp.

REPRODUCTION.—I have adopted the following plan with eminent success:

About the 1st of May, having first procured a quantity of long sea-moss, I tie it in small bunches and lay it in shallow water near the bank, attaching it safely to the bank

where it will have as good an exposure to the sun as possible: carp will not spawn in the shade. By the 5th of May in this latitude (32°) the carp will begin to spawn. They may be seen in great numbers, fluttering near the banks in shallow water, and they will be sure to find the moss and to deposit innumerable eggs upon it: the eggs will adhere to the moss from 3 to 4 days and then drop off. To protect the eggs and the young from the ravages of other fishes I constructed boxes 10 feet long and 5 wide. The gunnels or side pieces are 1 by 12, with a good water-tight bottom. The ends of these boxes are made of wire-cloth sufficiently fine to prevent the escape of the smallest carp and to admit a constant flow of fresh water. The bottoms are covered an inch deep with pure sand. When placed in the water they sink until the water stands from 6 to 8 inches deep in them. As soon as I discover the eggs on the moss, I gather up the moss and lay it in these boxes, putting weight enough on to keep it barely under the water. In 8 or 10 days, according to the temperature of the water, the young will be seen. It is best to anchor these boxes in the middle of the pond, where they will be subjected to the action of the wind and waves and have as fair an exposure to sun as possible. After the young are 2 or 3 weeks old they should be protected from the midday sun. It is wonderful how many can be hatched in a box of the size given. As the growth increases they should be divided and kept until they are large enough to take care of themselves, which will be in 2 or 3 months, if there are game fish in the pond. I commence feeding when a month old by sprinkling corn-meal in the boxes, but not enough to leave a residuum.

Carp do not spawn in this climate until they are 2 years old, and at 3 they spawn enormously. They begin by the 5th of May and run from 3 to 5 days only. I had only one that was as late as the 25th this year. I did not observe it spawning but one day, though I watched it closely day and night. I placed all the spawn of this one in a box by themselves; yesterday I bailed the water out of this box, straining through a wire sieve; it is simply wonderful how many young there are—too many to count.

SALES.—I am now selling the young, having sold to one man 1,000 at \$15 per hundred, and have demand for every one that I can hatch.

MISCELLANEOUS.—I have given the cultivation of the carp the closest attention, endeavoring to find out the most simple way to hatch and protect them, and one that any farmer could understand and adopt without requiring much time or attention. I have been eminently successful, and there is no reason why others should not be. My oldest carp are now $3\frac{1}{2}$ years old and I expect to exhibit one at the fair in New Orleans that will weigh 30 pounds.

836. *Statement of Henry Jones, Cross Roads, Navarro Co., Tex., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp 2 years since and put them in a large tank, 15 feet deep, with a muddy bottom, and large enough to float a steamboat. It is supplied by rain water and sometimes overflows. Yesterday with the thermometer at 100° the water temperature was 30° .

PLANTS.—It contains grass.

ENEMIES.—It contains catfish, perch, frogs, turtles, and any amount of snakes.

MISCELLANEOUS.—I have not fed them nor taken any care of them. The tank is so large that it is difficult to see the carp or do anything with them. I have never seen any one of the 20 that we put in 2 years since, and if there are any I do not know it. I have never seen any young and have never caught any.

837. *Statement of W. S. Robinson, Dresden, Navarro Co., Tex., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp December 23, 1880, but lost them all on account of the drouth. I received 38 more January 20, 1882. My tank covers one acre, is from 2 to 8 feet deep, and has a muddy bottom. It is supplied entirely with rain water.

PLANTS.—It is covered with water-lilies called in Texas young pin or water-acorn.

ENEMIES.—Catfish, perch, and bull-frogs have gotten in since I put the carp in.

FOOD.—I give them scraps from the kitchen but they do not seem to need much food, because there is vegetation in the water and all around it.

GROWTH.—I should think those received last would measure about 20 inches in length. They have not spawned that I know of.

838. *Statement of Thomas Jackson, Bremond, Robertson Co., Tex., June 24, 1882.*

DISPOSITION OF CARP RECEIVED.—The 18 carp received on January 15, 1882, and which I placed in my pond, were doing well up to the very heavy rain of May 6. This

flooded the country generally, caused my pond to overflow, and allowed most of my carp to escape.

FOOD.—The pond being newly constructed, it afforded a sufficient supply of natural food to sustain them. They are beginning to take food which I place in the pond.

GROWTH.—The few carp remaining are doing remarkably well, their growth being astonishing and their general condition very prosperous. They were only from $\frac{1}{2}$ inch to $2\frac{1}{2}$ inches long when received, but now average from 10 to 14 inches, this remarkable growth having been attained in about 5 months.

839. *Statement of T. C. Moore, Bremond, Robertson Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 19 carp in the winter of 1881, and 5 in the winter of 1882. I have an artificial pond containing about $\frac{1}{2}$ of an acre and supplied with water by the drainage from higher ground. It is from a few inches to 3 feet deep, and has a muddy bottom.

PLANTS.—It contains wild grass and water-grass and Bermuda grass.

ENEMIES.—There are no other fish, but there are frogs, craw-fish, and perhaps a few turtles in it.

FOOD.—I have fed them with bread, but irregularly on account of the distance of the pond from the house.

GROWTH.—They are now apparently 18 inches long and would perhaps weigh from 6 to 8 pounds each.

DIFFICULTIES.—The most serious difficulty has been to keep the water from overflowing during heavy rains. Nearly all the first lot escaped in this way. Owing to the distance of the pond and the muddiness of the water, I am not able to tell whether there have been any young produced or not. I intend to provide a better pond and to devote more attention to them.

840. *Statement of G. B. Byrd, Cold Springs, San Jacinto Co., Tex., June 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 live carp in February, 1883. After dividing them with Mr. Thomas L. Ross, I immediately placed 6 fish in my pond.

ENEMIES.—I have no other fish in the pond, not even a minnow.

FOOD.—I fed them during the winter on boiled rice, corn-meal, and flour, in about equal parts, baked into cakes of from $1\frac{1}{2}$ to 2 inches in thickness, and corn-bread, pan length. I saw nothing of these fish until May 10, and began to fear that some accident had befallen them, yet I continued to deposit food. I now have them so that they will come to my call and feed right under my feet. They rise to the top of the water and suck in a piece of biscuit as quickly as a hungry dog would devour it.

GROWTH.—On May 10th I saw floundering around in some weeds a carp fully 12 inches long, and since that day I have never failed to see them. There is one in the lot that must certainly be an extra fine specimen of the carp, as it is 16 inches long and large in proportion. When I put them in the pond the largest could not have been more than 4 inches long, and now the smallest is certainly more than 10 inches. In fact, the growth has been so remarkable that one would scarcely believe it.

841. *Statement of G. B. Byrd, Cold Spring, San Jacinto Co., Tex., July 16, 1883.*

FOOD.—I have been experimenting as to the best food for carp. I give them both muskmelons and watermelons, which they eat, but not with relish. They are extremely fond of German millet, broom-corn, and Egyptian wheat in the dough state, or just as it is ripe to eat. During fruit season I purpose feeding some of my carp exclusively on fruit, such as pears, summer apples, plums, and grapes.

GROWTH.—I have seen some carp that were placed in a pond one year before mine; but I think my 6 carp will weigh quite as much, if not more, than those; while I have one that is much larger than any of those alluded to. The Russian gentleman says mine are as large as carp grown in Russia in 3 years, and that he rarely saw carp twice the size of mine in the markets.

842. *Statement of Mrs. Nellie Clark, Fort Worth, Tarrant Co., Tex., Oct. 14, 1883.*

GROWTH.—One year ago last winter I received 20 carp. A short time ago a net was drawn through the pond, and we found them to be from 10 to 12 inches long. We are greatly in need of aquatic plants.

GROWTH AND REPRODUCTION.—Writing subsequently, under date of October 31, 1884, Mrs. Nellie Clark, Fort Worth, Tarrant County, Texas, says: "On dragging a net

through my pond to find out if it contained catfish, we brought out 2 carp that measured from 18 to 24 inches. The pond is alive with young, and it will be necessary for me to enlarge it for their accommodation."

843. *Statement of L. W. Crawford, Fort Worth, Tarrant Co., Tex., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 14 live carp in February, 1881. My pond is 100 yards long by 15 wide, $2\frac{1}{2}$ feet deep, and has a muddy bottom. It is fed by a 1-inch stream of water from an artesian well, the temperature of which is from 30° to 60° .

PLANTS.—It contains a long water-grass common in Texas swamps, and water-cress common in all parts of the country.

ENEMIES.—It contains no other fish except some minnows, $\frac{3}{4}$ of an inch long. There are no frogs nor turtles.

FOOD.—I have given them bread, turnips, lettuce, cabbage, and dough made of one part flour and 3 parts meal. They love lettuce better than any other kind of vegetation. They will eat turnips, mustard, and cabbage when young, also boiled Irish and sweet potatoes. They will eat tender ears of corn very readily. The dough, one part flour and 2 parts meal, is the best food for them.

GROWTH.—The 14 still live and would weigh from 8 to 10 pounds. I never saw anything grow as they do. The first year's growth was about 3 pounds. They were about $2\frac{1}{2}$ inches long when I got them, and at the end of the first year were 12 inches long. They are now from 18 to 20 inches long. They have produced no young yet.

MISCELLANEOUS.—I should like to make carp-growing a business, as this is a good fish market.

844. *Statement of William Brueggerhoff, Austin, Travis Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in July, 1880, and put them in a fountain about 8 or 10 feet in diameter, and $1\frac{1}{2}$ feet deep. The cement bottom has a covering of about 3 inches of slime and mud. There is a continuous flow of water through the fountain.

PLANTS.—It contains ferns of all descriptions, which grow on artificial mounds.

ENEMIES.—It contains perch, green frogs, and minnows, a small fish about $\frac{1}{2}$ an inch in length.

FOOD.—Two or three times a week I feed them with light bread and scalded meal, $\frac{1}{3}$ flour and $\frac{2}{3}$ corn-meal.

GROWTH.—The 4 that remain weigh about a pound each and are about 10 inches long. We gave away some of them.

REPRODUCTION.—They produced about 100 young. We still have 7, which are from 6 to 8 inches long, and weigh perhaps 4 ounces. The remainder of the young were distributed among our friends to put in public fountains, &c.

DIFFICULTIES.—There have been no difficulties at all in managing them.

845. *Statement of J. H. Dinkins, Texas Fish Com'r, Austin, Travis Co., Tex., Oct. 4, 1880.*

GROWTH AND REPRODUCTION.—A day or two ago I saw one of the carp received last winter (these fish were the young of 1879, and about 3 or 4 inches long when received), which measured 20 inches in length. I am inclined to think they spawned last summer for the reason that the pond is now filled with small fry, unknown before in the pond.

846. *Statement of editor of Texas Farm and Ranch, Austin, Travis Co., Tex., May 1, 1884.*

DISPOSITION OF CARP RECEIVED.—The State fish-ponds at Austin, Tex., are now in a most flourishing condition, and much taste has been displayed in decorating the walks with flowers and shrubs, and other attractive improvements. The ponds are situated close to Barton's Creek (about 2 miles from Austin), from which they are supplied with cold spring water. There are 4 of these ponds, 3 of which are fully stocked with carp of different ages. They are connected with sluices by which they can be dried, and fish may be easily taken or transferred, as required.

FOOD.—At the tap of the bell the funny boarders dart forward to the refectory with a sound like a distant waterfall, and a ripple on the surface of the water like that produced by a heavy driving rain. Scraps of bread and vegetables are then devoured, while the water is flecked with gold and silver from the sides and bellies of the feeding fish. "Do the young fish in the adjoining pond also answer to the bell?" we asked. "Oh, no," was the reply, "it takes about six months' training to educate them up to that point;

but when they have learned the lesson they never refuse to put in an appearance at meal-time."

GROWTH AND REPRODUCTION.—Of all sizes there are at present about $\frac{1}{2}$ a million carp, with facilities for increasing the number as the demand for stocking rivers and private ponds increases. Of all fish it is the best adapted to our climate, both for successful culture and large profit.

EDIBLE QUALITIES.—The quality of its flesh depends upon the character of its food. Carp in running streams or in ponds, where limited to mud or rank weeds for subsistence, are no better than the salt-water mullet; but it has been demonstrated by pisciculturists that when properly fed they are little if any inferior to salmon.

MISCELLANEOUS.—Of the importance of this fish as a factor in the future food supply of Texas, too much cannot be said; and yet it would seem sufficient merely to state that in a pond only a few square rods in area, the farmer can raise, without expense, more carp than is sufficient to supply his family the year round. Indeed, we trust the day is not far off when the carp pond, shaded with big trees and willows, and decorated with rose-bushes and flowers, will be the possession of every farmer who aspires to thrift, taste, and good living.

847. *Statement of John B. Lublock, Austin, Travis Co., Tex., June 3, 1884.*

EDIBLE QUALITIES.—We have tested fully the edible qualities of the German carp, and all pronounce it a first-class fish and reasonably clear of bones.

848. *Statement of William Radam, Austin, Travis Co., Tex., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in 1882, and 20 more July 1, 1883. The first lot were kept for a year in a well, 10 by 10 and 5 feet deep. The water was cold and they did not grow much. In January last I transferred them to a pond 50 by 100 feet and 6 feet deep, with a bottom of black loam, very muddy. It is supplied with irrigating water from the garden, and is always full. The water is warm on top. I am going to make a pond 400 feet long and 100 feet broad, as I have plenty of water. I am pumping, in dry weather, 750,000 gallons per day.

PLANTS.—It contains caladium esculentum, grass, and willows, but not large enough for shade.

ENEMIES.—There are no other fish, but there are a few frogs and some craw-fish in it.

FOOD.—Once a week I throw in cabbage, lettuce, scraps, &c. In addition we give them a little bread in the evening, when we call them with a bell.

GROWTH.—While they were in the well they only grew to be from 4 to 6 inches long. About January, 1883, I transferred the 13 old ones to the pond, and they are now from 8 to 12 inches long. In 7 months they have grown at least twice as large, and to be 4 times as heavy. I have seen in Germany all sizes of carp up to 40 or 60 pounds, but find that carp grow here in Texas at least twice as fast as in Europe.

MISCELLANEOUS.—I bought a good lot of water-plants and put them in the pond, but the carp killed them entirely by eating off the tops. The little carp I received this summer we put in the pond with the others. I am going to make a pond 400 by 100 feet, and make carp-raising and selling a business.

849. *Statement of J. B. Rogers, Duval, Travis Co., Tex., Dec. 10, 1880.*

GROWTH.—One of the carp, 4 inches long, received 11 months ago has reached the astonishing length of 20 $\frac{1}{2}$ inches and weighs 4 pounds and 11 ounces.

850. *Statement of Chas. von Rosenberg, Manchaca, Travis Co., Tex., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—Four years ago I received 10 scale carp and have received some mirror carpsince. I have 3 tanks at the head of a little branch covering $\frac{1}{2}$ of an acre each, and with a depth of from 3 to 8 feet deep and a muddy bottom. There is no water flowing through them except after hard rains.

ENEMIES.—They contain frogs, turtles, and snakes. A good many carp have been destroyed by wild fowls.

REPRODUCTION.—There are about 4 or 5 of the original lot left, and they have produced a good many young this year. I have sold about 2,000. I think the scale carp thrive the best.

851. *Statement of P. S. Clarke, M. D., Hempstead, Walker Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1879. My pool not being ready I kept them in a wooden tank until September 28, 1880, when I put

them in the pool. It is 60 yards wide, 100 yards long, from 2 to 4 feet deep, of sandy margin, and muddy bottom. It is a natural basin in the prairie supplied with rain water.

PLANTS.—The margin of the pond has a grass the blade of which resembles prairie-grass, but the roots are matted and close-jointed. The fish love to plow among these roots.

ENEMIES.—Snakes are the worst enemy; terrapin also infest the pool, but I do not think they do any harm. The long-legged blue and white crane also visit the pool.

FOOD.—I have given them no food to speak of.

GROWTH.—There are 6 of the original lot left that will weigh about 4 pounds each. Two that were caught weighed, respectively, $2\frac{1}{2}$ and 4 pounds.

REPRODUCTION.—I do not know how many young there are, but the pool seems to be full of them. They are 6 to 8 inches long. This spring's carp vary from 3 to 4 inches in length. I have disposed of 10 of the young which were from 6 to 8 inches long, to be put into another pool, and have promised more. They will overstock my pool in a very few years. I think I shall be able to supply all demands in my county for carp.

MISCELLANEOUS.—There is no difficulty with them at all. They are close imitators of our buffalo-fish. About sundown, the time they feed, I have seen the carp go out on the edge, almost completely leaving the water.

852. *Statement of C. R. Breedlove, Brenham, Washington Co., Tex., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in December, 1881. My rain-water pond or "tank," as the Texans call it, is from 30 to 50 feet wide and from 60 to 100 feet long. It is from 2 to 5 feet deep and a large volume of water flows through it during and after heavy rains.

ENEMIES.—There are craw-fish only.

FOOD.—I give them Indian corn, corn-bread, and biscuits.

GROWTH.—I have seen some of them, while feeding them, nearly or quite 24 inches long. I do not know how many there are, but suppose they are all there.

REPRODUCTION.—I am not sure that they have yet spawned.

MISCELLANEOUS.—I was offered \$5 apiece for them but would not take \$10.

853. *Statement of T. W. Morriss, Brenham, Washington Co., Tex., May 17, 1882.*

DISPOSITION OF CARP RECEIVED.—I received my carp in 1880. My 4 ponds are separated by dams, and have an aggregate length of about 400 yards and a width of from 50 to 60 feet, with depths of from 3 to 10 feet and muddy bottoms. I constructed a small basin in my yard this spring, in which I placed 5 carp. My object in this arrangement was to hatch the carp in the pool and remove the young to the larger ponds when they were large enough to care for themselves.

GROWTH.—The largest of the carp are about 2 feet long.

REPRODUCTION.—I discovered in the small basin on May 10 a large number of young, which are now about 2 inches long.

854. *Statement of William Elliott, Taylor, Williamson Co., Tex., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp December 17, 1880, and some subsequently through the Texas Fish Commissioner. I have 2 ponds, one 40 by 600 feet and one 100 feet square. Both are fed by springs. There is about $3\frac{1}{2}$ inches of continual overflow. The temperature is 56 degrees.

PLANTS.—They contain water-lilies and Johnson grass, or what is known as Texas-Colo-rado bottom-grass.

FOOD.—I have given them corn-bread, baked bread, and boiled oats.

GROWTH AND REPRODUCTION.—The old ones weigh from 15 to 20 pounds each, the young being of various weights. I have given away several lots to other parties.

EDIBLE QUALITIES.—They are very fine when cooked.

UTAH.

855. *Statement of James Toombs, Tynar, Box Elder Co., Utah, Aug. 28, 1883.*

GROWTH.—About 6 months ago I received 18 small carp. I placed them in a spring, and, noticing that some of them had died, removed them to another more suitable spring. A few days ago I examined them, and was greatly surprised at their remarkable growth.

856. *Statement of J. D. M. Crockwell, Oasis, Millard Co., Utah, Sept. 17, 1883.*

GROWTH.—Mr. Funk, of Manti, San Pete County, Utah, writes me that his fish weighed from 8 to 9 pounds last spring. By this time, of course, they are much larger.

857. *Statement of S. Francis, Morgan, Morgan Co., Utah, Dec. 15, 1882.*

DISPOSITION OF CARP RECEIVED.—The carp received a year ago have done well. I put them in a pond containing about one acre of water. The source of the spring is about 80°; the pond averages about 55°.

PLANTS.—The pond grows an abundance of vegetation.

GROWTH.—Many persons have seen the carp swimming at the top of the pond, their backs just out of the water. They judge them to be from 15 to 18 inches long, and to weigh over 2 pounds. This seems a very remarkable growth.

858. *Statement of A. Raht, South Cottonwood, Salt Lake Co., Utah, Jan. 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 60 small carp received about December 20, 1881, I put in an artificial ice-pond.

FOOD.—I fed them regularly during the winter and spring, but in the early summer I suspended feeding, as I could not see any of them.

ENEMIES.—I thought their numerous enemies had killed all, as we have sea-gulls, kingfishers, trout, and muskrats.

GROWTH.—On November 12, 1882, when the water was let out of the pond, so as to clean out weeds which might interfere with the ice-making, I found 36 large carp, the largest one weighing 2 pounds and 2 ounces, and one with scales all over, weighing about $\frac{1}{2}$ pound. One of the large ones was killed for eating and showed a good deal of spawn; so that I now hope to get a large quantity of young ones in the spring.

VERMONT.

859. *Statement of Lewis H. Spear, Braintree, Orange Co., Vt., Dec. 28, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880. My pond is 30 by 75 feet. Its bottom is composed of mud. The depth of the water varies from 1 to 3 feet. In winter the pond is supplied with water from a spring at its head. The warm spring water prevents the pond from being closed with ice. In spring and early summer the pond receives the rain water from off of the fields, and in midsummer and autumn the supply is obtained from a clear trout stream. The amount of water is about 12 inches as a rule; in the spring it is 100 inches. In summer the temperature of the water is 50 to 80 degrees.

PLANTS AND ENEMIES.—The pond contains yellow and white lilies, cowslips, water-grasses, peppermint, and willow. It is partly shaded by the German basket-willow, which protects the fish from birds of prey. It also contains frogs.

FOOD.—In May and June the carp are fed once each day. At other seasons they do not get food regularly. I give them crackers, bread-crumbs, mush, and wheat. They eat scalded meal quite freely. They also eat boiled potatoes when mashed.

GROWTH.—I judge the 16 remaining carp will measure from 12 to 18 inches in length. They will weigh from 1 to 2 pounds. In May, 1882, the first time I had seen the carp since they were deposited in the pond, I judged they would weigh 8 ounces and would measure 8 inches in length. My carp have not increased in size or been as good feeders as I desired. I think, however, that they have increased in size twice as fast as did trout that formerly occupied the same pond. Perhaps our ponds, rivers, and lakes may be adapted to this fish, but I think the waters in this section are too cool for the carp to make rapid growth.

860. *Statement of J. W. Howard, Barton, Orleans Co., Vt., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in November, 1880. My pond is 12 by 25 feet across and 3 feet deep, with a muddy bottom.

PLANTS AND ENEMIES.—The pond contains the common water-grass of these parts; also a few frogs.

FOOD.—I give them brown bread, potatoes, and angle-worms every day.

GROWTH.—They are very shy and keep out of sight. I think they do not weigh over 2 pounds. I have not yet seen any young.

MISCELLANEOUS.—As soon as I have fish enough I shall construct another pond, as I should like to make carp culture a success. I have the scale variety, and would like the other two kinds.

, VIRGINIA.

861. *Statement of John Neely, Accomack C. H., Accomack Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1881 I received 100 carp, which were placed in a small pond, from which they escaped into a mill-pond. I received 50 more afterwards. These were put in the mill-pond, the area of which is from 10 to 20 acres and full of stumps and debris. The bottom is muddy.

PLANTS.—The principal plant is the ordinary pond-lily, which abound in great numbers.

ENEMIES.—The pond contains snapping-turtles, but no fish as far as I have discovered. I do not feed the carp.

GROWTH.—The carp seem to vary in length from 18 to 24 inches. I have not caught any, as it is impracticable to use a net.

862. *Statement of John H. Wise, Accomack C. H., Accomack Co., Va., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received in April, 1881, a lot of carp, and 50 subsequently. My pond covers from 40 to 50 acres, with a depth from 4 to 7 feet in the center, getting shallower as it approaches the banks. One portion of the bottom is mud, the other hard sand. The temperature of the water is about that of other mill-ponds in the tide-water region of Virginia.

PLANTS.—Water-lilies and other grasses grow on the banks; also great quantities of grass of a soft, fine texture, which in many places reaches the surface of the water.

ENEMIES.—Snapping or fresh-water turtles, bull-frogs, sun-fish, or fresh-water perch, and a few small pike inhabit the pond. I have been unable to see any of the carp since putting them in, and do not know whether they keep concealed in the long grass or have been destroyed by the turtles and pike.

863. *Statement of Thos. M. Buck, Charlottesville, Albemarle Co., Va., July 21, 1882.*

DISPOSITION OF CARP RECEIVED.—I placed the carp received last fall in a pond, the bottom of which had been scraped to give the water a greater depth and to free the pond of the weeds that grew therein.

PLANTS.—The spring branch to which the fish have access is well supplied with weeds, &c., but the branch, except at the mouth, is quite shallow and may not be sufficient to accommodate them at spawning time.

FOOD.—I have been careful to have no other fish in the pond. During rains the shattered oats from the field above naturally wash into the spring branch, by which the pond is supplied with water, and, as no stock is allowed to run on this field, I thought oats might be sufficient to supply them with food.

GROWTH.—The carp have only been seen from time to time as they jump out of the water. From this glance I estimate them to be as large as a man's hand.

864. *Statement of Richard T. W. Duke, Charlottesville, Albemarle Co., Va., May, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 17 carp about 2 inches long, which I placed in my ice-pond. In the spring of 1881 I also received, through a friend in Baltimore, some 30 more. All these were hatched in the year 1880. In the summer of 1881 I built another pond expressly for fish, and in the fall of that year I procured and placed in this pond about 100 carp hatched in the year 1881. In the spring of 1882 I determined to enlarge my ice-pond and convert that into a permanent fish-pond. In order to do this it was necessary to draw off the water. It was drawn off in May and the carp were caught and transferred to the other pond. I secured about 35 out of the 47 put in. No doubt some few may have escaped and some may have been buried in the mud, but the entire loss was not over 13. These carp were about 12 or 13 inches long and would have weighed, I suppose, about a pound.

FOOD.—I feed them very often with loaf-bread broken into small pieces. This floats for a time, and the fish rise to the top and take the particles of bread just as readily as a trout takes a fly, but with much more deliberation. They are quite tame, and on any warm evening, upon throwing in crumbs of bread, some 50 or more will come up to the bank and swim around almost on top of the water.

GROWTH.—These fish are doing much better than I had expected. Those which were hatched in 1880 are now about 20 inches long and I think would weigh 3 or 4 pounds. Those hatched in 1881 are about 12 inches long and weigh about a pound. The yearling

carp caught yesterday weighed 14 ounces and was 12 inches long. This remarkable growth has been attained during one summer. The 35 fish which were transferred from the ice-pond to the new pond were from 12 to 13 inches long and weighed about a pound each.

HOW TO CATCH CARP.—I concluded to try the eating qualities of one, and with a small "fly-hook," with a piece of bread, soon caught one of the yearlings hatched in 1881. I avoided the large ones by drawing out the hook when any of these approached, as I wished to save all these for breeders this year. The carp caught weighed $\frac{1}{4}$ of a pound and was 12 inches long—the growth of one summer.

EDIBLE QUALITIES.—We had it fried for breakfast and 7 persons tasted it; all pronounced it excellent. The flesh is quite firm and white, and had no taste of mud. It reminded me in appearance and flavor of the "New River cat," which is generally considered a very good fish. It has but few bones. One, a female full of roe, was fried and eaten and was pronounced by all the family as very good fish.

WHEN CARP ARE NOT FIT TO EAT.—That carp caught in July are soft in flesh and muddy in taste is not surprising, and I would inquire what fresh-water fish, except brook trout (which will not live in water over 70°) and perhaps black bass, are fit to eat in the "dog days."

THE SHAD.—The shad leaves salt water in early spring and comes into fresh water to spawn. These fish are very much improved by a run in fresh water, and are very fine in April and the early part of May. But suppose they were taken in July and August after they were "spent," are they not utterly worthless as food? Now the same thing, no doubt, is true of carp. They spawn in May and June, and a carp of 5 or 6 pounds weight will deposit from 300,000 to 500,000 eggs, and could not possibly be fit for food earlier than the middle of October or first of November.

865. *Statement of Richard T. W. Duke, Charlottesville, Albemarle Co., Va., July 23, 1883.*

DISPOSITION OF CARP RECEIVED.—My pond has a loamy bottom, water from 1 inch to 9 feet deep, and covers 3 acres. The stream which enters it would fill a 3-inch pipe, and is not very cold.

ENEMIES.—The pond contains no plants; but some minnows and frogs. I kill the frogs when I can. I have seen one turtle, but hope I have killed him. I have killed a great many enemies, such as frogs, turtle, and snakes. This spring I have killed 8 blue kingfishers and a large fish-hawk. The kingfishers destroy a great many small fish. The fish-hawk takes the large ones.

FOOD.—I feed a little corn-bread and a little loaf-bread every evening at 6 o'clock.

GROWTH.—The largest of the old ones would weigh from 6 to 8 pounds. The young ones would measure from $\frac{1}{2}$ an inch to 5 inches.

REPRODUCTION.—I have about 200 of the original fish, and think they produced no young last year, but a great many this year.

MISCELLANEOUS.—I regard carp culture as a great success. In the Forty-first Congress I voted for a Fish Commission appropriation, and think that the best vote I gave while in Congress.

866. *Statement of Richard T. W. Duke, Charlottesville, Albemarle Co., Va., Mar. 18, 1884.*

FOOD.—I feed my carp a little; they come up and take food like pigs. The ice left my pond early in February, and the carp began to move about the middle of February.

GROWTH.—Last November I caught a carp which weighed 4 pounds, and 2 that weighed $1\frac{1}{2}$ pounds each.

EDIBLE QUALITIES.—I tried the eating qualities of the carp again last November. A 4-pound carp was boiled, and the 8 persons, my neighbors and my family, who ate of it considered it very good, as good as rock. The 2 small fish weighing $\frac{1}{2}$ pound were fried, and the opinion as to its merits equally divided. About one-half considered them very good, the others detected a strong taste. I have no doubt salt water would remove this.

HOW TO CATCH CARP.—Yesterday evening, with the aid of a hook and line, my son caught 5 carp in a few minutes, but put them back, as they were small—evidently the fry of my original carp.

VITALITY.—On Saturday evening I caught with a hook a carp which would weigh about 4 pounds. I put it in my bath-tub filled with water. Yesterday, about 8 o'clock a. m., I put the carp in a small box, surrounding it with wet moss, and forwarded it to Lynchburg by express. It reached there about 4 p. m., and I learned this morning from my friend to whom it was sent that when taken out and placed in a tub it was as lively as could be.

867. *Statement of C. H. Harman, Charlottesville, Albemarle Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp received 2 years ago, I put in $\frac{1}{2}$ -acre pond, with a depth of 10 feet in the deepest part, having a muddy bottom. About a 2-inch stream of spring water flows through it. No plants grow in the pond.

ENEMIES.—Large numbers of frogs and a few turtles and sun-perch inhabit the pond.

FOOD.—I give the carp corn-bread twice a week.

GROWTH.—The original carp were 18 inches long when last seen.

868. *Statement of John D. Watson, Charlottesville, Albemarle Co., Va., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1881, I received 8 or 10 carp and placed them in my pond, which is about $1\frac{1}{4}$ acres in extent, with an average depth of 5 feet, and of muddy bottom. A small, continuous branch flows through the pond.

ENEMIES.—The pond is infested by many frogs and some turtles.

FOOD.—Two or three times a week I give the carp the refuse of the kitchen and the vegetable tops from the garden.

GROWTH.—Some of the original carp are from 12 to 15 inches in length.

REPRODUCTION.—I have reason to think that the young are doing very well.

869. *Statement of J. B. Townley, sr., Red Hill, Albemarle Co., Va., Jan. 14, 1884.*

GROWTH.—You were kind enough to send me 17 carp last February, about 3 inches long. Last week in getting ice we cornered one fish, between the bank, some grounded ice and a piece of floating ice, and caught it. It measured a little upwards of 12 inches in length, by $4\frac{1}{2}$ in depth. It was returned unharmed to the water. Another was seen at the same time looking larger than the one caught. Both were a little sluggish in their movements. My ice pond is supplied with water at its head by a spring, where I have a pit originally 5 feet deep, and over which the water never freezes.

870. *Statement of Henry M. Price, M. D., Scottsville, Albemarle Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp I received in November, 1881, I put in a pond with 3 compartments, covering an acre. Its bottom is muddy. A 4-square-inch stream of water flows through the pond. Its temperature is from 45° to 50° .

PLANTS AND ENEMIES.—Most of the swamp-grasses and plants indigenous here grow in the pond. It also contains frogs and some fresh-water terrapins.

FOOD.—I gave the carp corn, corn-bread, and sugar-corn daily.

GROWTH.—Before the dams were broken I had all of the original carp. I have only 2 now, which, in July, 1883, weighed from 6 to 9 pounds. Some of the old ones caught in Hardware River, into which my carp escaped, weighed from 5 to 6 pounds.

REPRODUCTION.—There are from 500 to 800 young in my pond. Thousands were in the pond before it broke.

DIFFICULTIES.—An oversupply of water, which resulted in the breaking of the dam, has been the most serious difficulty I have experienced in the cultivation of carp. It is my intention to put a flood-gate to the dam to prevent a like occurrence.

871. *Statement of M. W. Wallace, Yancey's Mills, Albemarle Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1880 I received 16 carp, and 19 more in the fall of 1882. The first lot I divided with a neighbor. Each of my 2 ponds is 50 feet square, has a muddy bottom and a depth varying from 3 to 5 feet. The supply of water, though moderate, is sufficient.

PLANTS.—No plants grow in the pond.

ENEMIES.—The pond contains nothing that destroys the carp.

FOOD.—I have been giving my carp wheat, and corn-bread twice a week since the 1st of June. My not feeding them prior to that time is the reason the first lot are no larger. Some of my neighbors' carp which have been fed from the first are more than twice as large as mine.

GROWTH.—I have 7 of the 8 original carp. About 2 months ago they weighed from 2 to 3 pounds each.

REPRODUCTION.—There are 200 young in the pond, which appear to be of 3 sizes; 2 inches, 4 inches, and 6 inches. On account of the different sizes, I judge that the carp spawn twice a year.

872. *Statement of S. B. Corbett, Arlington, Alexandria Co., Va., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 19 carp I received in the fall of 1881 I put in an inlet to a pond. The pond is $\frac{1}{4}$ acre in extent, with a depth of from 3 to 5 feet, hav-

ing a muddy bottom. The inlet, 30 feet long by from 3 to 6 feet wide, is separated from the pond by a screen, which during the freshet last spring was carried away, and the carp escaped into the pond. An inch stream of water, mild in temperature, flows through the pond.

PLANTS.—There are no water-plants in the pond. Common grasses grow on the banks.

ENEMIES.—Goldfish, catfish, frogs, a few eels, and innumerable minnows inhabit the pond.

FOOD.—I have given the carp no food.

GROWTH.—The original carp are about 8 inches long. The pond appears to be well stocked with fish.

873. *Statement of Nicholas W. de Kraft, Jetersville, Amelia Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp I received on November 11, 1880, I put in a pond 5 miles distant, having a bottom of soft mud-washings, covering 4 acres, with a depth of from 6 inches to 9 feet. The pond is fed by small streams which supply water enough to run a mill. The temperature of the water in summer is about 60°.

PLANTS AND ENEMIES.—Cut lemon, wild oats, and cat-tail grow in the pond. Lilies and grasses grow in the shallow parts. Perch, cat, terrapins, frogs, and a few chubs inhabit it.

FOOD.—The carp get mill-sweeping and refuse.

GROWTH AND REPRODUCTION.—A carp 11 months old weighed 5½ pounds. The young seem to be abundant, and in the heat of the day can be seen in shallow water.

DIFFICULTIES.—I caught a carp 11 months old and placed it in a prepared feed-pond, which gave way during a freshet and the carp escaped. The pond is too remote for much care, but I am building another behind my house.

874. *Statement of G. W. Mitchell, Allen's Creek, Amherst Co., Va., Nov. 7, 1883.*

GROWTH.—The carp you sent us last year are doing well. We caught one from our mill-pond, which weighed 6 pounds.

875. *Statement of W. M. Evans, Amherst C. H., Amherst Co., Va., Dec. 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 13 carp about 3 years ago. My pond measures about 40 square rods. It is an ice-pond. Three small springs near the pond supply it with water.

PLANTS.—The pond contains various kinds of wild grass and weeds.

ENEMIES.—Small frogs, small turtles, and eels are sometimes seen in the pond. We suppose muskrats destroyed many carp. I did not feed my carp.

GROWTH.—We drew the water off this fall and we found a carp weighing 7 pounds, and 8 weighing from 2 to 7 pounds. We left about 60 carp weighing from 1 to 4 pounds.

PRODUCTION.—We do not know how many young fish there were in the pond, as we did not make a close examination when we drew off the water.

EDIBLE QUALITIES.—We have eaten the carp fried and boiled. They are like codfish in taste.

876. *Statement of H. B. Jones, Fishersville, Augusta Co., Va., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp which I received on November 20, 1881, I put in a pond that is supplied with spring water. In a few days they all disappeared.

877. *Statement of James R. Kemper, Fishersville, Augusta Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 30 carp I received in a pond immediately below a large spring of limestone water and by the side of a branch, which, overflowing 2 months later, destroyed the banks of my pond to such an extent that all of the fish escaped. I do not think there were more than ½ a dozen alive. Carp are a success here when properly handled. I will try again with a better location.

878. *Statement of James Bumgardner, sr., Greenville, Augusta Co., Va., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—Into an acre pond, having a rocky and muddy bottom, I put the 19 carp received in February, 1881.

PLANTS AND ENEMIES.—A coarse grass grows in the pond. Goldfish and bull-frogs inhabited it.

FOOD.—I feed them occasionally on bread.

GROWTH.—The 11 original carp weigh from 2 to 4 pounds each. They have done well, and have grown more rapidly than any fish I ever handled.

REPRODUCTION.—When I drew off the water a few days ago, I caught only 6 young, each about $\frac{1}{2}$ inch long.

DIFFICULTIES.—The spaw was destroyed by goldfish before I had entirely rid the pond of them.

MISCELLANEOUS.—I gave a part of the original lot of carp to a neighbor who placed them in a pond of fresh spring water. On drawing off his pond a few days ago he found 8 of the original carp, but no young. He thinks the suckers then in the pond destroyed the young.

879. *Statement of Thomas A. Lightner, Greenville, Augusta Co., Va., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 9 carp 2 years ago. My pond covers $\frac{1}{2}$ acre, with a depth of 6 feet in deepest part, getting shallower as it approaches the spring at its head. The bottom is of mud, gravel, and clay, which I placed there. A cold spring supplies the pond with a sufficient quantity of water at all times of the year.

PLANTS.—On the edges of the pond grow swamp grasses and small quantities of moss. It contains no other fish nor reptiles.

FOOD.—Two or three times a week I feed the carp on vegetables, corn and wheat-dough, and refuse from the kitchen.

GROWTH.—I have 8 of the original carp, each of which weigh from 4 to 5 pounds. I do not know why my carp do not breed.

880. *Statement of J. O. Cundiff, Emaus, Bedford Co., Va., May 12, 1884.*

GROWTH.—I received 22 carp, from 3 to 4 inches long, in November, 1882. They are doing well, and each are now from 12 to 15 inches in length.

881. *Statement of Phil. F. Brown, Blue Ridge Springs, Botetourt Co., Va., Oct. 29, 1883.*

GROWTH.—I received 25 German carp about 12 months ago. They were very small then, but now average over 2 pounds each.

882. *Statement of W. J. Price, Fincastle, Botetourt Co., Va., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1878 I received 20 carp, and in 1880, 1881, and 1882 other lots. The carp were kept in ponds $\frac{1}{4}$ of an acre in extent with muddy bottoms. The flow of water in one of the ponds is that of a 4-inch pipe, and has a temperature of from 55° to 60°. Several of the ponds contain standing water, the temperature of which in summer is 75°.

PLANTS.—Water-cress grows in one of the ponds. The others contain rushes.

ENEMIES.—One of the fresh-water ponds and 3 of the standing-water ponds contain carp only. In the other ponds are to be found chubs, suckers, and fall-fish.

FOOD.—I give the carp bread once a week.

GROWTH.—The carp received in 1878 weigh 6 pounds; those received in 1879, 3 $\frac{1}{2}$ pounds, and those received in 1881, 2 pounds, and are 15 inches long.

REPRODUCTION. In 2 of the ponds there are a great many young, which vary considerably in size. Some are an inch long, and others weigh $\frac{1}{4}$ of a pound each. In one of my ponds the carp have spawned only once. In the standing-water ponds I have seen no sign of their spawning.

883. *Statement of F. N. Maxey, Well Water, Buckingham Co., Va., Oct. 10, 1882.*

GROWTH.—Last season I received 16 fish. They did splendidly and grew to be 16 inches long. About 4 weeks ago we had an unprecedented big freshet, which broke my dam, allowing my carp to escape into Slate River.

884. *Statement of N. L. Kabler, Bedford Springs, Campbell Co., Va., Aug. 15, 1884.*

CARP FOR SALE.—I have 150,000 scale and mirror carp for sale, as follows:

2 to 3 inches long.....	\$3 per hundred.
3 to 5 inches long.....	5 per hundred.
10 to 12 inches long.....	12 per dozen.
12 to 18 inches long.....	20 per dozen.

885. *Statement of Shotwell Powell, Keysville, Charlotte Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in the fall of 1881, and 20 more in the fall of 1882. The first lot I put in several ponds varying in size. In consequence of the dams breaking I lost all of them. The ponds are supplied with an inch flow of cool water from a never-failing spring.

PLANTS AND ENEMIES.—The pond contains plants that are indigenous here. Small fish, minnows, frogs, and turtles that are common to small streams inhabit the pond.

FOOD.—A few times I have given the carp bread, crackers, and meal in small quantities.

DIFFICULTIES.—The most serious difficulty I have experienced is from an oversupply of water.

886. *Statement of Leonard P. Wheat, Berryville, Clarke Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I received 3 dozen carp and placed them in a cold-spring pond, serpentine in form, and covering about 1½ acres, in a rich meadow. The bottom is composed of clay and gravel. One million gallons of water, the temperature of which is 60° F., flow through the pond daily.

PLANTS.—Water-cress and a prodigious growth of horse-mint grow in the narrow parts of the pond.

ENEMIES.—The pond is inhabited by frogs and musk-rats. The latter are very destructive to the carp.

FOOD.—Plenty of food washes into the pond from the contiguous barn-yards and grain-fields.

GROWTH.—I have 3 or 4 of the original carp. The largest of them weigh about 3 pounds.

REPRODUCTION.—Large quantities of young have been produced.

DIFFICULTIES.—I have exterminated musk-rats many times, but they constantly reappear. I would like to procure English badger dogs with which to hunt them.

887. *Statement of J. J. Mosby, Culpeper Court House, Culpeper Co., Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 1, 1879, I received 16 scale carp; on November 1, 1880, 16 more, and on November 11, 1881, 21 mirror carp. My pond covers about 4 acres and is from 2 to 16 feet deep. A muddy ditch 4 feet deep, 12 feet wide, and 150 feet long extends through its center. A 6-inch flow of water from a never-failing spring supplies the pond.

PLANTS AND ENEMIES.—The pond contains plants indigenous here. It is inhabited by frogs, but by no other fish than carp. One carp was killed in shallow water while spawning.

FOOD.—At irregular times I give the carp corn-bread, potatoes, wheat, corn, and refuse from the table.

GROWTH AND REPRODUCTION.—On July 14, 1882, all of the original carp were in the pond. One weighed 7½ pounds and was 22 inches in length. A great many young are in my pond.

MISCELLANEOUS.—On April 30, 1882, I transferred the larger ones to a small spawning pond which covers about ¼ acre, leaving the large pond dry until July 14, 1882, in order to destroy all other fish eggs.

888. *Statement of M. Flanagan, Flanagan's Mills, Cumberland Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1879 I received 8 pair carp, and 9 pair since. I put them in a 153-acre mill-pond of clear water, with a muddy bottom. It has a full supply of water.

PLANTS.—There is no dock in pond, but grass grows in the several acres of the marsh.

ENEMIES.—Pond bass weighing from 1 to 12 pounds each, silver and yellow perch up to 4½ pounds each, masons, catfish, pike, creek mullets, frogs, terrapins, and turtles inhabit the pond.

FOOD.—I give the carp no food.

DIFFICULTIES.—The number of carp put in the pond was too small for its size.

889. *Statement of George S. Bernard, Secretary Petersburg Fish and Game Protection Association, Petersburg, Dinwiddie Co., Va., Oct. 29, 1881.*

GROWTH.—The carp that we received in the fall of 1880, and which we placed in the City Park lake about December 1, 1880, seem to be promising very well. A few days

ago, the keeper of the park with hook and line caught 2 of them, each measuring from 16 to 18 inches in length.

890. *Statement of R. A. Martin, Petersburg, Dinwiddie Co., Va., Feb. 15, 1884*

DISPOSITION OF CARP RECEIVED.—About the month of December, 1880, a committee of the Petersburg Fish and Game Association removed all other fish from the lake at the Central Park and placed in this lake some 2 dozen young carp. These fish were then from 2 to 4 inches in length. About last November a few more young carp, measuring from 2 to 3 inches long, were placed in this lake by the association.

FOOD.—During the last few weeks these fish, both of the first lot and of the last lot, have made their appearance in shoals near the edge of the lake whenever bread would be thrown to them, their beautiful movements in the water proving a constant source of interest to visitors.

GROWTH.—In the month of October, 1881, 2 of these fish were captured, and measured from 12 to 18 inches in length.

HOW TO CATCH CARP.—I have never yet caught fish with rod and line which intimated by its actions that it was less ready to give up the struggle for liberty than the carp. They fight long, and are game to the very last. I used a cork on my line as in fishing for chub, pike, and other game fish. They do not bite at the hook like other fish of the sucker kind, but take the hook more like the chub. To land a carp weighing from 3 to 3½ pounds requires the use of good tackle. It was found that these fish would not bite at worms nor minnows, but would at bread, and that the best bread with which to bait the hook is the crust of a baker's loaf or roll, fastened on the hook with the crust side up.

Among the gentlemen present at the park lake at the capture of the fish was Mr. W. E. Wells, who caught some of the carp, and says that, as a source of amusement with the hook and line, they are superior to any fish he ever saw.

891. *Statement of Emanuel H. Jones, Fairfax C. H., Fairfax Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp which I received on May 1, 1881, I put in a pond 60 by 25 feet, with a depth of from 6 inches to 3 feet. It has a muddy bottom and is fed by a constantly-running spring 20 yards distant.

PLANTS.—There are rushes and swamp-grass in the pond.

ENEMIES.—The ponds contains common frogs, but no fish nor turtles. Craw-fish let the water escape from the pond by cutting holes through the bank.

FOOD.—Once or twice a week I give the carp wheat, corn, corn-bread, and wheat bread.

GROWTH.—I have been unable to see more than 5 of the original carp, which are the size of the common shad.

DIFFICULTIES.—I am at a loss to understand why my carp have not spawned.

892. *Statement of G. W. Bell, Herndon, Fairfax Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp that I received in April, 1882, I put in a pond 22 by 60 feet, having a muddy bottom with a depth of from 2 to 4 feet. A ½-inch stream of very cold water flows through it.

PLANTS.—Yellow lilies and cat-tail rushes grow in the pond. The pond is not inhabited by anything that injures or destroys the carp.

FOOD.—They are never fed except when we wish to see them.

GROWTH AND REPRODUCTION.—The 20 original carp each measures from 10 to 14 inches. There are 200 or more young in the pond, each about 5 inches long.

DIFFICULTIES.—I have had great difficulty to prevent dams made with stone and cement from leaking, and will again use planks in the pond I am preparing.

MISCELLANEOUS.—I propose stocking streams in this vicinity with carp.

893. *Statement of R. Welby Carter, Upperville, Fauquier Co., Va., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—The 20 carp which I received in April, 1881, I put in a ½-acre ice-pond with a depth of 3 feet. The bottom is composed of sand, clay, and 6 inches of mud. It is warm in summer, and is on the side of a small branch.

PLANTS AND ENEMIES.—Common water-grasses grow on the edges of the pond. It is infested by bull-frogs.

FOOD.—When I feed the carp, which is not often, I give them corn-bread, corn, and wheat.

GROWTH.—A year ago a carp that had been in my pond 18 months weighed 3 pounds.
DIFFICULTIES.—The branch supplying the pond dried up last summer, and I was compelled to haul water to keep the carp alive.

894. *Statement of C. E. Jones, Wilmington, Fluvanna Co., Va., May 13, 1884.*

DISPOSITION OF CARP RECEIVED.—In the autumn of 1881 I received 20 carp, and 20 more in the autumn of 1882. They were put in a pond covering about $\frac{1}{2}$ of an acre, and nothing was seep of them until a few days since, when I drained my pond to ascertain what had become of them.

GROWTH.—Out of the 40 put in there were 9 left, which weighed from $2\frac{1}{2}$ to $3\frac{1}{2}$ pounds each, but there were no signs of any young.

895. *Statement of A. M. Kline, Middletown, Frederick Co., Va., Nov. 6, 1883.*

REPRODUCTION.—In August I visited Mr. Thatcher's pond and saw scores of large carp and tens of thousands of small ones, from 1 to 3 inches long.

896. *Statement of J. W. Schultz, Stephenson's Depot, Frederick Co., Va., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 13, 1880, I received 20 carp and 20 more on the 19th of November, 1882. The size of my pond during the winter is 40 by 140 feet and from 2 to 6 feet deep, with a clayey, marly bottom. There is a 2-inch flow of water through the pond, the temperature of which is 65° . The brook which supplies the pond with water is sufficiently large to drive a mill most of the year.

PLANTS AND ENEMIES.—Moss, cat-tail, and common grasses grow in the pond. It is inhabited by minnows, frogs, and skillpots. Muskrats damage the pond by boring through its banks.

FOOD.—Since last month I have occasionally given the carp light bread and green corn.

GROWTH.—I have 4 of the original carp, each of which measures about 22 inches in length and weighs $6\frac{1}{2}$ pounds.

REPRODUCTION.—There are not less than 400 young of last year's hatching which now measure from 1 to 12 inches in length.

HOW TO CATCH CARP.—In September, 1881, I caught a carp with a hook and line, which measured 11 inches in length and weighed a pound.

DIFFICULTIES.—In the fall of 1880 I had my pond cleaned out, and as the carp could not get shelter in the mud most of them perished.

897. *Statement of H. Stephenson, Stephenson's Depot, Frederick Co., Va., Aug. 1, 1883.*

DISTRIBUTION OF CARP RECEIVED.—In November, 1881, I received 22 carp and 22 more in November, 1882. My $\frac{1}{2}$ -acre pond is 4 feet deep and gets shallower as it approaches the spring which supplies it with water. The bottom is of mud.

PLANTS.—Weeds, grass, and a quantity of moss grow in the pond.

ENEMIES.—The pond is inhabited by many frogs and snappers and a few water-snakes, but no other fish than carp. I am shooting these pests and hope soon to be rid of them.

FOOD.—Believing there is a sufficient quantity of animal and vegetable matter in the pond, I seldom feed them.

GROWTH.—I have been able to see only 4 of the original carp, each of which weighed 2 pounds. I suppose they would weigh double that now. I cannot tell how many young are in the pond.

898. *Statement of A. M. Maclin, Hicksford, Greenville Co., Va., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 12 carp, which I placed in my pond, covering about 3 acres, with a depth of 2 to 3 feet. It has a black, mucky, loamy bottom, and is supplied by several small springs about $\frac{1}{2}$ mile distant. Since I erected the dam only once, and then during a very dry season, have the springs ceased to run.

PLANTS.—The pond contains a plant resembling moss, which covers almost the entire surface of the water in which the roots grow. Its blossoms are yellow and always in seed. Other plants, indigenous here, also grow in the pond.

ENEMIES.—Native pond fish and numerous frogs, turtles, and terrapins inhabit the pond.

FOOD.—About 3 times a month I give the carp corn and corn-bread.

GROWTH.—I have only seen 9 of the original carp at one time, though I suppose all of them are in the pond. They seem to be from 20 to 30 inches in length and about 6 inches through the thickest part of the body.

REPRODUCTION.—There are in the pond numerous small fish with a purple and light stripe extending lengthwise. The young of 1882 are about 6 inches in length and an inch in thickness. The young of 1883 are about the size of a man's finger. I hope these young fish are carp; if so, I will construct and stock other ponds.

899. *Statement of C. M. Adkisson, Mount Laurel, Halifax Co., Va., Oct. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received carp in November, 1882, and placed them in the pond which I had at that time. I now have 2 ponds, the one covering $\frac{1}{2}$ an acre and the other $\frac{3}{4}$ of an acre, with proper fixtures to control the influx and outflow of water.

FOOD.—I fed the carp regularly and they became quite gentle.

ENEMIES.—I noticed some young fry and continued to feed them with great delight as if they were genuine carp. I afterward, however, became fully satisfied of my delusion, and that the young fish that I had been petting were yellow perch. In order to get rid of them I constructed a second pond, drew off the old one, and destroyed the perch.

GROWTH.—To my surprise, however, I found only one, a mirror carp, which measured 17 inches in length and weighed 2 pounds and 8 ounces. This is probably the same one that I caught in July last, which then measured $10\frac{1}{2}$ inches in length, and has therefore grown, in the intervening 3 months and 21 days, $6\frac{1}{2}$ inches.

900. *Statement of J. R. Denton, Junction, Hanover Co., Va., Nov. 15, 1882.*

GROWTH.—In drawing my pond at the end of 10 months after the carp were placed therein only 12 fish of the original 25 were found, these being fully 10 inches long and of beautiful appearance, with 2 large bull-frogs and a few native suckers. The latter, of equal size with the young carp, had been put in the pond to test their comparative growth. The suckers had only reached the length of 5 inches and the weight of a few ounces, while the carp weighed at least a pound apiece.

FOOD.—Food, such as bread-crumbs and vegetables, was given to the carp daily.

901. *Statement of Ferdinand Davison, Richmond, Henrico Co., Va., Oct. 25, 1882.*

GROWTH.—The carp when put in last November were from $2\frac{1}{2}$ to 3 inches long. The larger ones are now from 10 to 15 inches long.

902. *Statement of Rev. H. M. Jackson, 300 W. Franklin st., Richmond, Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The 32 young carp I received in October, 1880, I put in a pond in Albemarle County, 30 by 60 feet, having a soft bottom with a depth of from 3 to 5 feet. Four gallons of spring water per minute flow through the pond. When entering the pond, the temperature of the water is 65° .

PLANTS.—Some ordinary grasses, but no lilies nor other root plants are in the pond.

ENEMIES.—The pond contains a few frogs, turtles, skillpots, and a snake, but no fish.

FOOD.—Occasionally, not regularly, the carp are given corn-meal tied in sacks. In winter they are not fed.

GROWTH.—I have all of the original carp, unless some have been stolen. They measure about 18 inches in length and weigh from 3 to 4 pounds each.

REPRODUCTION.—Each year hundreds of young are hatched. They now vary in length from 2 to 18 inches.

MISCELLANEOUS.—I propose this fall to stock Busby's pond and Rivanna River with carp.

903. *Statement of W. J. Lynham, Richmond, Henrico Co., Va., Aug. 29, 1883.*

DIFFICULTIES.—The breaking of my dam caused the loss of all the carp that I received.

904. *Statement of Mathew A. Miller, Richmond, Henrico Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in December, 1879, and 50 more in July, 1880. My pond covers $\frac{1}{2}$ of an acre, with a depth varying from 2 to 4 feet.

The bottom is of clay. A very small stream of spring water—probably 5,000 to 6,000 gallons in 24 hours—flows into the pond. The temperature of the pond in winter is estimated at 40°, and in summer at from 60° to 70°. It contains no plants.

ENEMIES.—Perch, small catfish, a few green frogs and snapping-turtles, are in the pond.

FOOD.—The first winter and spring I gave the carp boiled corn-meal 2 or 3 times a week. Since then I have given them no food.

GROWTH.—In June, 1882, several carp were caught, which were estimated to weigh 1½ pounds.

REPRODUCTION.—There are young in the pond, but I do not know how many.

DIFFICULTIES.—The first winter, on the edges of the pond under the ice, I found a number of dead carp. Having sold my farm in June, 1882, to H. P. Morris, of Gordonsville, I know nothing of the fish since that date.

905. *Statement of Samuel P. Moore, M. D., Richmond, Henrico Co., Va., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 30, 1881, I received 25 carp. On April 13, 1883, I received 13 more. My pond covers an acre, with a depth of 5 feet. It has a sandy loam bottom and is supplied with water from never-failing springs. The pond also receives a supply of surface water. In September the water is so cold as to be unpleasant for bathing.

PLANTS AND ENEMIES.—Meadow-grasses grow in the pond. There are no other fish in the pond, but it contains some frogs.

FOOD.—I give the carp no food, as it seems to be plentiful in the pond.

GROWTH.—When I removed the carp from the spring in which I placed them while I was getting the pond ready, I missed 6. They now appear to be about 10 inches long.

REPRODUCTION.—The young seem to be from 1 to 2 inches in length.

906. *Statement of James M. Price, Ridgeway, Henry Co., Va., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 16 carp, which number I divided with Mr. C. A. Carter. Mr. L. L. Thomas gave me 4 more in November, 1881. My pond is ½ of an acre in extent, 6 feet deep in its deepest part, and gets shallower as it approaches the banks. It is supplied with water from 4 springs, which are cool in summer and warm in winter.

PLANTS AND ENEMIES.—The pond contains plants that are indigenous here. Suckers, bull-frogs, and turtles inhabit it.

FOOD.—About once a week I give the carp corn-bread.

GROWTH.—In the summer of 1881 I caught a carp that measured 10 inches in length and 2 inches in breadth.

DIFFICULTIES.—It is difficult to prevent the young from escaping through the outlet.

907. *Statement of E. M. Gresham, Carlton's Store, King and Queen Co., Va., Sept. 25, 1882.*

GROWTH.—The great rains of September 22 and 23 allowed my carp to escape and destroyed my dam. I succeeded in catching 7 of the fish, and the smallest one weighed 3 pounds and 1 ounce. I managed to catch 5 of them alive and put them in barrels of water; but they must have been hurt in catching them, as all of them were dead the next morning. It is decidedly a valuable fish and one that will in time furnish meat to the thousands of our inhabitants.

908. *Statement of E. M. Gresham, Carlton's Store, King and Queen Co., Va., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1880 I received 17 carp in good condition, and another lot in the fall of 1881. I put them in a 1½-acre pond having a boggy bottom, with a depth of 5 feet, and fed by a strong running water.

PLANTS AND ENEMIES.—Wild oats, red betties, and other swamp grasses grow in the pond. Frogs, turtles, &c., inhabit the pond. It contains no other fish than carp.

FOOD.—As the stream supplying the pond with water drains a clover and wheat field and a large marsh, I give the carp no food.

GROWTH.—Last March the carp received in the fall of 1881 weighed about 8 pounds each.

DIFFICULTIES.—It has been difficult to keep my dam secure.

909. *Statement of O. M. Winston, King William Court House, Va., Aug. 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a lot of carp 2 years ago and put them in a pond in which there were chub, or beach bass and ring perch. All the carp have been destroyed.

910. *Statement of F. T. Adams, Aldie, Loudoun Co., Va., Mar. 7, 1884.*

GROWTH.—This spring the carp received on November 16, 1881, had attained a length of from 12 to 14 inches and a weight of from 2½ to 2½ pounds. They are keen hook biters.

911. *Statement of Wm. M. McCarty, Aldie, Loudoun Co., Va., July 26, 1884.*

GROWTH.—The carp received in November, 1883, were from 3 to 4 inches long, and to-day they measure from 8 to 12 inches in length. While fishing for snappers last week I caught 1 carp.

912. *Statement of B. P. Noland, Middleburg, Loudoun Co., Va., Nov. 3, 1884.*

DISPOSITION OF CARP RECEIVED.—I received a consignment of carp November, 1881, and planted them in a pond covering an area of about an acre.

ENEMIES.—I have found a great variety of other fish in the pond.

GROWTH.—In a small way my experiment with carp has been very successful, so much so that I am anxious to continue to cultivate them. This spring Colonel Dulany and myself determined to ascertain whether there were any carp left in my pond, as I had never been able to catch nor see one. Upon drawing off the water we found 2 of the most beautiful carp I ever saw. So far as I could see these were the only carp in the pond; the others may have been carried off by the flood which broke the dam in the spring of 1882. I have the pond so arranged now as to protect it from floods, and I am anxious to procure another lot of carp.

913. *Statement of L. S. Pendleton, M. D., Frederick's Hall, Louisa Co., Va., Sept. 30, 1883.*

GROWTH.—The carp which I received from you last spring were at the time from 1 to 3 inches in length. Now they are from 10 to 12 inches long and large in proportion. Their growth has been astonishing, and none of them have died.

914. *Statement of L. S. Pendleton, M. D., Frederick's Hall, Louisa Co., Va., Dec. 22, 1884.*

ENEMIES.—I find the minks, otters, and muskrats to be the most destructive enemies of the carp.

GROWTH AND REPRODUCTION.—The 13 carp received in April, 1883, grew finely and spawned freely last spring. I am sure that there were not less than 5,000 carp in my pond, from 3 to 24 inches long, until about two weeks ago when an unprecedented water-spout went over my dams and I fear washed all of my fish into a river near by. Some of the young fish that were spawned on the 24th of last May were 10½ inches at the time of the accident. One of the fry of last spring, that was found dead after the overflow, was full of eggs, and would have spawned next spring. I lost the carp just as they were fully established in the pond, and after an increase had been made and a growth attained which surpassed my most sanguine expectations.

915. *Statement of Wm. M. Bagley, Columbian Grove, Lunenburg Co., Va., Oct. 8, 1882.*

GROWTH.—Some of the carp received August 25, 1881, now weigh from 6 to 8 pounds. Some of them weighed over 5 pounds August 31, 1882.

916. *Statement of W. M. Coleman, Wattsborough, Lunenburg Co., Va., Mar. 24, 1884.*

GROWTH.—I received 16 carp from you February 4, 1883. To-day, being just 13½ months subsequently, I caught one which I found to weigh 5 pounds. I returned it to the water.

917. *Statement of George Scott, Chase City, Mecklenburg Co., Va., Nov. 23, 1882.*

GROWTH.—Most of the carp received last fall are doing well. I took 11 out of my pond last week to examine them, and found they averaged 9 inches in length and a pound in weight.

918. *Statement of Joseph Ligon, Massie's Mills, Nelson Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880 I received 15 carp, and 22 more in 1881. I put the carp in a 1-acre natural pond, with a depth varying from 6 inches to 5 feet.

The bottom is muddy. Water is conveyed across a hill from a large bold spring about 200 yards distant from the pond.

PLANTS.—Grass grows on the banks, but none in the pond.

ENEMIES.—The pond is inhabited by many bull-frogs, small frogs, and turtles, but no other fish than carp.

FOOD.—I feed the carp twice a week on corn-bread and cracked corn, and sometimes on wheat, rye, &c. The carp seem to relish raised flour-bread most.

GROWTH.—In the summer of 1882 I caught with a hook and line 3 carp, weighing, respectively, $3\frac{1}{2}$, $2\frac{1}{2}$, and $2\frac{1}{2}$ pounds. Before receiving your instructions, I constructed my pond in such a manner as to be unable to drain it.

REPRODUCTION.—I am at a loss to know what I am to do with the innumerable young that are in my pond. They are from 4 to 10 inches long.

DIFFICULTIES.—I fear that the severe wind storm that blew a quantity of the water out of the pond this spring caused the carp to bury themselves to such an irrecoverable depth in the mud as not to have spawned this spring.

1919. *Statement of G. F. Simpson, Midway Mills, Nelson Co., Va., Nov. 16, 1882.*

GROWTH.—The carp received last fall are now from 10 to 12 inches in length, and are doing splendidly.

1920. *Statement of W. H. Bridgeforth, Bellefonte, Nottoway Co., Va., Aug. 23, 1881.*

DISPOSITION OF CARP RECEIVED.—To insure the safety of the 15 carp received in November, 1880, I removed from the pond every other kind of fish. Only for a short time after placing them in the pond was I able to discover any trace of them, and had therefore concluded, the winter being a very severe one, that they had been killed out by the cold.

GROWTH.—Upon draining my pond a few weeks since I found 8 beautiful carp, weighing from 1 to $2\frac{1}{2}$ pounds each. They were not more than 3 inches long when received.

EDIBLE QUALITIES.—A more palatable dish of fish would be hard to find.

1921. *Statement of C. D. Epes, Nottoway C. H., Nottoway Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a lot of carp in 1880, and subsequently another. My pond is $\frac{1}{2}$ acre, supplied with water from 2 springs, and has a depth of from 4 to 5 feet.

PLANTS.—Plants that are indigenous here grow in the pond. Nothing that destroys the carp inhabits it.

GROWTH.—The carp weigh from 3 to 4 pounds each.

1922. *Statement of David M. Somerville, Nottoway C. H., Nottoway Co., Va., Aug. 10, 1883.*

DISPOSITION OF CARP RECEIVED.—About 3 years ago I received 45 carp. I put them into a pond which covers about $\frac{3}{4}$ of an acre and is supplied with an abundance of water from a spring $\frac{1}{2}$ mile distant. A freshet carried off all the carp. Last fall I learn that very large unknown fish were seen in Deep Creek, a tributary of Appomattox, and into which my pond empties. I think they are the carp that escaped from my pond. They were in a deep place, and would not bite a hook.

1923. *Statement of H. C. Baker, Gordonsville, Orange Co., Va., Feb. 4, 1881.*

GROWTH.—The 17 carp which were received in the fall of 1879 are doing remarkably well. In October last I caught 4 of them to see what growth they had made. They weighed from $2\frac{3}{4}$ to nearly 4 pounds, the largest one only lacking about 2 or 3 ounces of attaining the latter weight. I am satisfied that they are just the fish for the waters of Virginia, and I am sure it is the only fish suited to our ponds.

1924. *Statement of Jas. G. Field, Gordonsville, Orange Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 scale carp, 3 inches long, in October, 1879, and subsequently 3 lots, one of 14, and two of 25 each. The first lot I put in a mill-pond, but afterwards transferred the remaining 7 to a $\frac{1}{2}$ -acre pond which I built especially for carp. A constant stream of cool water from a small spring supplied the pond. It has a muddy bottom, with very little sand. The water is from $1\frac{1}{2}$ to 5 feet deep.

PLANTS AND ENEMIES.—Very few plants grow in the pond, but grasses common here

grow on the banks. Neither bass nor pike, but common branch fish, sun-perch, suckers, &c., inhabit the pond.

FOOD.—Occasionally I give the carp corn-bread.

GROWTH.—When last seen we had 7 original carp, each of which approximated the shad in size, and weighed about 4 pounds. I think my carp gain about a pound each year. I believe they spawned this spring. August 27, 1881, the leather carp received in the fall of 1880 and spring of 1881, were 10 inches long, and weighed from 1 to 1½ pounds.

MISCELLANEOUS.—I have disposed of some of the carp. It is my intention to stock the neighboring streams when I have young to spare.

925. *Statement of Wm. L. Hudson, Luray, Page Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 30 carp I received April 19, 1881, and 2 subsequent lots of 10 each in 3 ponds. One of these is 60 by 100 feet, having a clayey bottom, and a depth of from 2 to 5 feet. The other ponds are 30 by 40 feet, with a muddy and sandy bottom. There is a spring in each pond.

PLANTS AND ENEMIES.—A few lilies and weeds grow near the edges of the pond. No other fish, but a few small frogs, inhabit it.

FOOD.—Occasionally I give the carp corn-meal and bread.

GROWTH.—I have all of the carp except 2. They average from 16 to 18 inches in length.

REPRODUCTION.—There are young in the pond this year, and I expect to distribute some next fall to other parties.

926. *Statement of Wm. O. Yager, Luray, Page Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In April, 1881, I received 10 carp, and in 1882, 10 leather carp. I placed them in a pond covering ¼ of an acre, with a muddy bottom, and a depth of 3 feet. No overflow occurs except when we are visited by heavy rains. The water is cold at the bottom of the pond.

PLANTS AND ENEMIES.—Mosses grow on the edges of the pond. It is inhabited by frogs and skilpots, but by no other fish than carp.

FOOD.—Sometimes I give the carp curd and corn-meal.

GROWTH.—The largest carp taken from the pond weighed 1½ pounds, and measured 15 inches in length. I think there are carp in the pond, which will weigh 3 pounds.

REPRODUCTION.—I have 300 or 400 young of this year's hatching, which are about 6 inches long.

MISCELLANEOUS.—The carp pay me well for all my trouble, and are my pets. Visitors often admire them.

927. *Statement of Wm. E. Goolsby, Chatham, Pittsylvania Co., Va., Nov., 1882.*

GROWTH.—Last fall I received 22 carp. They are doing well, and will now measure from 7 to 8 inches in length.

928. *Statement of L. H. Pigg, editor of the Pittsylvania Tribune, Chatham, Pittsylvania Co., Va., Sept. 6, 1884.*

CARP FOR SALE.—I have 150,000 young carp for sale at the following prices:

For 100 carp, 2 to 5 inches long	\$5
For 500 carp, 2 to 5 inches long	20
For breeders, per pair	2 to 5
For a 5-gallon transportation can	1

I obtained 25 carp from the United States Fish Commission, November 11, 1881, and 20 more November 8, 1882.

929. *Statement of T. A. Elliott, Danville, Pittsylvania Co., Va., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—A 2 or 3 inch stream of water from a cool spring supplies the ¼-acre pond in which I put the 20 carp that I received on January 1, 1883. It has a gravelly and mucky bottom, and the water in it is warm.

PLANTS AND ENEMIES.—Flags, rushes, and moss grass having their roots at the bottom spread upon the surface of the pond. It is inhabited by silver-roach, pond-mullet, and frogs, but by no other fish than carp.

FOOD.—About once a month I give the carp moderately-cooked corn-bread, oats, &c.

GROWTH.—The original carp appear to be in a healthy condition and are growing rapidly, approximating the herring in size. They are too young to spawn.

930. *Statement of W. P. Robinson, Danville, Pittsylvania Co., Va., Nov. 25, 1884.*

DISPOSITION OF CARP RECEIVED.—The 15 carp and 6 gold-fish which were sent by express reached me safely November 15, 1884, though there were only about 2 inches of water in the bucket which contained them. I also received 25 carp November 27, 1881. I have kept these fish in 2 ponds, one of which covers 2 acres and the other 1 acre.

PLANTS.—In my 2 ponds there are to be found lilies of all kinds, various kinds of grasses, wild rice, wild oats, calamus root, and water-cress.

FOOD.—I have been feeding my old fish all the summer on refuse from the kitchen, cabbage leaves, boiled hominy, and all kinds of vegetable refuse, cooked. I find the boiled hominy to be the best food for carp, it being of a suitable size for them to swallow. I generally feed the carp in that part of the pond where the water is from 1 to 3 feet deep.

GROWTH AND REPRODUCTION.—My carp grow 1½ pounds a year. I have kept the leather carp in the 2-acre pond and the scale carp in the 1-acre pond. The 6 leather carp remaining spawned this year. I have about 1,000 young leather carp from 5 to 6 inches long and as broad as my two large fingers.

HIBERNATION.—The young have not gone into winter quarters yet, for every day they are to be seen swimming and jumping in the shallowest parts of the pond, where the water is from 1 to 3 or 4 feet deep.

931. *Statement of R. K. Dabney, Powhatan C. H., Powhatan Co., Va., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 30 carp that I received more than 2 years ago in ½-acre pond, having a soft, muddy bottom, with an average depth of 3 feet. The pond is supplied with water from a small spring near by.

PLANTS.—The plants that are indigenous here grow in the pond.
ENEMIES.—A great many frogs and a few terrapins infest the pond. It contains no other fish. I give no food to the carp.

GROWTH AND REPRODUCTION.—About a year ago a carp 10 inches long was caught. There are probably many young in the pond.

DIFFICULTIES.—Owing to my having sold my place soon after receiving the carp, they suffered for food.

932. *Statement of John Houston, Farmville, Prince Edward Co., Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in November, 1880, 25 in November, 1881, and 20 in 1882. The ½-acre pond, which is supplied with from 500 to 1,000 gallons of water per hour from 19 mineral springs and a free-stone spring, has a depth of from 8 to 10 feet, and a soft muddy bottom.

PLANTS.—The common flag is the predominant plant that grows in the pond. Wire-grass does well on the dam.

ENEMIES.—A few sun-perch and minnows inhabit the pond.
FOOD.—Almost every day in warm weather I give the carp corn-bread, loaf-bread, and crackers, and sometimes corn. They come in full sight to be fed, and people bring bread and feed them in order to get a good look at them.

GROWTH.—Yesterday 4 of the carp measured, respectively, 8, 12, 13, and 18 inches in length. The one 18 inches in length weighed 5 pounds. Nothing in this line could be more beautiful.

REPRODUCTION.—The young are from 4 to 8 inches long.
DIFFICULTIES.—Of the first lot a few died and others escaped when the dam broke. Something destroys the eggs. [It is the sun-perch and minnows which feed on the eggs.—EDITOR.]

933. *Statement of R. D. Miller, Farmville, Prince Edward Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp that I received in November, 1880, I put in a pond an acre in extent with a depth of 7 feet. Its bottom is muddy. Two hundred gallons per day is the flow of water, the temperature of which is 72°.

PLANTS.—Cresses, flags, and lilies grow in the pond.

FOOD.—Once in 24 hours I give the carp blood, bread, milk, &c.

GROWTH.—I have 16 of the original carp, each of which weighs from 4 to 6 pounds.

REPRODUCTION.—There are about 10,000 or 12,000 young in the pond. They weigh from ¼ to 1½ pounds. My pond contains carp only.

SALES.—I have sold 64 young at 25 cents a piece.

934. *Statement of Thomas Lewis, Salem, Roanoke Co., Va., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 500 carp which I received in November, 1878, in a pond 200 feet square, with a depth of 5 feet. This pond broke and all were lost except 146. There is a foot flow of water through the pond. At the spring the temperature is about 50°; that of the pond varies with the weather. The pond was entirely free from other fish, frogs, turtles, &c. In March, 1881, at which time the carp were 30 months old and weighed from 1½ to 2½ pounds each, and measured from 10 to 15 inches in length, I distributed the remaining 146 carp to the following parties: William Graybill, Amsterdam, Botetourt County, Virginia, 22 carp; D. S. Read, Roanoke, Roanoke County, Virginia, 20 carp; William Brand, Catawba, Roanoke County, Virginia, 20 carp; Institution for Deaf, Dumb, and Blind, Staunton, Augusta County, Virginia, 21 carp; William B. Dickerson, Glade Springs, Washington County, Virginia, 20 carp; N. K. White, Abingdon, Washington County, Virginia, 20 carp; S. F. Simmers, Salem, Roanoke County, Virginia, 10 carp; F. J. Chapman, Salem, Roanoke County, Virginia, 13 carp.

FOOD.—I gave the carp wheat and corn.

GROWTH.—In 5 years the original fish have obtained a weight of from 8 to 12 pounds each.

REPRODUCTION.—Thousands of young have been hatched, although the carp have not always been properly cared for.

DISPOSITION OF YOUNG.—Since I distributed the 146 original carp I have also distributed some 500 young, varying in size from 4 to 12 inches.

935. *Statement of Wm. M. Dunlop, Kerr's Creek, Rockbridge Co., Va., Aug. 2, 1883.*

DISPOSITION OF CARP RECEIVED.—I put the 16 carp received in December, 1880, in a pond ¼ of an acre (a part of a 6¼-acre pond), having a gravelly and muddy bottom, with a maximum depth of 3½ feet. About ½ a million gallons of water, the temperature of which is 62° F., flow through the pond daily.

PLANTS.—Coarse moss, resembling pine-tops, and water-lilies grow in the pond in muddy places.

ENEMIES.—White suckers, trout, California salmon, and black bass were put in the larger pond several years ago. Terrapins, bull-frogs, and lizards are natives of it.

FOOD.—I do not give the carp any food, as they feed on a soft bug, shaped somewhat like a grain of coffee, that is found among the moss in the pond.

DIFFICULTIES.—I am very much discouraged, as none of the carp have ever been seen, while plenty of suckers are caught every winter.

936. *Statement of J. K. Edmondson, Lexington, Rockbridge Co., Va., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 25 carp 2 years ago and 25 more last year. The water is cold. Subsequently the carp disappeared.

937. *Statement of Daniel J. Hileman, Mill Creek, Rockbridge Co., Va., Dec. 18, 1882.*

GROWTH.—The fish which you sent me last fall have done very well. I raised several of them up on a dip-net, and they were about 10 inches in length.

938. *Statement of Jacob Senger, Baker's Mill, Rockingham Co., Va., Dec. 12, 1881.*

GROWTH.—Mr. A. Myers, of this county, has some yearling carp that average 15 inches in length. Michael B. E. Kline has some weighing 1½ lbs. each.

939. *Statement of M. B. E. Cline, Broadway, Rockingham Co., Va., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—In October, 1880, I received 16 carp, and 25 more the next year. I gave a neighbor 12 of them. My pond is 22 by 62 feet, with a depth of from 1 to 4 feet. It has a clayey bottom. A constant ¾-inch flow of cold spring water passing the dairy and through the stock-yard supplies my pond.

PLANTS.—Grass grows in the shallow water. I have willow brush in the pond.

ENEMIES.—The pond contains nothing that is destructive to the carp. I killed the only 2 turtles there were.

FOOD.—I give the carp corn-meal dough, wheat, shelled corn, bread, and refuse from the dressing of fowls. I feed my carp as regularly as I do my hogs, which is twice a day.

GROWTH.—Last October each of the 16 original carp measured 20 inches in length and 9 inches in circumference.

REPRODUCTION.—The pond is full of young.

DISPOSITION OF YOUNG.—I gave to each of 5 neighbors 5 carp.

940. *Statement of Peter Rader, Broadway, Rockingham Co., Va., Oct. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 12 carp in November, 1880, and 25 in November, 1881. The first lot I placed in a pond about 120 feet in diameter, 2 feet in depth, and of muddy bottom. It is fed by a spring which yields about 180 gallons each 24 hours. It is cold at the spring, but becomes measurably warm in the pond, and flows out through a subterranean passage.

ENEMIES.—There are no other fish in it. Frogs and skill-pots abound. I have killed one muskrat in the pond.

FOOD.—I do not generally feed them, but have given them crumbs and wheat-bread a few times when the water was very shallow.

GROWTH.—I probably have 2 of the first lot and 10 or 12 of the second lot left. Last winter a carp which was caught weighed 5½ pounds and measured 22 inches.

REPRODUCTION.—As the pond has never been drained, I cannot tell how many young there are, but have handled 70 or 75, which were 6 inches in length, and have observed many smaller ones in the pond.

EDIBLE QUALITIES.—I have eaten 3. The first was cooked with the skin on, being parboiled and fried. The others were skinned before cooking, which seemed to be an improvement. I regard the fish as delicious.

DIFFICULTIES.—The most serious difficulty has been the failure of water during the long drouth of the past summer.

941. *Statement of D. M. Rodeffer, Broadway, Rockingham Co., Va., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp in the fall of 1880, and 20 more in November, 1881. The carp are kept in an artificial pond 30 by 40 feet, from 1 to 4 feet deep, and has a clayey bottom. A 2-inch stream from a spring 60 yards from the pond supplies it with water. I put fine willow brush in the pond for them to spawn on.

PLANTS AND ENEMIES.—On the edges of the pond grow broad swamp and spear grasses, which hang into the water. Frogs infest the pond.

FOOD.—I give the carp wheat-bread daily.

GROWTH.—I have 5 of the original carp, each of which appears to be about 15 inches in length.

DIFFICULTIES.—The water broke over the banks of the pond and carried off some of the carp. I have now erected a wire screen over the top of it. A few carp have died.

942. *Statement of Geo. W. Hollar, Dayton, Rockingham Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In a pond 20 by 50 feet, with a clayey bottom, I put the 20 carp which I received in November, 1881, and the lot received in the winter of 1883. An inch stream of spring water flows through the pond.

PLANTS.—Grass grows on the banks, but not in the pond. It is inhabited by nothing that disturbs the carp.

FOOD.—I give the carp light bread and refuse from the table.

GROWTH.—The 10 original carp now remaining will weigh from 8 to 9 pounds each. Since last spring 5 have died.

943. *Statement of B. F. Michael, Dayton, Rockingham Co., Va., Aug. 3, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp November 26, 1880, and subsequently 2 small lots. My pond has an area of 75 square feet, with a depth of 3 feet. The bottom is muddy. At the head of the pond is cold spring water, which, however, does not always flow through it.

PLANTS AND ENEMIES.—Grass grows in a portion of the pond. It is infested by a few frogs.

FOOD.—I give the carp bread irregularly.

GROWTH.—I have 9 or 10 of the original carp, which weigh from 8 to 10 pounds each.

944. *Statement of Wm. J. Miller, Dayton, Rockingham Co., Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received 49 carp. My pond is 14 by 40 feet, 3 feet deep and has a muddy bottom. The water passes through a 7-inch-square wire screen, and is not very cold.

PLANTS AND ENEMIES.—The pond contains moss, but no grass. Nothing injurious inhabits the pond except muskrats. I have found several dead carp.

FOOD.—I give the carp corn-meal in sacks.

GROWTH.—All of the carp except 4 jumped out of the pond. Those remaining are large, and are now in a mill-dam.

945. *Statement of Samuel Shrum, Dayton, Rockingham Co., Va., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1880 I received 16 carp, and 20 more last October. I put the first lot into a pond near a mill-dam. I think the muskrats let them into the dam. The second lot I put into a pond of standing water belonging to a neighbor. I have not fed the carp.

GROWTH.—I think some of the original carp are still in the mill-dam. In June after the November when I received the carp, I caught one that was 12 inches long and 4 inches wide. About a year later I caught a carp that was 18 inches in length and 6 inches in breadth; it weighed 3 pounds. A neighbor who received 3 carp from the Harrisonburg disposition in 1880 has one that measures 2 feet in length and 17 inches in diameter.

REPRODUCTION.—Yesterday, in passing a pond in which carp were put in 1880 I was told that there were young carp also in it.

946. *Statement of John C. Wenger, Dayton, Rockingham Co., Va., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 16 carp on December 6, 1881, and placed them in my pond, which is 25 by 50, feet with a depth varying from 1 to 3 feet and a bottom composed of a tough soapy soil.

PLANTS AND ENEMIES.—Weeds grow in the pond. Frogs and snakes infest it, but no turtles have appeared since I shot one.

FOOD.—The carp consume less in cold than in warm weather. In warm weather we give them bread once a day.

GROWTH.—In 1881 there were in the pond 12 of the original carp. They now measure from 15 to 20 inches in length.

REPRODUCTION.—There are young of this and last year's spawning in the pond, and they are from 3 to 4 inches long.

MISCELLANEOUS.—I was very much discouraged and feared that my carp would not increase, as I never saw any young in the pond. Lately, however, on sultry evenings I have seen last year's and this year's young swimming on the surface with their noses out of the water.

947. *Statement of John W. Bowers, Greenmount, Rockingham Co., Va., Aug. 7, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp which I received in December, 1880, I placed in a pond 40 by 60 feet, having a clayey bottom, with a depth of from 2 to 4 feet. It is plentifully supplied with rain water, the temperature of which in summer is moderately warm; in winter, cold.

PLANTS AND ENEMIES.—Very few plants grow in the pond. Bull-frogs and turtles infest it. There are no other fish in it.

FOOD.—Three or four times a week I give the carp bread, corn-bread, cabbage, &c.

DIFFICULTIES.—In May, 1881, my carp were apparently doing finely, but during the summer following they mysteriously disappeared.

948. *Statement of Peter Bonds, Harrisonburg, Rockingham Co., Va., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—About 2 years ago I received 16 carp, and subsequently a lot from Mr. Deckert, which I put in 2 ponds, respectively, 50 by 50 and 40 by 50 feet, with depths of from 1 to 4 feet. Spring water is turned into them daily.

PLANTS AND ENEMIES.—Rushes grow in the ponds. Muskrats destroyed all of the first lot of carp except 3, and snakes ate up all my young carp before I could exterminate them. No other fish inhabit the pond.

FOOD.—I give them light bread and corn-bread.

GROWTH AND REPRODUCTION.—Last fall the 3 original carp weighed 4½ pounds each. I obtained last summer 225 young from the 3 old carp. Last fall the young weighed 2 pounds each.

949. *Statement of Henry Pulse, Harrisonburg, Rockingham Co., Va., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—The 24 carp received in November, 1880, I placed in a stagnant pond 20 by 75 yards, with a depth of from 2 to 3 feet and a muddy bot-

tom. Except when it rains, no water flows into the pond. In winter the waterseldom freezes more than 2 inches in thickness, and is warm in summer.

PLANTS AND ENEMIES.—Wild grass and mint grow in the pond. It is inhabited by frogs and turtles.

GROWTH.—We have taken out 12 of the original carp, each of which are from 12 to 18 inches long and weigh 5 or 6 pounds.

REPRODUCTION.—My fish spawned in 1882, but the spawn did not hatch. A flood of water washed out of the pond a great many of this year's young, but I put back 250 of them, which are now from 2 to 3 inches in length.

950. *Statement of Emanuel Rhodes, Harrisonburg, Rockingham Co., Va., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, I received 16 carp. My pond is 17 by 75 yards, 4 feet deep, and is fed from an underground spring.

PLANTS.—Wild swamp grasses and other varieties grow in the pond.

ENEMIES.—The pond also contains catfish and frogs.

FOOD.—I frequently give the carp bread.

GROWTH.—The present size of the carp is 13 inches in length. They weigh 4 pounds. I have seen no young in the pond.

951. *Statement of James M. Rhodes, Harrisonburg, Rockingham Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received a supply of carp, and subsequently another lot. My pond covers a $\frac{1}{4}$ of an acre, and is supplied with a good stream of spring water.

PLANTS AND ENEMIES.—Water-plants of a wild nature grow in the pond. Turtles and muskrats infest it, but I am catching them.

FOOD.—I feed the carp daily upon bread and refuse from the kitchen.

GROWTH.—The original carp average 3 pounds in weight.

REPRODUCTION.—There are a number of young in the pond which are the size of a man's finger.

DIFFICULTIES.—In consequence of the low water the first lot of carp died. At first the pond was not fed by running water.

952. *Statement of Michael Shank, Harrisonburg, Rockingham Co., Va., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—In the winter of 1880-'81 I received 10 carp; last fall I received 19 more. I put the first lot in a small spring, as my pond was not ready. A freshet carried off the carp from the spring. A small quantity of water flows through the pond in wet weather. Last spring I had 5 of the old carp left.

ENEMIES.—The pond contains no other fish nor turtles, but many frogs.

EDIBLE QUALITIES.—We have eaten one carp fried in lard. All pronounced it very good.

DIFFICULTIES.—I am very much dissatisfied that there have been no young yet.

953. *Statement of A. S. Rosenbeyer, Mauzy, Rockingham Co., Va., Sept. 11, 1883.*

ENEMIES.—Raising carp has proved a failure with me, on account of their being killed by muskrats and turtles. I had only 3 left of the second lot, which I gave away.

954. *Statement of Daniel Miller, Spring Creek, Rockingham Co., Va., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1880, I received 16 carp. My pond is $\frac{1}{4}$ of an acre, with a depth of from 20 to 30 inches. It has a mucky bottom. In the pond there is a spring, near which it never freezes. The flow of water is 50 gallons per minute.

PLANTS AND ENEMIES.—The pond contains moss. A few small fish, frogs, and muskrats live in it. Some of the carp have been killed by snakes.

FOOD.—About 4 times a week we give the carp light bread.

GROWTH.—I have 7 of the original carp, which weigh from 4 to 5 pounds each. There are no young in the pond. I think the carp will spawn this summer.

955. *Statement of Jacob Thomas, Spring Creek, Rockingham Co., Va., July 30, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received 16 carp. My pond is 25 by 60 feet, and 2 feet deep, with a bottom composed of sand, clay, and gravel. It is supplied with spring water through a 2-inch pipe. The temperature of the water is between that of spring and pond water.

PLANTS.—The weeds and clover growing on the edges of the pond hang into the water.

ENEMIES.—The pond is inhabited by turtles and frogs, but no other fish than carp.

FOOD.—About once a week I gave the carp corn-meal and wheat screenings.

GROWTH.—Seven is the greatest number of original carp I have seen. I think the largest will weigh 4 pounds.

REPRODUCTION.—It is impossible to tell the number of young produced. I have seen 100 at one time this summer.

DIFFICULTIES.—I find it very difficult to keep the frogs and turtles out of the pond.

956. *Statement of David Bowman, Timberville, Rockingham Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The 26 carp which I received on November 16, 1880, I put in a pond of still, muddy water, 30 by 40 yards, with a depth of from 1½ to 4 feet. It is formed on limestone land, and has a clayey bottom.

PLANTS.—Sour-grass, smart-weed, Spanish needles, and other grasses grow in the pond.

ENEMIES.—The pond is inhabited by turtles, bull-frogs, skilpots, and catfish.

FOOD.—When I fed the carp, which was very seldom, I gave them soft corn and worms. Only one original carp has been seen. The water is very cloudy or muddy at times.

DIFFICULTIES.—When I received the carp the weather was cold, and I had to cut a hole in the ice in order to put them into the pond.

957. *Statement of Solon M. Bowman, Timberville, Rockingham Co., Va., Aug. 4, 1883.*

DISPOSITION OF CARP RECEIVED.—Into a ½ acre pond, having a clayey bottom, with a depth of 2 feet, I put the 16 carp I received on November 26, 1880. No water flows through it.

PLANTS AND ENEMIES.—Swamp-grass grows in ½ of the water's edge. Catfish, common frogs, and turtles inhabit the pond.

GROWTH.—I suppose the original carp will weigh 2½ pounds each.

958. *Statement of Sam'l H. Myers & Son, Timberville, Rockingham Co., Va., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—The 16 carp that I received I put in a pond of about 100 square feet, with a depth of from 2 to 4 feet. It has a blue potter-clay bottom.

PLANTS.—Joint-grass grows in the pond.

ENEMIES.—The pond contains no fish, but in it are frogs and turtles. The water got very low 2 years ago, when something caught the carp.

FOOD.—Grain was fed to the cattle at the pond, where they obtain water in winter. When the carp were taken from the pond I think they would have weighed 2 pounds each.

959. *Statement of Lewis Will, Timberville, Rockingham Co., Va., Aug. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—In January, 1880, Mr. J. P. Pence and myself received 37 carp. Mr. George L. Will and myself received 26 more in the fall of 1881. My pond is 15 by 75 feet, and from 15 to 20 inches deep. The bottom of the pond is composed of mud. There is a regular flow of an inch of water through the pond. The temperature of the water is between spring and river water at this season of the year.

PLANTS AND ENEMIES.—A swamp, or water-grass grows on the edges of the pond. It contains bull-frogs.

FOOD.—I sometimes give the carp wheat-bread 3 or 4 times a day, and some days I do not give them any food.

GROWTH.—I have 7 of the original carp. From appearance I think they are from 15 to 20 inches long, and weigh 4 or 5 pounds.

960. *Statement of D. J. Andes, Moore's Store, Shenandoah Co., Va., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—Three years ago I received 8 pairs of carp, and, subsequently, another lot. Moss grows in the pond, which is infested by no enemies.

GROWTH.—I have an original carp left that measures 20 inches in length. I feed corn-meal.

961. *Statement of Charles L. Swartz, Mt. Clifton, Shenandoah Co., Va., Oct. 17, 1882.*

GROWTH.—January 31 we received 20 carp, but all except 5 died before we got the pond ready in July. The 5 remaining have grown to be from 8 to 10 inches long.

962. *Statement of L. Triplett, jr., Mt. Jackson, Shenandoah Co., Va., Aug. 9, 1883.*

DISPOSITION OF CARP RECEIVED.—In December, 1880, I received 14 carp, and 20 more in the spring of 1881. My pond measures from 200 to 270 feet in length, from 60 to 75 feet in width, from 6 to 8 feet in depth, and has a mucky bottom. There is very little flow of water through the pond, except in the spring of the year.

PLANTS.—No plants grow in the pond, but it is shaded by woods.

ENEMIES.—Bull-frogs and terrapins inhabit the pond. It contains no other fish.

FOOD.—I feed the carp on wheat bran, which they seem to relish and come for like pigs. During the first 2 years I gave them nothing in addition to what blew into the pond from the adjoining grain fields.

GROWTH.—In September, 1882, several of the original carp each weighed from 6 to 6½ pounds.

REPRODUCTION.—The pond swarms with young, which vary in size and weigh from 5 to 6 pounds.

DISTRIBUTION OF YOUNG.—I gave some young to 2 parties, who placed them in ponds with catfish.

963. *Statement of George W. Rosenberger, New Market, Shenandoah Co., Va., Sept. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1882, I received 61 carp, 20 of which were obtained from the Government, the rest from friends. My pond is 60 feet in diameter, 3 feet deep, with a muddy bottom, and is supplied with water from fields as water-sheds.

PLANTS.—The pond contains moss, but since the carp have been placed there it has disappeared.

ENEMIES.—The pond contains plenty of frogs and small lizards, but no other fish than carp.

FOOD.—I do not feed the carp, but they are supplied with food by the 20 to 40 head of cattle that get water from the pond.

GROWTH.—With a dip-net I caught 7 carp, 2 of which measured, respectively, 13½ and 14 inches in length and weighed 2½ pounds. I think that the cultivation of carp exceeds in the amount of food which is produced that of anything else from the same area of land employed. In November, 1882, the carp which I put in my pond measured only from 1½ to 2½ inches in length.

EDIBLE QUALITIES.—We ate one fried in lard. The quality was good.

MISCELLANEOUS.—I have also constructed a lake to be fed by a spring. It is 42 yards long by 10 wide. It contains *Nymphaea alba*, *Cyperus atrovirens*, and *Leersia oryzoides*.

964. *Statement of George W. Rosenberger, New Market, Shenandoah Co., Va., Mar. 4, 1884.*

GROWTH.—In a still-water pond, and a fresh-water lake that is fed by a spring, I have 90 carp which average about 20 inches in length and 3 pounds in weight. They are beautiful fish, and grow rapidly.

HIBERNATION.—They hibernated about December 1, 1883. I was able to see plenty of them almost any time in February, 1884. On throwing bread upon the water, they would come up after it very readily.

965. *Statement of Frank S. Robertson, Abingdon, Washington Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 14 carp in December, 1880, and 20 more in April, 1883. My pond is 40 by 100 feet, with an average depth of 6 feet and a muddy bottom. It is supplied with a 3-inch stream of water from a bold limestone spring 120 yards distant. The temperature of the water is 54½°. The young carp received in April, 1883, died in the box in which I placed them while the pond was being drained.

PLANTS.—The pond contains the usual variety of grasses; orchard grass was sown around its banks.

ENEMIES.—Plenty of frogs and sometimes turtles and muskrats, but no other fish than carp inhabit the pond. In the crow of an Indian hen, or green heron, which is the most destructive of the fish-eating birds, I found 4 young carp.

FOOD.—The carp receive sustenance from the milk washings that flow into the pond in addition to the meal, and corn and wheat-bread which I give them.

GROWTH.—I drew off the water from the pond in June, 1882, and found 12 of the 14 original carp. But there are now only 3 remaining, all but 2 of the others having died in the box in which they were kept. These also died soon after being replaced in the pond, from injuries received in the box. Each of these 3 measure about 20 inches in length and weigh about 5 pounds.

REPRODUCTION.—The young fry vary in length from $\frac{1}{2}$ inch to $1\frac{1}{2}$ inches, and are from 1,000 to 3,000 in number.

DIFFICULTIES.—As I did not receive any carp in the spring of 1880, I procured and placed in my pond about 100 sun-perch and suckers, knowing the latter were not carnivorous, and supposing that the former were not. Finding the increase of the sun-perch so great, I drew off the water in June, 1882, when many thousands of the sun-perch were to be seen. I also found 12 of the 14 carp and removed them to a large box through which a constant stream of fresh water ran. I allowed the pond to remain without water until all of the bottom except 10 square feet, where the mud was 6 inches deep, was dry. The water was then turned into the pond and the carp replaced. In 3 weeks I discovered the pond to be again full of young sun-perch, the spawn evidently retaining vitality in the spot of mud. I drew the pond again last April, and allowed the bottom to get perfectly dry. Now that the pond is rid of the sun-perch I am greatly encouraged, and I have no doubt that I will be successful in the culture of carp. Purposing larger operations, I shall make other ponds this season of greater dimensions.

966. *Statement of John G. White, Abingdon, Washington Co., Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—About three years ago I received 15 carp, each 5 or 6 inches long. The fish are kept in a good-sized pond, having a gravelly and rocky bottom and a depth of 4 feet. A very cold spring and a large stream supply it with water, which does not freeze in winter.

PLANTS.—The pond contained a little moss, which, however, soon disappeared. There is nothing in it that disturbs the carp.

FOOD.—I give the carp bread, and intend to throw into the pond a bag of ship-stuff once a month.

GROWTH.—I have never seen them until this summer, when I counted at different times 8 or 10 of the original carp. They appeared to be from 12 to 15 inches long.

967. *Statement of Hiram V. Thompson, Glade Spring, Washington Co., Va., Nov. 8, 1883.*

DISPOSITION OF CARP RECEIVED.—About February 1, 1883, I received 12 mirror carp, which were about an inch long. My pond covers an acre, and is from 4 to 5 feet deep in places, though much of it is covered with shallow water. In April I got from a neighbor 5 scale carp a year or more old.

PLANTS.—Grass and water-oats grow over the whole of the pond.

GROWTH.—On the 30th of September I took one of the young mirror carp, which measured 18 inches. I notice that the mirror carp grow the faster.

REPRODUCTION.—In July I discovered thousands of young, some of which are now 18 inches long, and many of them are of the mirror variety, though the 5-year-old carp I got in April are scale carp. I am puzzled as to whence these young mirror carp came, as I cannot think that the carp which were an inch long in February have sufficiently matured to produce eggs.

In neither of the 4 ponds of my neighbors, from whom I got these scale carp, are there any young, although the old ones seem to thrive well. Their fish received last spring at the same time as mine are 2 inches shorter. I think it due to the way in which mine have been fed.

968. *Statement of Henry Horner, Potomac Mills, Westmoreland Co., Va., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—The 25 carp which I received from Dr. Greenlaw in December, 1880, I put in a 25-acre mill-pond, with a depth of from 1 to 11 feet, and supplied with an abundance of spring water.

PLANTS.—Plants that are indigenous here grow in the pond.

ENEMIES.—Pike, or jack, catfish, eels, yellow perch, chub, frogs, bull-frogs, turtles, and snapping-turtles inhabit the pond. I never fed the carp.

DIFFICULTIES.—The carp were received in a healthy condition and placed in a pond which had just been rebuilt after lying idle 16 years. It was not long, however, before the dams above broke, filling my pond with trash and enemies of the carp. I do not know whether there are any carp there or whether they have been eaten by the pike.

969. *Statement of Charles M. Williams, Wytheville, Wythe Co., Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1879 I received 42 carp. The mill-pond into which I put them is a mile long, 30 to 40 yards wide, and from 3 to 12 feet deep. The flow of water is enough to fill a $3\frac{1}{2}$ or 4 foot pipe. There are several springs in the pond.

PLANTS.—Rushes, blue-grass, and weeds grow in the pond. A large portion of it is well shaded by the woods that skirt the pond.

ENEMIES.—The pond contains white suckers, minnows, frogs, and turtles.

DIFFICULTIES.—We have not seen nor been able to catch any, although we believe the carp are still in the pond.

970. *Statement of Robert E. Withers, Wytheville, Wythe Co., Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In the spring of 1879 I received 33 carp, and 20 more in January, 1880. My pond is from $\frac{1}{4}$ to $\frac{3}{4}$ of an acre in extent and 8 feet deep, with a clayey and gravelly bottom, and is supplied with water from a spring 200 yards distant. The water has a temperature of 65° and a flow of 3 or 4 gallons per minute.

PLANTS.—Rushes, flags, grasses of various kinds, water-cresses, water-dock, and two or three varieties of algæ grow in the pond.

ENEMIES.—Water terrapins, snapping-turtles, green frogs, and water-snakes infest the pond. It contains no other fish than carp. I also find the muskrat an active depredator.

FOOD.—The carp have been regularly fed with potatoes, bread, chopped and crushed corn, and vegetables from the kitchen.

GROWTH.—Last fall some of the carp weighed $6\frac{1}{2}$ and 7 pounds. Owing to the breakage of the dam in December, 1881, and in June, 1883, I have few, if any, of the original carp left.

REPRODUCTION.—There are a large number of young in the pond, and they vary much in size. The young of last year's hatching are the size of a hand.

DISPOSITION OF YOUNG.—I have given some young to several applicants to stock their ponds.

EDIBLE QUALITIES.—I have tested the edible qualities of the carp both in spring and fall months, and find them better in the latter season, just before the cold weather commences.

WEST VIRGINIA.

971. *Statement of John A. Trimble, Pepper, Barbour Co., W. Va., Nov. 28, 1882.*

GROWTH.—Of the carp received April 30, 1881, I raised 11, and this fall they measured 21 inches in length. One caught March 3, 1882, then measured 15 inches in length and 5 in breadth.

972. *Statement of George E. Showers, Martinsburg, Berkeley Co., W. Va., Apr. 21, 1883.*

GROWTH.—In November, 1881, I put 21 carp in my pond, and having seen no signs of them I concluded to draw off the water on the 13th instant. To my surprise I found them all right and of fine size. One of them, not the largest, weighed $3\frac{1}{2}$ pounds. Those I have will be 2 years old this summer.

EDIBLE QUALITIES.—I had one of them cooked, and all who ate of it pronounce carp to be better than shad.

973. *Statement of J. E. Curtis, Wellsburg, Brooke Co., W. Va., Aug. 6, 1883.*

DISTRIBUTION OF CARP RECEIVED.—My pond being in an unfinished condition, an unexpected flood carried off the first lot of 20 carp which I received. About December 1, 1882, I received a second lot of 60. My pond measures 40 by 90 feet, is from 2 to 5 feet deep, and has a bottom of tough limestone, clay, and gravel. A 3-inch pipe leads from a spring to the pond, the supply of which varies very much from a full pipe in spring, fall, and winter, to a very small stream in summer. The temperature of the water is about that of large streams here.

PLANTS.—Roots of plantain and of swamp-grass grow around the edges of the pond. The pond is infested by frogs, water-snakes, turtles, and muskrats. . I found one carp half eaten, as I supposed, by muskrats. No other fish inhabit it.

FOOD.—Every 3 or 4 days since May 1, I have thrown some light bread on the surface of the water. I gave the carp clover, parsnips, beets, corn, and oats, but I have never seen them eat anything but bread. They come to the surface for bread.

GROWTH AND REPRODUCTION.—At one time I counted 24 of the original carp, each of which are from 5 to 6 inches long, and weigh about $\frac{1}{2}$ pound. I have watched carefully for young fish, but think they are too young. If I get any young this season I expect to stock another acre.

974. *Statement of John C. Covell, Romney, Hampshire Co., W. Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1881 our Fish Commissioner put into the pond of the West Virginia Institute several old carp about ready to spawn. The pond, or

reservoir is 50 by 80 feet, from 2 to 3 feet deep, and has a clayey bottom, and contains from 50,000 to 60,000 gallons of water, part of which is replaced by spring water from the mountains 2 or 3 times a week. The temperature of the water is 58°.

PLANTS.—Blue-grass, clover, &c., grow in the water along the margin of the pond.

ENEMIES.—Sun-perch and common frogs inhabit the pond.

FOOD.—I feed the carp perhaps once a day. I give them stale bread, and sometimes lettuce.

REPRODUCTION.—In the fall of 1881 over 500 small carp were seined out of the pond. Possibly 100 more remained. Of these, which are now nearly 2 years old, some would weigh a pound each. One 4-year old I estimate to weigh 3 pounds.

975. *Statement of C. S. White, Romney, Hampshire Co., W. Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1879, I received 20 carp. During the first year the carp were kept in 3 small ponds, each 30 by 50 feet, having muddy bottoms. These ponds having been broken by a flood in 1880, I moved what did not escape to a pond $\frac{1}{2}$ acre in extent, having a muddy bottom, and through which there is a constant flow of from 3 to 12 inches of water. The water is deep in the center and gets shallower as it approaches the sides. The temperature of the springs is 56° F. In summer the water is cool in the center of the pond and warm two-thirds of the surface. I have another pond 30 by 60 feet, in a clayey field. In summer it is at times not more than a foot deep, and for weeks not a drop of water flows into it. In winter it is about 5 feet deep. In this latter pond I put 50 young carp in the fall of 1881.

PLANTS.—The ponds contain 5 varieties of water-grasses, yellow-dock, white pond-lilies, and cresses. A few white lilies and grasses grow in the smaller pond.

ENEMIES.—Last June I cleaned out my larger pond and destroyed about 10,000 cat-fish, perch, and chub.

FOOD.—I give the carp in the larger pond no food except a few bread-crumbs in order to toll them into sight. From June till November I occasionally give the young carp in the smaller pond bread, refuse of the table, lettuce, cabbage, clover, and fruit.

GROWTH.—I have 6 of the original carp, one of which weighed 10 pounds the 1st of last June. They weighed considerably over a pound, October 29, 1880.

REPRODUCTION.—The carp spawned twice in 1881. In 1882 the spawn was destroyed by other fish. As yet I have seen no indication of the carp in the smaller pond spawning. I suppose the young of 1881 will weigh 3 pounds.

DISTRIBUTION OF YOUNG.—I placed 50 young in the smaller pond, and have distributed about 500.

DIFFICULTIES.—It has been difficult to prevent the young and the spawn from being destroyed by other fish. Minks, coons, and wild animals, especially muskrats, have been of much annoyance.

976. *Statement of E. W. Smith, jr., Weston, Lewis Co., W. Va., Oct. 23, 1884.*

GROWTH.—On seining my pond I find but 2 of the 21 carp planted in November, 1882. One of these measures 20 inches in length and 5 in breadth. I have 3 large ponds supplied with water sufficient for thousands of carp.

977. *Statement of Garrett Cunningham, Moorefield, Hardy Co., W. Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—In the winter of 1879-'80 I received 6 carp, and 10 or 15 more in the winter of 1881-'82. I put the carp in a succession of ponds, fed and connected by a small stream of warm water. The depths of the ponds vary from 2 to 10 feet.

PLANTS.—Yellow water-lilies or docks and many kinds of wild swamp-grass grow in the pond.

ENEMIES.—Mud-turtles, skillpots, and all kinds of frogs infest the ponds.

DIFFICULTIES.—Black bass appeared in the stream soon after I placed the carp there and ate them. I intend making another pond.

978. *Statement of William Sadler, New Salem, Harrison Co., W. Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—On December 14, 1880, I received 44 carp. I put 25 in a pond 12 by 100 feet, and 19 in a smaller pond. The depth of the larger pond is 3 feet. The bottom of the ponds are composed of mud. The amount of water that flows through them in the dry season is small. Last winter I distributed the original carp in 4 ponds, as follows: 12 carp in the first pond, 11 in the second pond, 8 in the third pond, and 7 in the fourth pond. I have 7 ponds, and will open 2 more this fall.

PLANTS.—Some of the swamp-grass in the pond is destroyed by the fish rooting it.

ENEMIES.—The pond is inhabited by frogs, snakes, and snapping-turtles, but no other fish. Last summer I saw a snake catching young carp.

FOOD.—Daily I give the carp meal, bran, corn-bread, and wheat-bread.

GROWTH.—In the fall of 1881 I had 38 carp remaining. When I drained my pond last fall I still had 38 of the original carp. Last February they would measure from 12 to 18 inches in length.

REPRODUCTION.—I got only 53 young last season. They now measure 9 inches in length. There are in all the ponds a great number of young of various sizes which were hatched this spring.

DISPOSITION OF YOUNG.—The 53 young carp hatched last year I put in a small pond by themselves. They are doing well, and the largest of them are 9 inches long. I put 150 young in 2 other ponds, and gave a neighbor 16.

979. *Statement of George W. T. Kearsley, Charlestown, Jefferson Co., W. Va., July 25, 1883.*

DISPOSITION OF CARP RECEIVED.—All but one of the 20 leather carp that I received in the winter of 1881 were lost. The 20 scale carp received the following summer I put in a pond about 60 or 70 feet in diameter, from 4 to 5 feet deep in center, with a muddy bottom. As no streams feed the pond, it is supplied with rain water, the temperature of which varies with the weather. I have other ponds to receive young fish.

PLANTS AND ENEMIES.—Mosses grow on the edges of the pond. It is inhabited by frogs, but by no turtles nor other fish than carp.

FOOD.—I give the carp boiled corn, chopped cabbage, and corn-bread as often as I deem it necessary.

REPRODUCTION.—There are young in the pond this season.

DIFFICULTIES.—When I received the carp it was very cold. Ice $\frac{1}{2}$ an inch thick had formed in the can. I fear many of the carp perished. I am not sure of but one old carp still remaining.

980. *Statement of J. Ogden Murray, Charlestown, Jefferson Co., W. Va., Aug. 3, 1883.*

GROWTH AND REPRODUCTION.—Carp sent to Mr. W. H. Moore some 12 months ago are now from 10 to 15 inches long. We purpose eating them next season. There is a great increase in the stock of fish sent him.

981. *Statement of William J. Knott, Shepherdstown, Jefferson Co., W. Va., Aug. 20, 1883.*

DISPOSITION OF CARP RECEIVED.—On November 18, 1880, I received 20 carp. My pond is about 70 yards in extent, has a muddy bottom, and is 2½ feet deep. During a portion of the year a spring supplies the pond with water. No plants grow in it.

ENEMIES.—Turtles, frogs, and catfish inhabit the pond. I regard the latter as injurious, and intend to get them out.

FOOD.—I do not feed the carp.

GROWTH.—After losing and giving away some of the original carp, I have 6 or 8 that average from 14 to 16 inches in length. There are no young yet.

982. *Statement of B. A. Fleming, Fairmont, Marion Co., W. Va., Nov. 20, 1882.*

GROWTH.—The 16 small carp that I received last spring are doing very well, and are from 10 to 12 inches long.

983. *Statement of F. H. Richards, Fairmont, Marion Co., W. Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In November, 1881, I received 61 carp, and 15 in December, 1882. My pond is 60 feet square, from 5 to 7 feet deep, and is supplied with cold spring water.

PLANTS.—A number of water-plants and grasses grow in the pond.

ENEMIES.—Frogs and turtles, but no other fish than carp inhabit the pond. I try to destroy the turtles.

FOOD.—Once or twice a day I give the carp corn-bread, corn-meal, potatoes, cabbage, parsnips, beans, wheat-bread, and many other kinds of vegetables.

GROWTH.—I have 60 of the original carp. In November, 1882, one year after they were received, 2 of the carp measured 12 inches in length each. There are no young yet.

DIFFICULTIES.—It has been difficult to prevent the water from breaking the dam. I am disappointed that they did not fill the pond with young this summer.

984. *Statement of H. S. White, Bellton, Marshall Co., W. Va., July 27, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp I received in 1881 and 1882 I put in a pond from 18 to 24 inches deep. It is supplied with water from a spring, and has no outlet, except through an earth "dump" of the Baltimore and Ohio Railroad.

PLANTS.—Wild grasses grow in the pond. Nothing that destroys the carp inhabits it.

GROWTH.—The 10 original carp now weigh about 2 pounds each.

REPRODUCTION.—The young, of which there are not very many, vary in weight from $\frac{1}{4}$ to 1 pound.

DIFFICULTIES.—The drought of 1881 nearly exterminated the original carp.

985. *Statement of J. B. Hager, Board Tree, Marshall Co., W. Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In the fall of 1881 I received 30 carp. My pond is more than $\frac{1}{2}$ acre in extent, never less than 3 feet deep, with a clayey bottom. It is supplied with spring water.

PLANTS AND ENEMIES.—Grass grows in the pond, and frogs in great numbers infest it. No other fish inhabit it.

FOOD.—I feed the carp, but not as often as I should, on bread, dough, and vegetables.

GROWTH.—I have seen only 3 of the original carp, each of which when one year old weighed 4 $\frac{1}{2}$ pounds. They do not come to the surface.

DIFFICULTIES.—I do not know the proper manner or time of feeding.

986. *Statement of Lewis W. Runner, Morgantown, Monongalia Co., W. Va., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received a lot of carp on April 22, 1881. My pond is 40 by 69 feet, with a depth of 6 $\frac{1}{2}$ feet in its deepest part. It has a muddy bottom. The flow of water is $\frac{3}{4}$ of an inch. Spring water flows into the pond through a ditch a hundred yards long.

PLANTS AND ENEMIES.—Common river and swamp grasses grow in the pond. It contains no enemies but bull-frogs.

FOOD.—I give the carp bread, potatoes, lettuce, cabbage, and wheat daily.

REPRODUCTION.—Several hundred young are in the pond. They measure from 4 to 9 $\frac{1}{2}$ inches in length. The original carp were stolen in August, 1882.

DIFFICULTIES.—A lack of water has been a great drawback to me in the cultivation of the carp.

987. *Statement of John M. Ferguson, Alderson, Monroe Co., W. Va., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—In 1881 I received 24 carp. They have been kept in ponds such as are usually found in a limestone country, in mill-dams, and in still water. The ponds are large and fed by rains. They never go dry. The mill-dams are on small creeks.

PLANTS AND ENEMIES.—Blue-grass and plants that are indigenous here grow in the ponds. Catfish, suckers, chubs, hard-shell turtles, and bull-frogs inhabit them.

FOOD.—I give the carp in the ponds corn-bread and refuse from the table and kitchen.

GROWTH AND REPRODUCTION.—The yearling carp are about 10 inches long; the old ones larger. Considerable numbers of small young have been seen in the pond this season.

DIFFICULTIES.—Turtles and small fish destroy the spawn.

988. *Statement of Rufus Houchins, Indian Creek, Monroe Co., W. Va., Sept. 14, 1882.*

DISPOSITION OF CARP RECEIVED.—I put the 1 dozen carp, 2 $\frac{1}{2}$ inches long, received the last of April, in a small pond covering $\frac{1}{4}$ of an acre.

GROWTH.—At the end of 4 months I drained my pond and found the growth of my carp to be remarkable. Nine of them are now 14 inches long, and 2, 12 inches long, one only being missing.

989. *Statement of Daniel Maxwell, Roney's Point, Ohio Co., W. Va., Aug. 6, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp in 1882. My pond is 30 by 50 feet, has a muddy bottom, and is 4 feet deep. It is supplied with a flow of from 1 to 2 inches of spring water.

PLANTS AND ENEMIES.—Swamp-grass, water-flags, and calamus grow in the pond. Frogs infest it.

FOOD.—Twice a week I give the carp boiled potatoes, corn-bread, and all kinds of small grain.

GROWTH.—Five of the original carp are known to be dead. On the 1st of June the carp were 6 inches in length. There are no young yet.

DIFFICULTIES.—I find it difficult to keep the screen clear.

990. *Statement of Levi Phillabum, Valley Grove, Ohio Co., W. Va., Sept. 8, 1883.*

GROWTH.—My carp did well until a rain broke my pond, when they got out, all except one, which I caught. It weighed 4 pounds and measured $16\frac{1}{2}$ inches.

991. *Statement of John K. Botsford, West Liberty, Ohio Co., W. Va., July 28, 1883.*

DISPOSITION OF CARP RECEIVED.—Two years ago I received 10 carp. My pond is 20 by 40 feet, has a loamy bottom, and is 5 feet deep. The temperature of the water, of which there is no great supply, is that of an open spring.

PLANTS.—Water-lilies grow in the pond.

ENEMIES.—Frogs, muskrats, and water-snakes infest it. When I put the carp in the pond there were about 150 gold-fish in it. I do not feed the carp.

GROWTH.—Last fall each of 4 original carp weighed from 1 to $1\frac{1}{2}$ pounds. I exhibited them at the fair grounds.

REPRODUCTION.—I have seen several schools of young of from 200 to 300 each. They measure perhaps $1\frac{1}{2}$ inches in length.

992. *Statement of Andrew Mann, Forest Hill, Summers Co., W. Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—In September, 1880, I received 7 carp, which I put in a pond 30 feet in width. It has a muddy bottom, is 2 feet deep, and is supplied with moderately cool spring water.

PLANTS AND ENEMIES.—Clover, timothy, and weeds grow on the edges of the pond. It is infested by bull-frogs and toads.

FOOD.—Once a day I give the carp wheat-bread, corn-bread, cabbage, lettuce, and clover.

GROWTH.—I have 6 of the original carp, each of which weighs about 3 pounds.

REPRODUCTION.—There are about 200 young in the pond. They will weigh about $\frac{1}{2}$ pound each.

SALES.—I have sold and given away about 150 young.

993. *Statement of P. F. Bartlett, Astor, Taylor Co., W. Va., July 26, 1883.*

DISPOSITION OF CARP RECEIVED.—The first lot of carp received were destroyed. On November 30, 1881, I received 20 more. My pond is $\frac{1}{2}$ of an acre, 7 feet deep, and has a muddy bottom. A flow of cool limestone water supplies the pond with 3 gallons per minute. In the pond it gets quite warm.

PLANTS.—Bulrushes, flat-blade grass, and willows grow in the pond.

ENEMIES.—Bull-frogs, snapping-turtles, snails, mussels, and lizards live in the pond. Crawfish let out the water by digging holes in the banks. No other fish inhabit it.

FOOD.—I give the carp corn-meal, wheat, cheese, and all kinds of bread.

GROWTH.—The 20 original carp vary in length from 12 to 18 inches, and weigh from 2 to 4 pounds each.

REPRODUCTION.—From 3,000 to 4,000 young are in the pond. They measure from $\frac{1}{2}$ to 3 inches in length each.

994. *Statement of E. T. Bartlett, Parkersburg, Wood Co., W. Va., Aug. 29, 1883.*

DISPOSITION OF CARP RECEIVED.—The carp which I received in November, 1880, I put in a pond 12 by 46 feet with a depth varying from 4 to 6 feet. It has a clayey bottom. Water enough to nearly fill a 3-inch pipe flows through the pond. The water passes through 2 trout ponds before it reaches the carp. The temperature of the water at the spring is 52° .

PLANTS.—The pond contains the plants that are indigenous here, and, especially, a vine which grows in an oval shape, and which is so buoyant that it eventually floats upon the surface of the water, disengaging its roots from the soil below. It is greatly admired by visitors.

ENEMIES.—Frogs, snapping-turtles, and a turtle resembling a land-terrapin inhabit

the pond. Bass and sun-fish got in through a hole that rusted in the screen. I have seen one or two dead carp on the surface.

FOOD.—Once or twice a day I gave the carp curd.

DIFFICULTIES.—The ravages of the black bass and the turtle was a difficulty with which I had to contend. It being almost impossible to keep the black bass, lake bass, sun-fish, and catfish out of the pond, I gave the carp to a neighbor. Carp and California salmon are the only kinds of fish that I have not been able to cultivate successfully.

995. *Statement of C. H. Shattuck, Parkersburg, Wood Co., W. Va., Mar. 4, 1884.*

DISPOSITION OF CARP RECEIVED.—Just a year since I received a lot of carp, and another lot subsequently, a total of 50 carp. I placed them in a small pond carefully inclosed by a tight board fence.

FOOD.—In the summer of 1883 I fed the carp.

GROWTH.—In October, 1883, I drained the pond and cleaned it, and found 39 carp in good condition, a few of them measuring 13 inches in length and none less than 10 inches.

MISCELLANEOUS.—I intend to keep the carp in the pond in which I first placed them, as they muddy the water too much in an ice-pond.

WISCONSIN.

996. *Statement of Joachem Schildhauer, New Holstein, Calumet Co., Wis., July 24, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in the fall of 1880. The pond is 50 feet square; has a muddy and sandy bottom.

ENEMIES.—It contains some frogs. The carp all disappeared the second season, and I think they were eaten by minks.

997. *Statement of A. J. Turner, Portage, Columbia Co., Wis., Aug. 1, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 3 dozen carp in May, 1881. They were put in Mud Lake, which is about 50 rods long, 10 to 12 rods wide, and from 4 to 8 feet deep. The water is quite warm in summer.

PLANTS.—It contains water-lilies, eel-grass, &c.

ENEMIES.—It contains frogs and turtles in abundance. We suspect the carp have become food for turtles. Nothing has been heard of them since they were put in.

998. *Statement of Anton Link, East Bristol, Dane Co., Wis., Aug. 11, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 15 carp in October, 1880, and 20 in November, 1882. I have 3 ponds; one, 16 by 16 feet; one, 30 by 50 feet; and another, 12 by 20 rods. They are about 6 feet deep, and the bottom is muddy and gravelly.

PLANTS.—They contain grass and water-lilies.

ENEMIES.—There are all kinds of wild fish in them, frogs, and turtles.

DIFFICULTIES.—I have spent a great deal of money with ponds and fishes, but have not had any luck with carp. I have not seen them since I put them in.

999. *Statement of Edwin Reynolds, Melomen, Fond du Lac Co., Wis., July 31, 1883.*

DISPOSITION OF CARP RECEIVED.—I received 20 carp June 14, 1881. My pond is 4 by 6 rods, of 5 or more feet in depth, and of soft clayey bottom. The spring at the west end of the pond furnishes about 6 barrels of quite cold water per hour, but the surface of the pond is quite warm.

PLANTS.—I have planted some English water-cress. There are two varieties of weeds in the pond, of which I send samples.

ENEMIES.—There are none except a few minks and a very small fish known as horned dace.

FOOD.—I have given them old bread, cooked potatoes, soaked grain, chopped lettuce, cabbage, sweet apples, &c.

GROWTH.—I saw nothing of them until July 5, 1882, when the full number of 20 came to the surface and a goodly number of small ones. They were from 12 to 16 inches in length, and were estimated to weigh 3 or 4 pounds each. I then fed them regularly every day, and could see that they increased in size very rapidly.

REPRODUCTION.—They are very busy during the spawning time running among the weeds and the little bayous. In the proper time small ones appeared in reasonable

numbers. Judging from the number of young carp that appear at or about sunset, I have somewhere in the neighborhood of 5,000. They measure all the way up to 3 or 4 inches.

DIFFICULTIES.—They hibernate in November, and fearing a severe winter I put straw and brush on the ice in December to protect them from freezing. In March I was disappointed to find that the pond was infested with minks, and several of the fish had been destroyed. I immediately set out to destroy the minks and captured 3. I found the partial remains of a number of carp on the ice, and in the spring took out 8 dead fish. I have not seen one since, and am satisfied that they were destroyed.

1000. *Statement of G. H. Kruschke, New Lisbon, Juneau Co., Wis., Dec. 2, 1882.*

REPRODUCTION.—The 20 carp received a year ago have spawned, and I have caught a number of young carp this summer.

1001. *Statement of Max Gruhle, Fillmore, Washington Co., Wis., Oct. 13, 1884.*

GROWTH.—Having lately fished our pond, we are able to report that our carp are doing well. Those planted last winter weigh from 2 to 3 pounds each, while those planted 2 years ago weigh as high as 5 pounds. They have not spawned this year. I have 3 ponds, the largest of which is an acre in extent.

1002. *Statement of Fred. Doering, Winneconne, Winnebago Co., Wis., Sept. 24, 1883.*

GROWTH.—The carp I received November 16, 1882, were then about 3 inches long. This spring they were about 5 inches long, not having grown much because of the severe cold weather; but they have made up for it this summer. To-day they are 12 inches long.

1003. *Statement of Fred. Doering, Winneconne, Winnebago Co., Wis., Oct. 25, 1884.*

DIFFICULTIES.—All but 3 of the carp received last fall were destroyed during the winter by muskrats. Those remaining are alive and doing well. We have drained the pond and killed the rats, and expect no further trouble from them.

MISCELLANEOUS.

1004. *Statement of G. B. Mobley, Eutaw, Greene Co., Ala., Nov. 8, 1880.*

GROWTH AND REPRODUCTION.—I received 21 carp November 14, 1879. On going to my pond this evening I found a number of carp that weighed from 2½ to 4 pounds. These fish spawned up to about October 22, and the number of fry hatched in May I estimate at 34,000. Thus it can be seen what an immense number of young must be in my pond when even those hatched in May have grown up and spawned. I think I have all the minnows that will be needed to stock all the ponds in this section of the State. Carp are beyond doubt the most prolific fish I ever knew, and their rapid growth is truly wonderful. Those hatched in May will weigh from 1 to 3 pounds.

DISPOSITION OF YOUNG.—I have already commenced stocking the neighboring lakes and ponds, and expect to finish before cold weather sets in.

EDIBLE QUALITIES.—I have never seen so good a fish to eat; they are simply delicious. I have had them cooked at the hotel where I board, and all who ate them said the carp is superior to any of our Southern fishes.

HOW TO CATCH CARP.—I have had very fine sport fishing for them the past week. Those taken with a hook were from 4½ to 6 inches long and weighed from ½ to ¾ of a pound each. Crickets and grasshoppers were the only bait I used, and at which they bit very rapidly.

1005. *Statement of J. C. Nicholson, M. D., Mount Meigs, Montgomery Co., Ala., Oct. 25, 1884.*

GROWTH.—I saw nothing of the 33 small carp planted in my pond in November, 1882, until yesterday, when one was taken, which, by actual weight, weighed 5 pounds, and was about 20 inches long.

HOW TO CATCH CARP.—The carp alluded to was taken with hook and line.

DIFFICULTIES.—The carp that I received in 1881 were all killed by craw-fish.

1006. *Statement of John B. Knapp, Stamford, Fairfield Co., Conn., Oct. 7, 1884.*

GROWTH AND REPRODUCTION.—I stocked Crystal Lake with leather carp about 4 years ago. A few days ago most of the water was drawn off for the purpose of repairing the dam preparatory to the expected ice-harvest. It was found that the lake was literally swarming with fish, the largest from 5 to 6 pounds in weight, and from that down to the size of the young of this season.

MISCELLANEOUS.—This is really an important incident in relation to the food supply. The experiment so successful here may be repeated indefinitely, and a new supply of excellent food-fish be available at a price within reach of all.

1007. *Statement of J. H. Post, Gainesville, Alachua Co., Fla., Dec. 8, 1884.*

GROWTH AND REPRODUCTION.—I have 5 large scale carp that were 3 years old last spring, and which now weigh from 6 to 8 pounds each. I have raised about 100 young from them this season.

1008. *Statement of A. S. Baldwin, Jacksonville, Duval Co., Fla., Dec. 18, 1881.*

DISPOSITION OF CARP RECEIVED.—Early in February, 1881, I obtained 12 carp and placed them in an inclosure in my pond. This inclosure was made of laths nailed closely together on scantling, with the lower ends projecting into the muddy bottom. Subsequently these 12 carp escaped into my $\frac{1}{2}$ -acre pond. In about 6 weeks after I planted the first lot of carp I procured 6 other carp, which I also deposited in the inclosure, having previously repaired it.

PLANTS.—In the pond there is a most luxuriant growth of vegetation, so much so that about every month I am obliged to have the pond raked so as to prevent a displacement of so much of the water. This surplus vegetation is thrown upon the banks and used in fertilizing my farm. Among the plants are sweet-scented white lily (*Nymphaea odorata*), common yellow pond-lily (*Nuphar advena*), water-shield (*Brasenia peltata*), water-nymph (*Najas flexilis*), 3 varieties of bladderwort (*Utricularia*), arrowhead (*Sagittaria natans*), and many other varieties whose names have not been determined. The cells of the *Utricularia* are full of black seed, which, probably, furnish food for the carp.

FOOD.—I fed the last lot of carp daily, while those that escaped into the pond were sustained only by the natural productions of it. They are very fond of sweet potatoes, cooked in any manner, and also boiled cabbage. There is a large quantity of muck on the bottom of the pond, that, no doubt, contains many small insects and other forms of animal life, which, with the seeds of aquatic plants, furnish them much food.

GROWTH.—My man informed me that while raking the pond last fall he captured 2 fish, which, from the description given of them, I think must have been carp. But as their size was so much larger than I supposed possible I was yet in doubt as to their identity. He did not show me the fish, but returned them to the water. I daily sought for them, and at length I discovered 2 fish swimming together near the bottom. They were each at least a foot long and were survivors of the first lot. I then began to feed them, and they would come and suck in bits of bread, &c., floating on the water. I then opened my inclosure and let the 5 remaining carp into the pond. Although I had fed the carp in the inclosure daily, and had not given the carp in the pond any artificial food whatever, the latter were double the size of the former. I do not know how many of the original carp are in the pond, but I think that all of them remain. Some of them are at least 18 inches long and weigh 5 pounds, while all of them are more than 12 inches in length.

REPRODUCTION.—For some time past I have seen numerous small fish swimming at the bottom, and, from their shape and manner of taking food, I have reason to believe that they are young carp. They are about 3 or 4 inches long.

HOW TO CATCH CARP.—I have taken, with a hook and line, 3 carp and put each of them back again. They were over a foot long and very heavy and solid. I tried to catch some of the young with small hooks, but both the bait and hooks were taken off by the large carp.

MISCELLANEOUS.—I believe carp are adapted to the inland lakes and streams of Florida. The only apprehension I have, is the voracious character of the fish that inhabit many of our ponds, but in my pond the carp command the situation. The cat and perch have almost disappeared, while months ago, whenever I threw food in the pond, they would come and eat it. But now, as soon as the carp approach, the cat instantly make way for them. The cat are not as plenty as in former days; for I have frequently been in the habit of catching them with hook and line. I suppose I caught over 200 during last spring and summer. I doubt not but that the cat will yet be exterminated. The carp have given no evidence of hibernating, and seem to care little for what food I throw in the pond.

1009. *Statement of John A. Houser, Fort Valley, Houston Co., Ga., Nov. 13, 1884.*

DISPOSITION OF CARP RECEIVED.—About the 1st of April I procured from G. W. Singleton, of Macon, Ga., 6 mirror carp averaging about $1\frac{1}{2}$ pounds in weight. At the same time I obtained from a stream near by 6 red-horse about the same size, which, with the carp, I deposited in a newly constructed pond covering over an acre and having a depth of over 4 feet in the center. This pond receives its supply of water from the rainfall only, which filled the pond about the 1st of April. Since then, however, the rainfall has been very slight, and at this writing the pond is nearly dry, there not being a sufficient amount of water in the pond to sustain the fish that are there. It has no outlet, nor does it need any for it never receives enough water to overflow its dam.

GROWTH AND REPRODUCTION.—A few days since I seined the mud-hole and procured 26 mirror carp, the young averaging a pound each.

HYBRIDIZATION.—When I seined the pond I got the 6 red-horse which I planted with the carp, and also took 100 fish which proved to be a cross between carp and red-horse. These hybrids weighed from 1 to $1\frac{1}{2}$ pounds. It is a scaly fish, being of a bright color, with gold-colored spots around its neck, and having a mouth similar to that of the carp. Its dorsal fin extends from the shoulder down. The pectoral fin and the anal fin are red, and bear a more striking resemblance to the corresponding fins of the red-horse than of the carp. Is it possible to propagate this hybrid?

1010. *Statement of H. H. Cary, M. D., La Grange, Troup Co., Ga., Oct. 16, 1880.*

DISPOSITION OF CARP RECEIVED.—About 700 carp, weighing about $\frac{1}{2}$ ounce each, were received in November last and distributed in small quantities to various parties in the States.

GROWTH.—So far as heard from, they have done remarkably well. One correspondent reported by letter received to-day that the fish deposited in his pond November 21, 1879, now weigh 4 pounds; others report the growth nearly as large. They are usually captured at a size of from 4 to 6 pounds, when they are at their best table qualities.

1011. *Statement of W. Foost, Fowler, Adams Co., Ill., Sept. 27, 1882.*

GROWTH.—My carp are all right and growing nicely.

1012. *Statement of J. H. Keen, Cairo, Alexander Co., Ill., Oct. 23, 1884.*

MISCELLANEOUS.—There is a leather carp in my pond weighing 7 or 8 pounds. Its body is partially covered with scales.

1013. *Statement of W. and O. Wilhelm, Florence, Stephenson Co., Ill., Oct. 21, 1884.*

DISPOSITION OF CARP RECEIVED.—A year or more ago we received 20 carp. Fifteen of them were placed in a pond near a large spring, and the remaining 5 in a pond below the first one, and fed only by a portion of the spring-flow. The 15 planted in the first pond subsequently died.

GROWTH.—The 5 carp have done well. Last week one of them measured $17\frac{1}{2}$ inches in length.

1014. *Statement of A. Shinkle, Covington, Kenton Co., Ky., Dec. 15, 1884.*

GROWTH AND REPRODUCTION.—The carp received in December, 1881, have multiplied greatly and have grown to a large size. I think some of the largest will weigh 15 pounds.

1015. *Statement of Joseph Barlow, Sykesville, Carroll Co., Md., Oct. 9, 1880.*

GROWTH.—The 10 scale carp received in May last were about 3 inches long. Three months after placing them in the pond, I was surprised to find them from 7 to 10 inches in length.

1016. *Statement of John Koogle, Myersville, Frederick Co., Md., Nov. 22, 1882.*

DISPOSITION OF CARP RECEIVED.—I placed the carp received 2 years ago in a small pond with others obtained elsewhere. Last spring I removed a portion of the carp from this pond to another small one.

GROWTH AND REPRODUCTION.—I drew off the water a few days ago and found my fish to be from 12 to 16 inches long. There are a number of young, which I estimate at 1,400. There are 3 sizes of young.

1017. *Statement of John Brooks, Princeton, Worcester Co., Mass., Nov. 9, 1884.*

GROWTH.—I find that 12 of the carp received last season have attained a length of from 10 to 12 inches, and that they are as large as the fresh mackerel that are peddled from carts in this city.

1018. *Statement of Charles Dudley, Jackson, Hinds Co., Miss., Dec. 18, 1881.*

DISPOSITION OF CARP RECEIVED.—There were 12 carp placed in a pond at the lunatic asylum in December, 1880. The bottom of the pond is composed of black mud for a depth of about 3 feet. The water is very muddy.

ENEMIES.—A barrel of dead catfish and sun-perch have been taken out of the pond.

GROWTH.—One of the inmates of the asylum saw the carp in the pond and killed them. They were 19½ inches long, and weighed 3 pounds.

1019. *Statement of Lucius L. Bridges, Sedalia, Pettis Co., Mo., Apr. 19, 1881.*

DISPOSITION OF CARP RECEIVED.—As all the ponds in this vicinity were frozen over when I received my consignment of 20 young carp, I deemed it advisable to keep the fish until spring before planting them. To this end I constructed a tank or vat of yellow pine, 4 feet in length by 2 in height and depth. I covered the bottom with loam to a depth of 3 inches, and then filled it with water from Flat Creek. I caused the vat to be steamed for three days, so as to thoroughly remove all the sap from the lumber, and I then placed it in the basement of a building.

When received the carp were from ½ to 5 inches long. Fearing that the wintering of the carp in the manner described might prove a failure, I caused the 8 carp remaining to be placed in a couple of ponds in this county, 4 in one and 4 in another. Holes were cut in the ice, and the little fry were set adrift beneath their frosty covering. I learn from the proprietors of the ponds that they are alive this spring. Yesterday, I planted in a park contiguous to this city the 12 carp which I wintered in the vat. The pond is a new one, covering about 3 acres in extent, and varying from 3 to 10 feet in depth. It is supplied with water from Flat Creek, by means of the city water-works, and is not liable to go dry nor overflow.

FOOD.—Before planting the carp I scattered a peck of corn-meal and cracked wheat over the water at the place of deposit. It, of course, sank to the bottom, and as the pond is motionless, it is presumed that it will remain there for a long time, as a bed to which they can resort for sustenance. I gave directions that food be supplied at regular intervals, and always at the same place, so as to accustom them to a regular feeding place.

1020. *Statement of S. S. Hutchinson, Milford, Hillsborough Co., N. H., Nov. 24, 1881.*

GROWTH.—As I had not been able to discover but 2 or 3 of the 20 carp that were received November, 1880, I thought a snapping-turtle, which I discovered in the pond last spring, had destroyed the remainder. I have, however, lately seen 11 of the original carp, which appeared to be fully 10 inches long. These fish have received no food other than the natural resources of the pond.

1021. *Statement of Rev. John H. Brakeley, Borden town, Burlington Co., N. J., Dec. 4, 1884.*

GROWTH.—I drew the water from my ponds last October to ascertain the condition of the adult carp that were received in 1881, as well as their increase. I found that the adult carp, which averaged 4½ pounds last year, had grown but little during the past year, having gained on an average only 10 ounces. The 15 young fish, however, now 2 summers old, had attained an average weight of 2½ pounds; the largest weighed 3 pounds. Some adult carp which I had in a 2½-acre pond attained an average weight of 6½ pounds from 4½ pounds the year before. The largest of these weighed 7½ pounds.

REPRODUCTION.—In addition to the 12 adult carp, I found in the ¾-acre pond 2,145 young carp from 3 to 6 inches in length. My adult carp commenced spawning May 13. There were 480 young taken from the large pond, some of them being 9 inches long. When the adult carp commenced spawning May 13 they made a great commotion in the water by their rapid motion through it near the surface. The spawning continued at intervals until July 18. As early as July 18, I discovered a few young fish feeding in the margin of the pond, and on the 28th I captured 2, in a fyke, then 2 inches long.

1022. *Statement of Richard Smith, Parsippany, Morris Co., N. J., July 24, 1883.*

DIFFICULTIES.—I received 50 carp from Mr. Stone, of Morriston, about two years since. Very soon after I had put them into my pond the dam broke, and I consequently lost them.

1023. *Statement of T. V. Smith, Sharon Springs, Schoharie Co., N. Y., Jan. 15, 1881.*

GROWTH.—In May last I planted 5 carp in my pond. One of them was caught last fall and found to measure $12\frac{1}{4}$ inches in length.

1024. *Statement of Theo. Kimmel, Salem, Forsyth Co., N. C., Dec. 4, 1884.*

DISPOSITION OF CARP RECEIVED.—About a year ago I planted a lot of carp in a pond 75 by 180 feet, with a depth of from 2 inches to 5 feet, but they subsequently died. While seining in a mill-pond May 3, 1884, I caught a carp that was 6 inches long and placed it in my pond. About September 1, 1884, I procured a dozen young from 3 to 6 inches long, that were hatched the preceding May, and also placed these in the ponds.

GROWTH.—On draining my pond June 28, 1884, I found the carp planted May 3d to weigh 3 pounds. I also drained the pond November 8, 1884, and found my large carp to weigh 8 pounds. The small carp had attained a length of from 8 to 12 inches.

1025. *Statement of W. K. Hunter, Rolesville, Wake Co., N. C., Apr. 29, 1881.*

GROWTH.—I drained my one-acre pond April 19, and found the 20 carp to be $\frac{1}{2}$ larger than when they were planted March 7, 1881. Some think that they are fully as large again. For so short a time this is remarkable growth, and I deem it worthy of note.

1026. *Statement of Kemp Gaines, Springfield, Clarke Co., Ohio, Dec. 30, 1884.*

DISPOSITION OF CARP RECEIVED.—The mirror carp were received in good condition in November, 1884, and were planted in the pond with the carp received in 1880.

GROWTH AND REPRODUCTION.—I still have 12 of the carp received in the fall of 1880. I did not weigh them this fall, but ascertained that they measured from 28 to 30 inches in length. Since the fall of 1882 I have furnished spawners and young fish to stock 84 ponds. Applicants for fish this season got all they wanted, some taking as many as 40 spawners with mates, and young fish by the hundred.

1027. *Statement of W. E. Walters, Chagrin Falls, Cuyahoga Co., Ohio, Oct. 1, 1884.*

EDIBLE QUALITIES.—Last Saturday I presented 3 carp to the editor of the Chagrin Falls Exponent, who has published the following report upon them: "Three fish, weighing about half a pound each, were fried and served for dinner. In quality they equal any we have ever eaten, excepting only brook trout. The texture is fine and firm, and there are no bones excepting the back-bone and the usual attachments, as in the case of a black bass or whitefish. The flavor resembles that of a rock bass or perch more than any other fish with which we are acquainted. The slightest muddy taste was not discovered, although the pond in which they were grown has a muddy bottom. It is probable that the quality of these little fishes was better than that of a larger individual; but we are entirely satisfied that the quality of the fish will satisfy the most exacting, and that the most of people will be happily disappointed when they eat their first carp."

1028. *Statement of Seth Gifford, West Elkton, Preble Co., Ohio, Oct. 27, 1884.*

GROWTH.—Last August I discovered one of the 6 mirror carp which were deposited in my pond in November, 1883. It was about 16 inches long. I fear that this is the only one that has survived.

1029. *Statement of J. F. Hempstead, Twinsburg, Summit Co., Ohio, Oct. 1, 1884.*

GROWTH.—I placed in my pond last year some carp fry, then not over an inch long. They were hatched in the summer of 1883. I recently weighed one, which tipped the beam at 3 pounds and 10 ounces. How is that for a yearling.

1030. *Statement of C. M. Ingram, Glen Hall, Chester Co., Pa., Sept. 20, 1884.*

GROWTH AND REPRODUCTION.—I obtained 20 carp November 29, 1882, and January 26, 1883. They are now 20 inches long, and a great many young are to be seen in the

pond; in fact, the old pond is full of them. I have built another pond near it covering $\frac{1}{4}$ of an acre, and I also purpose building a third one.

GROWTH AND REPRODUCTION.—Writing subsequently under date of November 21, 1884, Mr. C. W. Ingram says: "I received 40 carp in December, 1882. There are in my pond 25 leather carp weighing from 4 to 5 pounds each, and about 5,000 of this year's fry."

1031. *Statement of Fred. Kunze, Cornwall, Lebanon Co., Pa., Oct. 22, 1884.*

GROWTH.—I have 14 carp remaining of the lot received several years ago. They weigh from $1\frac{1}{2}$ to 2 pounds, 2 of them turning the scale at the latter weight.

1032. *Statement of B. Short, Chatham Valley, Tioga Co., Pa., Nov. 18, 1884.*

FOOD.—I feed the carp on wheat kernel, boiled potatoes, and millet-seed.

GROWTH AND REPRODUCTION.—I received 4 carp April 18, 1883, and planted them in a pond covering about $\frac{1}{4}$ of an acre. At that time the fish weighed less than a pound each, while 2 fish I caught September 18, 1884, weighed $5\frac{1}{2}$ pounds each—a growth of $4\frac{1}{2}$ pounds in 17 months. I am unable to state the exact number of young, but I estimate it at 1,000. They are now 8 inches long.

1033. *Statement of R. J. Donaldson, Georgetown, Georgetown Co., S. C., Dec. 1, 1884.*

DISPOSITION OF CARP RECEIVED.—Of the 19 adult carp which I received April 12, 1884, I lost 3 shortly after their arrival, these being sick at that time. During the summer I lost 3 more. The season was very favorable and the pond full of grass, lilies, &c. There is a continual supply and flow of good, fresh water all the year.

ENEMIES.—With a dip-net I have taken hundreds of small menhaden, bream, &c. Four weeks ago the watchman saw a half-grown alligator going into the pond from the canal. He set the trap and remained at the pond a day and a night. The following morning the alligator was caught. On opening, I found in him a fine, whole carp, very fat.

DIFFICULTIES.—To my great surprise I cannot find any young carp, although it is just possible there may be some in the pond. All surroundings pointed to a large amount of spawn, and I can only account for no young upon the theory that all the adults were males. The one caught by the alligator and one that jumped from the pond in the night and died, were males containing a large quantity of milt.

1034. *Statement of R. L. Bouton in behalf of John Low, Saulsbury, Hardeman Co., Tenn., Dec. 6, 1884.*

DISPOSITION OF CARP RECEIVED.—The 20 carp sent me in 1879, Mr. John Low planted in an artificial pond, 50 by 100 feet, with a depth of 10 to 12 feet in the middle. No water flows through the pond.

PLANTS.—Some water plants grow in the pond.

ENEMIES.—The pond contains no other fish, frogs, turtles, &c.

FOOD.—The carp are fed on corn-meal. I was at the fish pond October 9, 1884, in company with Mr. John Low and Mr. H. Wright and saw the fish fed. Mr. Low struck the plank fence a few raps and then the water, when the fish began to come from deep water for their food. As I sat in a chair at the brink of the water I could see the carp at a distance of about 50 yards swimming near the top of the water. They fed not 2 yards from my feet, and ate the corn-meal like pigs do shelled corn.

GROWTH AND REPRODUCTION.—I cannot state the number of carp, nor the number of young there has been produced; but there are carp in the pond all the way up to 10 pounds.

EDIBLE QUALITIES.—I have eaten plenty of carp fried, and found them very good food.

1035. *Statement of M. T. Peebles, Johnson City, Washington Co., Tenn., Dec. 4, 1884.*

DISPOSITION OF CARP RECEIVED.—I received an assignment of carp in December, 1882, but all but 4 subsequently died. I also received some mirror carp in December, 1883, but all of them perished, having evidently been injured during transit. To the 4 carp remaining of the lot received in December, 1882, I added 14 other scale carp in July, 1883. I have also received 20 mirror carp on the 24th ultimo, which I have hope of saving. None have died thus far.

REPRODUCTION.—The 4 remaining carp of the lot planted in December, 1882, gave an increase of 20 in July, 1883, under very unfavorable circumstances. Twelve of the 20 carp hatched in July, 1883, were wintered, by way of experiment, in 14 inches of water under a covering of moss, and in July, 1884, they gave a limited increase, as the others had done in July, 1883. The 14 scale carp planted in July, 1883, produced several thousand young in May, June, July, and August, and so distinct and well defined in size as to leave no doubt on the mind of the observer as to their age.

From the 2 experimental tests to which the carp have been subjected, I am fully satisfied that when spawned and hatched naturally they will always give an increase in the latitude of Tennessee at the expiration of 12 months from the time they are hatched, if kept under favorable circumstances. The increase will not be great the first year; nor will it be great the second and third years as compared with the same kind of fish at the age of 5, 6, or 7 years.

Fifty carp that were hatched last July, I am now keeping in a pond by themselves for the purpose of determining as nearly as possible what the increase is in the first year.

1036. *Statement of C. W. Rummel, Round Top, Fayette Co., Tex., Nov. 12, 1884.*

ENEMIES.—On drawing off the pond we found a hard-shell turtle and some catfish.

GROWTH.—One year ago I received 12 small carp. To-day I found 3 only, but they had grown to be from 16 to 18 inches in length.

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