

**NOTES ON McCLOUD RIVER, CALIFORNIA, AND SOME OF ITS FISHES,
BASED UPON A LETTER OF J. B. CAMPBELL, OF THE UNITED
STATES FISH COMMISSION.**

McCLOUD RIVER, SHASTA COUNTY, CALIFORNIA, *May 6, 1881.*

Prof. SPENCER F. BAIRD,

U. S. Commissioner of Fish and Fisheries, Washington, D. C.:

SIR: The United States Fishery is established, one and one-half miles from the junction of the McCloud with the Pitt, in a rough and mountainous country culminating in high limestone peaks on the east. Four miles above the fishery is the trout-rearing establishment, of which Mr. Myron Green is superintendent. East of the trout pond is a small creek or brook, running between limestone peaks. Three miles from the trout pond, and on the west side of the river, is a small farm belonging to Henry Mirey. One mile above Mirey's place is the home of the writer, consisting of a nice orchard and garden on the east side of the river, together with a beautiful creek that does not vary more than 4 degrees during the winter, and ranges from 53 to 57 degrees during the summer. For the next 65 or 70 miles there are neither white men nor Indians. There is a mill branch in summer, but none in winter. The entire country is mountainous. The river is very rapid. The temperature of the water at the United States Fishery, in the summer, is from 55 to 60 degrees at midday in the hottest weather. From the fishery up, the river gets one degree colder in about every 10 or 12 miles for the distance of 65 or 70 miles. There is a large spring that breaks out in the bed of the river, forming more than two-thirds of its volume. From there up the water becomes very warm, from 60 to 70 degrees. About three miles from the spring begins a series of three falls, each of which has a descent of about 50 to 60 feet, and is about two miles from the next. Under these falls there are a great many trout. I have caught one hundred in less than two hours. They are smaller than those lower down, averaging about one-half pound to one pound in weight. From these falls up, the water is quite still and sluggish (with the exception of about half a mile just above the falls, where it is very rapid) for many miles, traversing a lava country. There are plenty of trout above, and they are much larger than those below the falls, averaging about 8 to 10 pounds. Through seven miles of this sluggish water there are few trout, but as the water becomes more rapid small brook trout are plentiful. The river is about 130 to 140 miles in length, more or less, I should judge, but it has never been measured. Trout inhabit the river to the head-waters.

I will now endeavor to give you a description of some of the McCloud River fish, beginning at the mouth of the stream.

The first is known as the "rifle pike." Its color is darkish brown. It

has a small mouth and a comparatively small head. The flesh is very solid, but rather full of bones; yet the fish is considered excellent for the table. The "rifle pike" is found in the river through the last four miles of its course. It becomes very fat, and weighs from 2 to 5 pounds.

The second is called "whitefish." This splendid fish is so-called because of its white flesh. It prefers sluggish water, although I have seen it in rapid water about twelve miles above the mouth of the river. The "whitefish" has a large mouth and a very large head. The examples that I have seen varied from 4 to 28 pounds in weight, but larger ones have been caught.

The third is the "dolly varden" or "wye-dar-deek-it," a beautiful trout with golden spots on the back and sides, and with scales so small as to be hardly perceptible to the naked eye. The mouth is big and the head is large and not beautiful. The flesh is invariably red—a cherry red. It weighs from 2 to 15 pounds. It frequents the river from the junction to the spring, there being none above the spring and few near the river mouth. If one takes hold of the "dolly varden" it slips away nearly like an eel.

The fourth is the sucker, which inhabits the lower twelve or fourteen miles of the river. It reaches as much as 3 to 5 pounds in weight, averaging about 1 pound.

The fifth is the red-sided trout, or, as it is called in New York, the rainbow trout. I will mention only its habits, as you have undoubtedly seen many of them. It feeds almost entirely on the bottom of the river, but will take a fly through March, April, and part of May, as the river is then literally alive with insects. It also feeds on salmon eggs when the latter begin to spawn, and on old dead salmon, at which time it becomes very fat, and will rarely take a hook. It feeds very little during the spawning season, which is in the winter, from January 10 to April, and sometimes until May 1. Rainbow trout run up the small streams to spawn, sometimes; but the majority of them spawn in the main river. They spawn invariably on gravel beds, digging a small round hole in the gravel to correspond with their own lengths. The male accompanies the female, and lies close to her side, and when the female deposits her ova the male ejects his milt. They commence feeding immediately after spawning. I have caught them weighing two and one-half pounds. I could give you full details of their spawning, but I have not space.

The sixth is a bull-head, from 1 to 3 inches in length. It is very destructive to salmon spawn and the little salmon while they retain the umbilical sac.

Any time you should desire further particulars, send me a letter and I will answer it with pleasure. I have been writing to Seth Green for over two years, and have given him full particulars concerning the fish of this region and their habits.

If you want to know how the McCloud trout thrive in New York you

can apply to him, as I have supplied him with all that he has got from that river. He took some spawn from them this season.

I omitted to state that the "dolly vardens" are very destructive to other trout, or any kind of fish. They spawn in September and November. Their eggs are about one-half the size of those of the common trout. The fish are very difficult to obtain. They will live in a small place where the common trout would not. I have kept them in a pond, about 6 feet square, for a month, where the common trout would kill themselves in a short time. They appear to be more hardy. I have watched the salmon and the trout during their spawning more than any other man in this part of the country, as I have fished a great deal, and have been fishing longer than any one who takes any interest in the matter. I came here in 1855; I have caught hundreds and probably thousands.

J. B. CAMPBELL.

[NOTE.—The species referred to in Mr. Campbell's descriptions are the following: "Rifle Pike," *Gila* sp.; "Whitefish," *Ptychochilus oregonensis* (Rich.) Ag.; "Dolly Varden," *Salvelinus malma* (Walb.) Jor. & Gilb.; "Sucker," *Catostomus occidentalis* Ayres; "Red-sided Trout," *Salmo irideus* Gibbons; "Bull Head," *Uranidea* sp.—EDITOR.]

THE ORIGIN OF THE MENHADEN INDUSTRY.

By CAPT. E. T. DEBLOIS.

[NOTE.—In the following article, Captain DeBlois has thrown new light upon several long mooted questions, especially the date of the discovery of the value of menhaden oil, the origin of menhaden oil manufacture; the application of pressure in the manufacture of fish oil, and the invention of the purse seine, besides placing upon record an important series of observations upon the growth of the menhaden fishery within the past half century.—G. BROWN GOODE.]

In 1811 two men, one by the name of Christopher Barker, and the other John Tallman, commenced the business of making oil out of menhaden fish, with the use of two iron pots, upon the shore, a few rods south of what was then called the Black Point wharf, near Portsmouth, R. I. They boiled the fish in the pots or kettles, and bailed the fish and contents into hogsheads, putting on top the fish in the hogsheads pieces of board with stones on top, to press the fish down so that the oil would come on top, and also in order that the oil could be skimmed off. A man by the name of John Hunt was the oil man who skimmed off the oil, and put it up in barrels for market. It was sent to New York to market by a house or people that were doing business in Newport, R. I., by the name of Munroe, who were in the West India trade.

Barker & Tallman, it seems, found the oil business to be profitable, for in 1814 they added two more pots to their business, and the same fall two other men commenced the same business, by the name of Munroe, very near Barker & Tallman's works. The business was carried on