

MONTANA FISHING STREAMS UNEQUALED FOR SPORT WITH ROD; HOW HATCHERIES OPERATE THAT SUPPLY MILLIONS OF TROUT

Within a few weeks the first of 3,000 baby trout will open their eyes to the beauties of western Montana streams, when the state hatchery at Anaconda releases the early arrivals from the eggs collected far and wide during the fall.

Soon their companions will follow them from the protecting security of the hatchery's cement troughs to the turbulent mountain streams, where they will fight for existence against the marauding cannibals of their own race, the appetite of birds and beasts of the land and finally they will match their wits (or whatever a fish has in place of wits) with the deceptive skill of a man on the end of a line.

Notwithstanding the numbers of the finny family that are jerked unceremoniously from their favorite element by the cunning devices of civilization, by far the greater number perish through the natural tragedies that lurk behind every boulder in the streams. Without the artificial stocking of streams, the fish so familiar to Montana sportsmen today would be known only from their pictures, unless it were in a few practically inaccessible places, and these are few.

Nature intended Montana streams a paradise for fish as well as for fishermen, and nature provides fish enough to battle against her forest tragedies, but she did not provide to replenish her streams with fish sufficient to satisfy the demand of the anglers who by the thousands follow the watery trails each Sunday and holiday the weather will permit. At present fishing is confined almost entirely to lakes, where those who care more for the fish than the sport of

treatment. The fish he has trained were just as wild as any in the open streams when Gorham first saw them last August.

Fish Do Understand
But Gorham does not train all the fish in the hatchery. He has not the time. In his charge at present are more than 3,000,000 potential fish and they require constant vigilance of the most painstaking kind. In spite of the care demanded by his charges, Mr. Gorham is not always too busy to show the curious some interesting sights in the hatchery—some sights that give a fair explanation of why the trout will still be biting in western Montana streams in years to come. To the uninitiated, the rearing of millions of fish gives rise to innumerable questions, but the writer could find no question he could not answer.

"Nature knew what she was about when she equipped a female fish to lay a thousand eggs," he explained. "She knew that through her generous methods of operation she would be fortunate were she to conserve or even hatch more than a very small per cent of those eggs."
Only 10 or 15 per cent of the eggs deposited on the pebbly beds of the streams or lakes, hatch, Gorham estimates. After this discouraging effort at reproduction on a large scale, the members of the family that wiggle out of their eggs diminish rapidly in numbers during the first weeks of their existence, so that instead of 1,000 offsprings as planned, the mother trout, if she is watching, may see not more than two or three score of her family, find their way into anglers' baskets.

In the fish hatchery the story is quite different. Considering the



Bill Vogt, champion caster, about to make a cast.

of those who are not familiar with them, but they can be distinguished by the expert. The locality from which they come and the food in the water has a marked effect upon the color. The usual colors are gradations of pink blending sometimes to amber and also to blue.

The Anaconda hatchery obtains its supply of eggs, in as far as possible from the open streams. Traps are maintained at Georgetown lake and Stuart's mill and from these sources Dr. I. H. Trece obtained the local supply last fall. George town lake contributed 310,000 and other sources about 100,000. Commercial dealers in Massachusetts furnished about 2,500,000 eggs. The regular price for eggs through these dealers is \$1 a thousand. The dealers raise fish for the market and the eggs they obtain and sell to hatcheries which mean just so much "velvet" to their businesses.

Of course to count millions of eggs is an impossible task, but much of the work is eliminated.

The commercial dealers usually count the number in a few ounces and use this count for the basis of estimating the lot, for the sizes of eggs vary greatly. The state hatchery uses the Von Bayer system by which the count is taken in a miniature trough of the eggs that will lie on the bottom. A curve chart further facilitates the matter and the eggs are thus speedily counted by the thousand or million. The eggs number from 250 to 500 to the ounce.

Through the aid of cold storage, eggs have been sent abroad as far as Russia and Canada has been a good customer. Commercial fish raising in the west has attained very small proportions, due to the absence of large markets, and so the eggs are not for sale in the west.

Last Year's Record
This hatchery planted last year more than 14,000,000 fish of several varieties and may do better this year by the time the spring varieties come in. Last year eastern brooks numbering 2,535,500 were planted in the streams as well as 9,513,500 grayling, 1,714,000 cut throat, (native) trout, 251,500 rainbow trout and 30,000 little red fish, a species of salmon.

In long, narrow cement troughs in which are arranged trays with screen bottoms, the eggs are placed for their period of incubation in the hatchery. Water from a natural stream is fed into each trough to keep a fresh supply always and the eggs are disturbed as little as possible. They are sheltered from the direct rays of the sun, which would be fatal to them. Every precaution is taken to shield them and the troughs are kept in the most sanitary condition possible.

When eggs are received from dealers they already "eyed-out," but if they have traveled far some have already died en route and turned white. To facilitate the work of segregating the good from the bad eggs, a long trough is provided, by which a dozen persons may stand and work. The eggs may be placed in the trough by one worker as rapidly as the others can remove the bad ones. They are removed either with tweezers or glass syringes. Mr. Gorham with Dr. I. H. Trece and E. B. Basset, assistants, handle the work of the hatchery at present.

Trout Are Particular.
Stocking the streams with companionable species is the aim of the department, since it has been found that the trout is most particular about his associations. The bull trout or "Dolly Varden" is allowed to match his wits with the eastern brook, the rainbow and black spotted or the grayling and black spotted are encouraged to associate in other streams.

Fish when young are extremely delicate creatures and especially in this true when they are hatched by artificial aid. They are subject to as many, if not the same, ailments that visit the human baby.

After the fish hatch they pass through a period of six weeks when they are said to be in the sac-stage. They require no food to sustain them during the critical period, but they do require attention and lots of it. They hunt the dark corners and crevices and would smother themselves to death if allowed to have their own way. They live on the

content of the sac and when this is absorbed, they rise and are ready to feed.

They Eat Hourly.
Every hour they are fed beef liver, chopped extremely fine and just like the human baby, they are fed exactly the right amount or they will become ill. Gill fever and fungus and dropsy are some of the names applied to the ailments of the baby fish.

Scrupulous care is taken to keep the troughs in the most sanitary condition to avoid infection. Daily they are cleaned to rid them of the unused food and slime that tends to accumulate. The troughs are painted throughout and the whole hatchery presents an attractive appearance as any laboratory.

Bringing up a fish in the way it should go is not merely a matter of watching it develop, but appears quite as important to the fish's future as it is to the future of the boy that his parents obey the biblical injunction to "bring up a child in the way he should go." The infantile organism is no sooner out of his shell than he gives evidence of his intelligence by assuming some very near human characteristics. If coddled he becomes "spoiled," and too indolent to search for food. He will overeat if he can and gormandizing produces a disease that would probably be termed gout if he had big toes in which to exhibit the symptoms.

Teaching Them to Eat.
"It is of vital importance that the little fish learn how to eat on the start," Mr. Gorham explained. "The little fish develops habits rapidly and as soon as he can take food he should be given it properly, just as in the case of the child. If the fish is neglected, his growth becomes stunted

and pure apple vinegar is sometimes used in the water as cures for the diseases. Those in charge of the fish hatchery find plenty to do from the time the eggs are deposited in the trough and as the fish develop the work increases.

Care Is Ceaseless.
Not until the little fish are finally deposited in the stream does the care suspend, for they must be taken to the stream with as great caution as they were fed in the troughs. When they are sufficiently developed to launch out for themselves, they are placed in 10-gallon steel milk cans that may contain from 500 to 3,000, owing to the age and size. To prevent them from smothering in water that becomes stale, for they consume the oxygen rapidly, the water is stirred up by use of a dipper. The water is cooled by ice and must be kept at a temperature within five degrees of the temperature of the stream. At the stream the temperature is brought to as near the temperature of the stream as possible.

Value of Nurseries.
In some places nurse ponds are in use but fish men appear to be at variance as to their real value in conserving the little fish. The nurse pond is used to care for the fish until he becomes a fingerling. Some argue that the fish raised by hand to this age is in a better position to begin life in the natural stream, but this is met with the argument that the little fish, if pampered too long, may become a "spoiled child," depending upon human assistance for his food. He has not learned to know the dangers of association with large fish. Gorham believes nurse ponds in connection with hatcheries,

who have a day or more to spare and of course the trout have suffered."

The Largest Hatchery.
The Anaconda ranch is the largest operated by the state fish and game commission. It contains 60 cement troughs, each capable of holding 50,000 trout fry each, but as they grow, it becomes necessary to thin them out several times. They will hold many more grayling fry.
Other state hatcheries on which Superintendent Brunson reports are located at Dearborn, Emigrant, Lower Madison (temporary), Somers, Salmon lake, the federal hatchery at McAllister and traps at Heben dam. A summary of his report for the biennial period 1919-1920 shows distribution as follows: Anaconda, 22,812,200; Emigrant, 1,809,500; Heben dam and Lower Madison, 5,703,800; Somers, 9,952,200; a total of 39,647,700.

EGGS BEING USED FOR POKER STAKE

FARMERS OF THE BILLINGS DISTRICT DISCOVER NEW USE FOR HEN FRUIT

Game Was Formerly Penny Ante but When Money Became Scarce Rural Gamblers Turn to Eggs; Winners Would Take Eggs to Town and "Cash In."

Eggs have served an entirely new purpose in a farming district near Billings that has been hard hit in the last few years. The use made of them proves the ability of the residents of the district to adapt themselves to circumstances.

It had long been the habit of the farmers of this neighborhood to gather for a "little game" of poker. In the old days it was penny ante. Then evil days fell upon the players and there were no more pennies to ante.

There was a genius among them, however. He suggested "egg ante." All of the members arose and called him blessed. The games went on. Nightly the farmers gathered with the eggs gathered for the day, and first one farmer and then the other would drive to town and "cash in" on his night's work.

Three or four of the farmers started to town the other day, each bringing eggs for a city friend. It was inevitable that a game should start. When town finally was reached two of the players went to grocery stores and bought "strictly fresh ranch eggs" to take to their friends.



An Hour's Catch on a Good Montana Stream

catching them, find plenty to attract.

Fish Find Hard Life
It is because of the demands made from so many sources upon the lives of the trout, grayling and whitefish that the fish hatcheries of the state are working overtime, hatching fish to stock the streams. In charge of the affairs of the Anaconda branch is a man who not only has spent his mature years hatching, raising and studying fish, but who has learned to train a fish to do his will.

In the tanks of his workroom, W. B. Gorham has several pets which will respond to taps of his fingers and motions of his hands in the water. They will eat from his hands with as little concern as they nibble at the food thrown into the water.

The popular impression that a fish has no intelligence is all a mistake, according to this fish culturist, and to prove it he shows the visitor what an intelligent fish can do. His fish can not talk but they show that they appreciate kindness and intelligent

green eggs are 80 per cent good, as many as 95 per cent of the eggs taken can be hatched by the culturist, it has been found, Gorham estimates.

Thus the year's family of a single mother trout may range between 750 and 1,000, through the aid of the hatchery. Dealers and fish men estimate that a fish weighing one pound will produce 1,000 eggs.

"Like the poultryman, the fish culturist can never afford to count his 'chickens' before they hatch," he said, "but with modern methods and the right care, the loss has been reduced to a minimum. Some eggs will 'die' through faulty handling, for they are very delicate, and some will not hatch because they are not fertile, but we can aid nature many-fold and that is just what we are doing, when we collect eggs and incubate them."

Eggs Are Gathered
The eggs of the different varieties of trout and associated game fish resemble each other closely to the eyes



Playing with three and one-half pound Rainbow trout on a Montana trout stream.

ed and he might forget how to eat. Once his growth is stunted, he never recovers from it and will never catch up in weight with the fish that was fed properly from the first day.

"In the natural stream the fish feeds, when young, on microscopic organism which it is impossible to supply him in the hatchery, and of course the greater part of the fish in the stream get the right start. In the hatchery we must supply him with the best substitutes at hand.

"Too much feeding is as erroneous as too little. As the fish grow older the feeding periods can be lengthened but their appetites become keener at meal time and then they might overeat if given a chance. If allowed to consume too much liver they may swell up and die. Even before they leave the sac stage, they may develop spot disease, a fatal ailment which appears to be due to congealing of the oil globules in the sac."

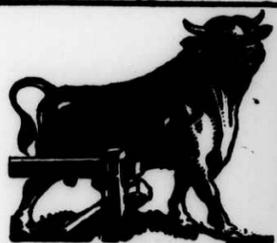
Delicate as Babies.
When one hears that little fish are subject to dropsy he expects to learn next that they may catch colic, whooping cough and measles. It makes them almost human. Dropsy is merely a swelling of the sac. Care is taken also to avoid an excess of slime on the fish. Science has discovered methods of combating the diseases of the tender little creatures,

where they will receive certain care are valuable assets.

Nature Protects Variety.
The varieties of trout seldom cross breed in their natural state, students have decided and when they do, the productivity of the offspring is greatly lessened. The popular impression with sportsmen is to the effect that "mules" as the half-breeds are called are sterile. This is true, it is not strictly true in the case of the first generation, although the chances are slight that these fish will reproduce.

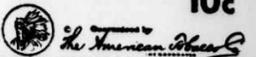
Likes Our Fish.
Concerning the introduction of new varieties of trout in the state, Mr. Gorham believes it is not advisable. The kinds of fish found in Montana streams are ideal, he believes.

"The rainbow and black spotted trout are most excellent table fish—as good as any in the country," he declares. "Anglers who have never fished out of the state do not realize fully what is theirs, and with proper care the numerous wonderful angling streams can be kept productive. The anglers are numbered by the hundreds and as a rule I believe they have keen interest in the welfare of their fishing places. The far away spots in which the fish once found sanctuary, are no longer remote. The use of scores of automobiles has made them easily accessible to those



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