Prize Fishing Contest—Conditions and Prizes in This Issue

Field & Stream

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"In the Land of the Sladang"
By
EDISON MARSHALL

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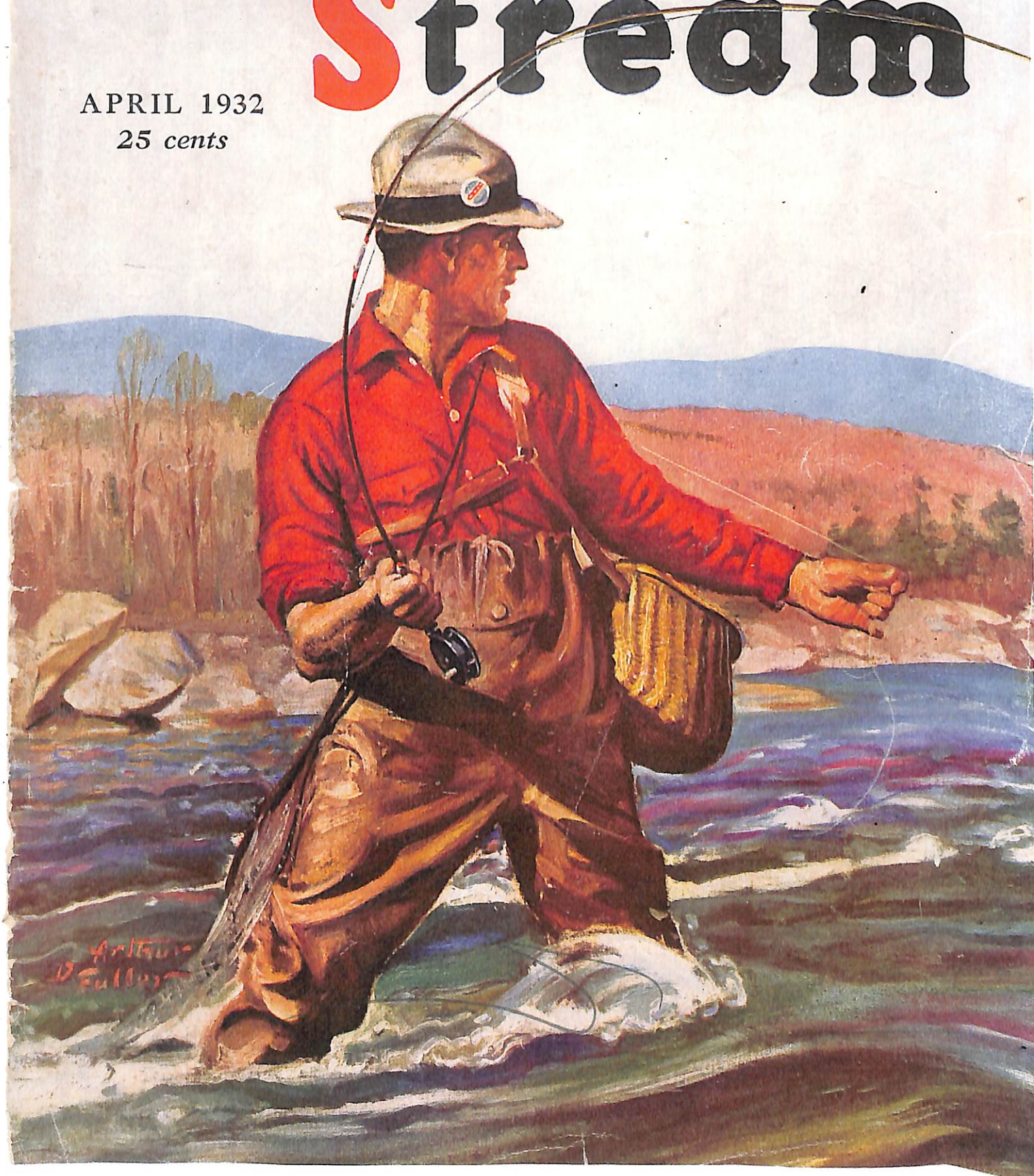
25 cents



Elevators for Fish

At last a sure method has been devised to get fish over dams

By DUANE H. KIPP

Each morning during the tests the hoop net was emptied

THE vicious circle of a constantly decreasing supply of fish and of a constantly increasing number of fishermen has been becoming progressively more pronounced in the last few years. Of course, that statement partially explains the situation. The more fishermen who catch fish, the less fish there will be to catch.

But this is not an argument to reduce the number of fishermen. On the contrary, the number of fishermen should continue to increase, and the number of fish to catch should be multiplied many times. Such a condition, which would be a realization of Herbert Hoover's apt phrase and hope, "Less time between bites," is not unattainable. It is entirely possible.

What has caused the condition of more fishermen and fewer fish? The increasing number of fishermen is not the only cause—it is not even the most important cause. It is the man-made changes in environment, regardless of cause, that have done most to decimate fish populations in American waters. Probably no other one factor, unless it be water pollution, has done so much to deplete the number of game fish in American waters as has the construction of innumerable dams across the thousands of rivers and streams on this continent.

Most fish migrate. Depending upon whether they spawn in waters of rising temperature or in waters of falling temperature, practically all species journey upstream in spring or fall to deposit and fertilize the eggs which must be deposited and fertilized if the sport of fishing is to continue. Any obstruction in a river or stream impedes migration; most dams make it impossible.

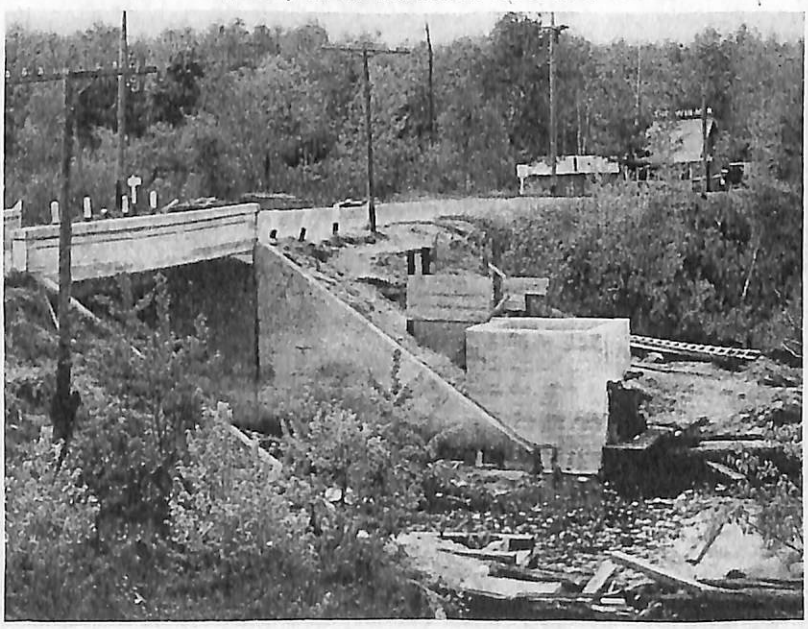
Serious obstacles to migration have an extremely deleterious effect upon natural reproduction. Nature so arranged piscatorial reproduction that fish travel upstream to find the best spawning grounds. When they cannot travel upstream, they must deposit their spawn under less favorable circumstances, with the result that natural reproduction may become practically nil in watercourses whose uninterrupted flow has been blocked by dams. It has been claimed by those interested in belittling the detrimental effects of dams that artificial propagation counteracts any such injury done to natural reproduction, but nowhere is artificial propagation of fish carried on to a sufficient extent to replace natural reproduction entirely. Everywhere artificial reproduction is considered only supplemental to natural reproduction, and it should be so considered.

It is unfortunate in many ways that the attention of fisheries men has been directed so strongly to artificial propagation. Had more attention been paid from the first to the protection of the native environment of game fish and to surmounting the man-made obstacles to reproduction as they began, the future would look much brighter. However, it is not too late if those interested in the maintenance of the sport of fishing will do as much toward the protection of natural conditions and natural reproduction as they have done for artificial reproduction in the past.

Such a change in attitude is basic. All the artificial propagation in the world will not make fishing waters of some lakes, streams and rivers which have been ruined by man's thoughtlessness, unless the very character of the waters is again transformed.

For many generations a few people have realized the damage done to fish by the construction of dams across waterways. For instance, one of the principal reasons for the creation of the early New England fish commissions was to provide some means so that the salmon and shad

The Barr fishway on the Manitowish River in Wisconsin



could reach their natural spawning grounds over or through the many dams which had been built across certain New England rivers. There were several early attempts at the construction of suitable fishways, principally on New England streams. One was built at Holyoke which cost more than $100,000 but which, like most of the others, proved to be a total failure.

This problem of providing a means for fish to travel upstream over dams, which has attracted attention in varying degrees for many generations, has become particularly important in the last decade or two, because in comparatively recent years the number of dams, principally power dams, on American watercourses has been multiplied several times.

UNTIL the last few years interest in fishways in America has been confined almost entirely to commercial species of fish, principally in providing a means for salt-water salmon to reach their spawning grounds in fresh-water streams. There are two reasons why the interest should have been so directed: first, because the salmon is a commercial species of fish and the financial livelihood of fishermen depended upon its abundance; and second, because dams were constructed principally on streams which emptied directly into the ocean. Fairly satisfactory fishways have been devised for salmon. These are of two types, either the fish ladder or the fish wheel. They are in successful operation now on many rivers, most notably so in the Pacific Northwest.

When the problem became acute for inland as well as outlying waters, attempts were made to use on inland streams the type of fishway which had proved successful for dams built across coastal watercourses. Almost without exception all such attempts were failures because the species of fish in inland waters will not or cannot make use of any type of fishway which requires excessive leaping. Some species, principally trout, are more adaptable than others, but most obstructive dams are built across streams that are larger than most trout streams. Consequently, the problem does not affect trout so much as other species of fish.

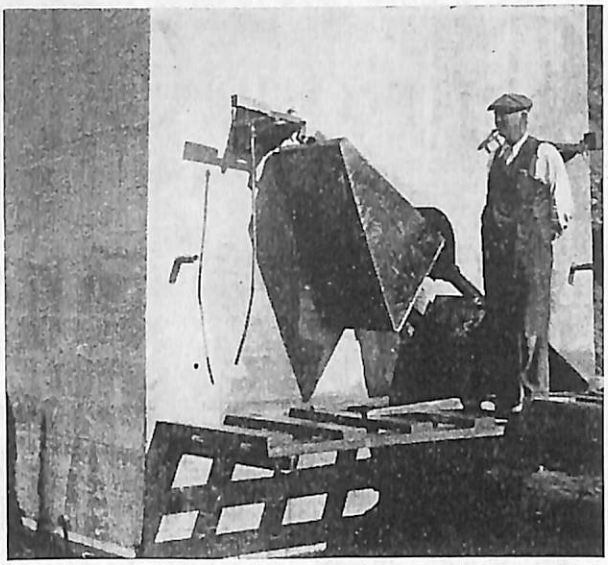
The game fish most directly concerned by the blocking of streams in inland waters are the wall-eyed pike or pike-perch, the pickerel, the great northern pike, the many members of the bass family, and in Wisconsin the muskalonge and sturgeon. These species positively will not make use of any type of fishway that requires leaping as does the fish-ladder type, and each of these species is entirely too wary to enter a fish wheel. As a consequence, until this year there has never been a fishway devised for any of these species which could in any sense be called successful.

The fisheries division of the Wisconsin Conservation Commission has been experimenting with several types of fishways for many years. As far back as 1907, experimental fishways were placed in dams across several Wisconsin rivers. Everything was done to make fair tests. In order to determine the degree of success, a hoop net was placed at the outlet of each fishway above the dam so that no fish could use the fishway without being seen and recorded.

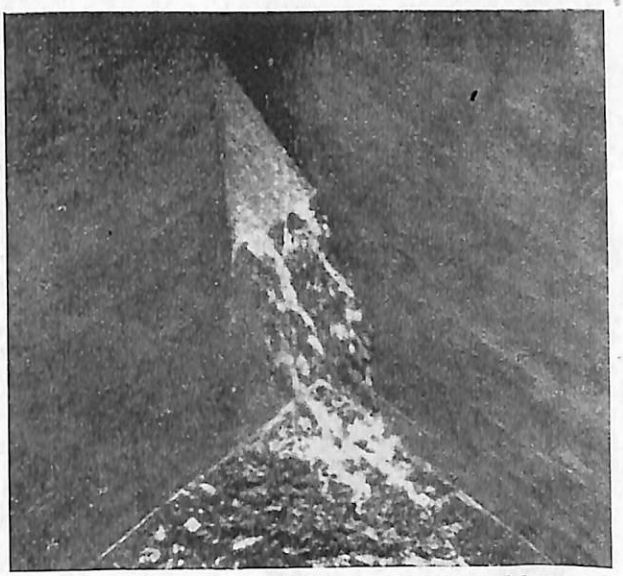
THESE first fishways were principally of the ladder type. In an experiment conducted with a ladder-type fishway at the dam on the Wolf River near Weyauwega, Wisconsin, in 1909, close observations were made every day from April 16 to June 15. During all of this time only seven fish passed through the fishway. All seven were suckers.

Three years later additional fishways were experimented with on Wisconsin streams which, although varied somewhat in detail, were still of the ladder type. These were installed in the dam on the St. Croix River near St. Croix Falls, the dam on the Wisconsin River at Kilbourn, now Wisconsin Dells, the dam on the Fox River near Eureka, and another one in the dam on the Wolf River near Weyauwega.

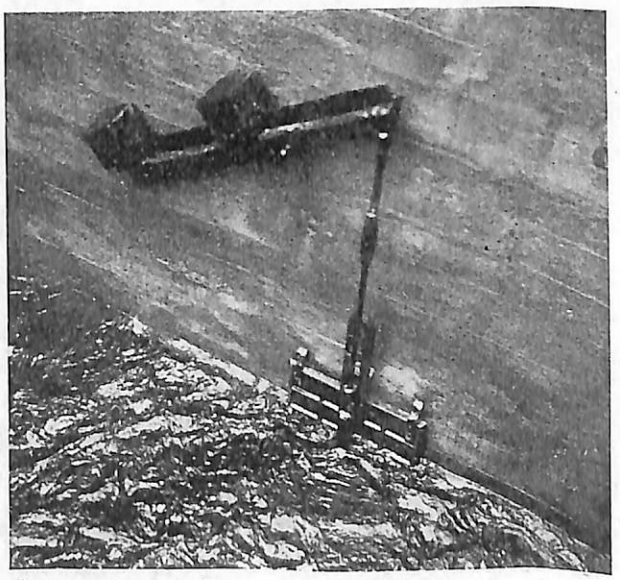
After complete installation and after nets had been placed for checking the passage of fish, daily observations were made during the month of May, 1912. In the dam at St. Croix Falls not a single fish, either game fish or rough fish, was recorded. At Kilbourn but one sucker went through the fishway in the thirty-one days. At Eureka two bass, three pickerel, two suckers, one carp, thirteen dogfish and one sunfish constituted the total number for the month. At Weyauwega forty-nine suckers, but *(Continued on page 56)*



Mr. Barr standing by the automatic counterbalance which operates the fish lock



This picture shows the lead chute which attracts fish toward the egress tube while the lock is filling



Interior of practically empty fish lock showing the automatic outlet for water and inlet for fish

that pool as he began to retrieve those whirling blades of The Magnificent Lancer? From my position I could see the slanting rays of the sun boring deep into the green water, failing only when they came hard against the line of white foam. I saw Enormous emerge from under the white wall of bubbling water. For an age-long second, as if undecided, he hung poised in the green depths. I recall that for the moment I had the fleeting impression that a skilled lapidary had mounted a magnificent emerald over an artist's full-color canvas of a lurking trout. Then, like the shadow of an arrow whistling over the greensward of an archery course, that trout struck! There was an eruption that shattered one facet of the emerald into thousands of colorless fragments. Then the line, running swiftly, began to cut the emerald squarely across the middle, sending the chips flying.

THE Magnificent Lancer had not failed! My second thought was of the rod, and with some apprehension I watched its quivering arc. But only for a moment. The Colonel knew the tool; that trout had met an angler.

It must have been that the white line of foam at the foot of the lock concealed from our view some obstruction well known to Enormous. Again and again he tried for it, but the Colonel artfully stopped him just short of the foam. Finally the cutting line swept out to the center of the pool and the trout went down, sulking.

The Chief Offender pumped him—a little too severely, I thought. "Careful, Colonel! A trout that has lived as long as that one is sure to know a lot of tricks."

"Watch and pray, brother," I was told.

I divided my time between the two commands. There was time enough for the longest of prayers, and time enough in which an observing man could learn much.

The orderly from headquarters, being a non-fisherman, must have thought it a pointless game.

"He'd better pull it in," he said to me. "That staff car is waiting for him."

The Colonel overheard, and it irritated him no little. "You go away!" he barked. "Go way away! Don't trouble me about wars. Can't you see I have all the war on my hands that I can manage? Sit down and keep quiet. And if you know any prayers—which I doubt—say them."

"But, sir, the Adjutant said—"

"Hang what the Adjutant said! And hang the Adjutant! That war up front has been going on for three years without my aid. It can worry along a bit longer. It can— Oh, Lordy! There he goes for that lock again!"

But he didn't make it. The Colonel was now knee-deep in the pool. After all, what is a pair of calfskin boots by the side of a mighty trout?

That war went on while the greater war lasted. Up at the front, guns were thundering, shells filling the air with whining, searching fragments, and men were hurling themselves at one another's throats while the staggered, mad world hung breathless on the outcome. But we were not of that world. Ours was a world filled with something vastly more important; we were engaged in a pursuit that breeds no wars, no hates, no thoughts of avarice, no desires to plunder and lay waste, and no ambition for world dominion.

The C. O. knew that he must play that trout until the stout heart could not send another command to weary muscles. We had no net, and when one angles for large trout without a net he increases the trout's chances for victory. Time and again I thought the trout finished, only to be surprised by another gallant rush. But at last Enormous lay motionless in two inches of water. A quick flip sent him on to the sand with a heavy thud.

What a trout! What an inspiration had been mine when I included a fly rod as a part of oversea equipment!

"Colonel," I said, looking down at the heavy, deep-bellied king of the Seine, "you once asked me if I thought this water held any keepers. What do you think now?"

He stooped to disengage The Magnificent Lancer from the large hole that it had worked in the trout's mouth. It came away without effort.

"I think," he replied, his gaze fixed upon the marvelously contrived bit of hardware, "that while this war lasts I will be in a position to make your life exceedingly miserable should you ever report the whole truth concerning the taking of this fish. You tempted me! In the guise of a brother, you brought about my downfall. Now, a fallen wretch, I am called to other fields. I must trust my reputation to your hands. Surely I am in need of a keeper. Tonight, when the three of you sit down to the feast I have provided, be not over-exact in your description of The Magnificent Lancer."

From one of the fly boxes I took a battle-scarred Mayfly and fixed it in the torn cartilage of the trout's mouth.

"Colonel," I remarked, "a brotherhood is nothing if the brothers are not brotherly. In peace, go thy way to war. The sign of the Mayfly shall be as a covenant between us. Behold my brother's keeper!"

ELEVATORS FOR FISH

(Continued from page 25)

no game fish, went through during the entire month of May.

None of these types of fishways could possibly be called successful. Other experiments have been conducted from time to time when there seemed to be hope of a new type or new improvements in the old types that might be satisfactory. None of them, however, until 1931, proved to be any more satisfactory than those recorded.

Through all the time that Wisconsin has been experimenting with fishways, the fisheries division has kept in contact with fish commissions of other states. Within the past year extensive research has been carried on and questionnaires have been sent to every source from which reports of successful fishways emanated. Eminent fisheries authorities throughout the country were asked their opinions about various types, and invariably the response was the same. While fisheries men all recognized the imperative need of a successful fishway, none of them had anything constructive to offer. It seemed as though it was hopeless to find any type of fishway that would work for those fish which have made the north-central part of the United States famous for its fine fishing.

In 1930 another rumor of a successful fishway came to the attention of the Wisconsin Commission. It was not of a fishway in operation on a dam but a miniature model devised by a man named Harry Barr who lived in Ironwood, Michigan. Through the co-operation of local citizens of Vilas County, Wisconsin, the Wisconsin Public Service Commission, the Chippewa and Flambeau Improvement Company which owned the dam, the Wisconsin Highway Commission and the Wisconsin Conservation Commission, arrangements were made to try still another experiment and test this new type of fishway.