



SALMON LEAPING A FALLS ON ITS MIGRATORY TRIP TO SPAWNING GROUNDS

Thus it fights its way a thousand miles up the Columbia River, but it cannot leap great dams and runs the risk of extermination by such construction activities in the River

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Salmon or Kilowatts

Columbia River Dams Threaten Great Natural Resource

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BUILDING dams for purposes of power or irrigation, whether actually needed or not, has become a national mania. From the point of view of conservation it has also frequently become a national menace. Spurred by plans to provide employment through public works, many such programs have been undertaken without adequate thought being given to their general value and effect. Some of these projects destroy existent wealth or endanger some other resource. The construction of dams in the Columbia River in Oregon is a typical instance.

Of all the rivers in the world, the Columbia is the greatest salmon stream. It has produced, and still produces, more and better salmon than any other stream. In February or early March the great spring Chinook salmon leaves the ocean and starts its dramatic run. Slowly it fights its way up the river, a thousand miles or more, to the spawning beds at the headwaters. There, in September, the eggs are laid and from these headwaters the fingerlings must make their way back to the sea. Nature has endowed this fish with this migratory urge. The salmon has found the Columbia River to be a stream where conditions are favorable for it to answer the call. If these conditions are destroyed the salmon run is destroyed. No power of man or Nature can restore it.

On the economic side, the annual income from the salmon fisheries of the Columbia is between ten and twelve million dollars. This is five per cent on a two hundred million dollar investment. It is certainly not extravagant to expect that careful thought should be given

to any project calculated to destroy such a resource.

Protection of this resource has been a constant battle. Over-exploitation has been continuously fought. Unscreened irrigation ditches in the upper reaches of the river have led the fingerlings out into the fields to die when the water dries up. Pollution is a menace that must constantly be fought. Finally, the greatest danger of all—dams for electrical energy and irrigation—threatens the future of the Columbia River salmon run.

Perhaps the greatest lesson to be drawn from what is happening on the Columbia is the need for a careful and complete survey before any such development project is undertaken. Rivers serve a variety of purposes. They furnish water for domestic use and irrigation; produce power; provide navigation; serve recreational purposes; and sustain fish for food supply. Before steps are taken to conserve any stream for any one of these purposes it should be definitely established which is the most important service of the river.

Had this been done in the case of the Columbia River certain vital facts would have been brought out. It would have been established that no experience in the past shows how to reconcile high dams with the migratory habits of such an important fish as the salmon. It would have shown that there is no knowledge of what would be likely to happen to the schools of fingerlings when, returning to the ocean, they encountered the heavy flow of water through large turbines. It would have demonstrated that to change the Columbia River into a series

GRAVITY FISHWAY OR FISH LADDER

This is the best method of leading salmon over dams. This picture is taken at low water after the spring run

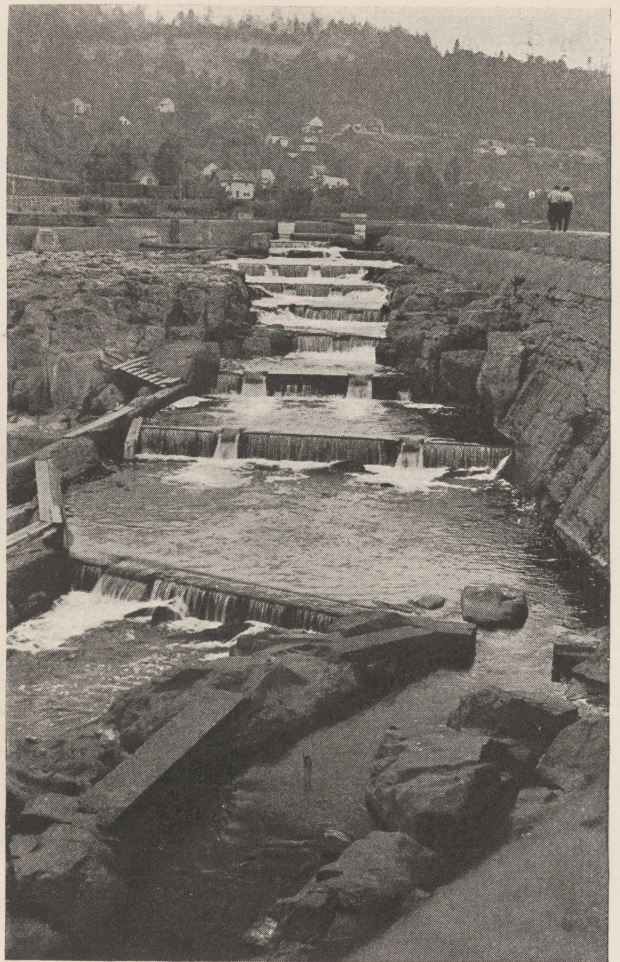
of great lakes would result in the destruction of the spawning places of the salmon; change the food supply now available to the migrating fingerlings; and bring such fish as bass who naturally feed on fingerlings.

No such study was made. Paying no attention to the food importance of the Columbia River, the Federal Government has appropriated \$31,000,000 to build a sixty foot dam across the river at Bonneville. It also appropriated \$60,000,000 for a two-hundred foot dam at Grand Coulee. These projects are under way. At Grand Coulee no consideration whatsoever has been given to the salmon run. Bonneville Dam, however, is only slightly more than one hundred miles from the mouth of the river. It is, therefore, of vital importance with respect to the salmon.

The United States Bureau of Fisheries has been advocating the installation of elevators to transport the salmon over the dam. These are costly and have no proved background. It is not known whether the fish will even enter these complicated devices. Two such elevators, however, will be installed. Fortunately, however, the Bureau of Fisheries has come to realize the uncertainty involved in these elevators and is supporting the installation of five fishways. This is the only natural way of helping the salmon solve the problem created for them by man. These gravity fishways are series of pools, one above the other, leading around the dam. The fish are able to ascend in small leaps to upper waters. There is ample water to supply these fishways.

Lack of appreciation of the importance of the salmon prevails with those holding the purse-strings. Fish experts and engineers estimate that \$5,000,000 will be necessary adequately to safeguard the salmon run. Secretary of the Interior Ickes allotted \$2,500,000. This necessitated cutting down the dimensions of the fishways, and the first has been started on this restricted basis. The money allotted has since been increased to \$3,200,000, which, ac-

While the future of the white pelicans of Great Salt Lake seems at the moment to be less dark than it was, eternal vigilance is required lest selfish or misguided interests institute quiet attacks upon these birds. Jay N. Darling, Chief of the Biological Survey, has taken an active interest in the protection of these birds, and the Fish and Game Commissioner of Utah has at last been enlisted in their behalf. Through the activity of the Emergency Conservation Committee and other conservationists attention has been called to this issue, the details of which are described in a pamphlet issued by the Committee. The white pelican has been the object of persecution on the ground that it eats game and commercial fish, a charge that is entirely false since it lives almost entirely on so-called trash fish.



ording to experts, is still sadly insufficient.

Thus the Federal Government is experimenting and gambling with a natural resource of high value. It is endangering an important food supply. While spending billions in many debatable ways, it is saving a million or so by tampering with the future of a two hundred million dollar industry. And, sadly enough, there is grave question whether conceivable future needs for electrical energy will ever justify pouring millions into the building of the dams at Grand Coulee and Bonneville.

The California Roadside Council, 3311 Pacific Avenue, San Francisco, has brought out an effective pamphlet entitled *Your Roads and Highways*. It graphically summarizes all salient points relative to highway development and control and emphasizes effectively the vital importance of proper supervision and restriction on this development.

Through a bond issue authorized in 1927, California has built up a chain of State Parks and Historical Monuments representing an actual investment of about fourteen million dollars. This does not include many areas given outright to the State. A complete summary of the acquisitions has been compiled by the State Park Commission.