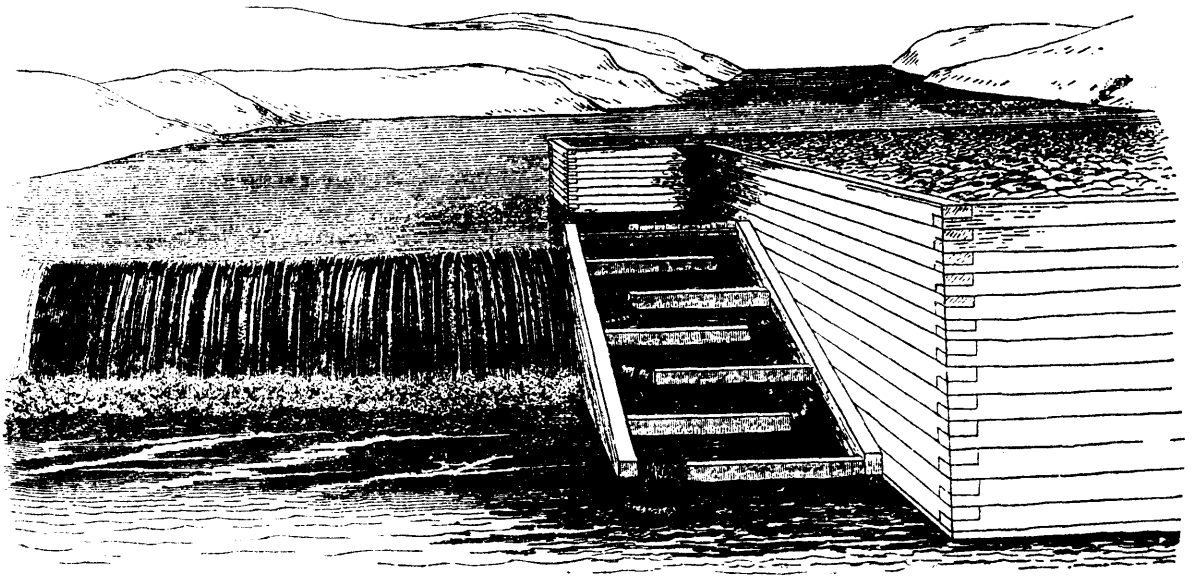

THE CONSTRUCTION OF FISH-WAYS.

Every State in the Union has, or should have, laws for the protection, preservation, and propagation of food-fishes. In no State where these laws have been enacted, commissioners of fisheries appointed, and appropriations made for stocking streams, have they been abandoned, after a fair trial, but encouraging reports come from all quarters.

The first and most important principle necessary to the success of fish-culture in any State, is to give the fish freedom to go to their natural spawning grounds, the head-waters of streams. Prevented from doing this by impassible dams or other obstructions thrown across streams, they become wasteful, and in time will disappear below as well as above the obstruction. It is as natural for fish to ascend a stream to deposit their spawn, as for birds to seek the tree-top, in which to rear their young. With these facts before us the importance of constructing dams which will permit fish to ascend the streams, is quite apparent. In this work of constructing fish-ways, the State of Kansas has not been behind. The late report of the Hon. D. B. Long, Commissioner of Fisheries, to the Kansas Board of Agriculture, is accompanied by a plan of fish-way, which we take pleasure in presenting to our readers.

A fish-way is but an artificial imitation of the means by which river fish pass up rapids, in their yearly migrations. The fish in their upward course reach the foot of the rapids; here they rest awhile, and then shoot up a slight distance, and again rest behind some rock, where they gather strength to make another leap and continue in this manner until the fall is passed.

To construct a fish-way, take a long box, fasten one end to the top of the dam, and extend the other end to the centre of the pool below the dam. Supposing the box to be sixteen feet long, four feet wide, and two feet high on the inside of the box, pieces of plank, called riffles, are placed transversely, about three feet apart, as shown in the engraving. Each riffle is about a foot high, and extends about two-thirds of the way across. If the first riffle is fastened to the right side of the box, and at right angle with the side of the box, the next, three feet above, will be fastened to the left side, and extend thirty inches across it, and so on alternately until the top is reached. The water entering the top of this box, is diverted from right to left in its course, forming eddies, or resting-places for the fish in their upward course. These ways can be constructed of stone as well as timber, being, of course, in the former case, more durable. As a general thing, millers, manufacturers, and men owning water-power are intelligent, progressive men, and when satisfied of the importance of the law requiring the construction of fish-ways, will, as soon as convinced that they will not interfere with their business, and will add much to the general good of the State, construct substantial fish-ways over their dams. Illustrating the necessity of fish-ways, we might mention, that after the construction of the Lawrence dam, fish in the Smoky Hill River and other streams above became very scarce, but after the dam was washed out in May last, fish at once became abundant in the Kaw and its tributaries above Lawrence.

Any mechanic can readily construct a fish-way by referring to the engraving herewith presented. Upon the construction of this aid, more than anything else, depends the success of fish-culture in all our States.

BETON STRUCTURES.

(See page 376.)

Several years ago in this journal we called attention to the excellence of a building material which has since that time slowly but surely been gaining in its well deserved reputation. We refer to the Beton Coignet, also called in France Beton Agloméré, an artificial stone, which, in its valuable properties, surpassed all the other artificial stones, as well in strength and hardness as in durability.

Its manufacture was first introduced into this country in 1869, by Mr. John C. Goodridge, Jr., who has been its only manufacturer here. After seven years of constant experiment, he has invented an improved method of manufacturing Beton, which makes a far stronger stone, and one that is entirely free from the unsightly checks and the efflorescence which would frequently appear in the best made artificial stones. This is accomplished by the removal of all the uncombined lime, clay, and the earthy impurities, as well as the alkaline salts from the cement.

By the Coignet method the highest crushing strength that could be obtained was about 7,000 pounds per square inch. By the Goodridge method a stone can be made that will carry, without crushing, a strain of over 14,000 pounds per square inch. The following list shows a comparison of building material as regards crushing strength. While the strongest granite tested by hydraulic pressure, stands 15,000 pounds per cubic inch; marble, 9,000; the best brick, 4,400; common brick, 2,000, and even less, this material stands a crushing strain of 12,000 per cubit inch. Granite and marble, when under great pressure, explode, flying into powder; Beton gradually crumbles, and gives due notice of the excessive strain. Beton is hardened by water and atmospheric changes, the process of silicatization and crystalization going constantly on.

We give, as an illustration of this class of work, the fountain built in 1873 by Mr. Goodridge on the Plaza at the Flatbush entrance to Prospect Park, Brooklyn. This fountain has a diameter of 113 feet.—*Manufacturer and Builder.*