

are called weather fish, and are kept in glasses, where by their uneasy movements they denote a change twenty-four hours in advance, and from the same cause many fish forsake the sea for the rivers; the groundling is roused into activity; the silurus leaves the deep water; and the eels become lively. If the lightning strikes the water the perch sickens and dies; the snake and the slow worm are restless before a storm; toads leave their concealment before rain; ducks are busily active, and swallows fly lower.

Before a storm breaks forth many birds, such as the crossbill and plover, are uneasy, and show themselves less, and while many species of water-fowl hurry for shelter to the shore, the petrel, as if rejoicing in the coming conflict of the elements, dashes forth and defies its power. If the atmosphere be lowering in the morning, pigeons feed rapidly and return to their cots; and the hare hides itself, but the mole comes to the surface of the ground, and the squirrel seeks its nest and shuts its entrance. This susceptibility of atmospherical change influences also materially the natural economy of some animals; the wild rabbit, for instance, which feed chiefly in the evening or at night, comes forth at noon-day, if the weather portends rain, and loses its natural timidity in its eagerness to procure food.—*Thompson's Passions of Animals.*

#### ON THE ARTIFICIAL PRODUCTION OF FISH IN OUR RIVERS.

We give the following very interesting account of the artificial production of fish, from the *Farmer's Magazine*. The subject is attracting much interest abroad, and will doubtless be practically tested here.

Not unconnected with the Agriculture of the country, and certainly not uninteresting to the rural improver, are the wonderful discoveries just brought to bear on the artificial production of fish in our rivers. The whole subject seems to open out a source of profit to the speculator, of interest to the naturalist, and of the increase of nation's food. The capture of salmon—brought now to perfection so great, that our rivers are about denuded of that prince of fishes—ceases to be either skillful or surprising before the schemes in operation for breeding that fish. Not only has it been tested by the stocking of the French rivers and streams of the Vosges, the Moselle, the Upper and Lower Rhine, but the spawn has been successfully transported to New Zealand.

A recent number of the Journal of the Highland and Agricultural Society of Scotland attributes the discovery of the plan to Mr. John Shaw, of Drumlanrig, so far back as 1833, and further proved by the Rev. D. S. Williamson, ten years afterwards. But the scientific world seems to have been still earlier at work; for, in 1764, Professor Jacobi, of Berlin, discovered that the roe of fish was fecundated after the ejection by the female; and more that the roe and milt extracted even from dead fishes possessed the vital power, and even when dead two or three days that this power is not lost. The Professor also mentions how fish may be thus introduced into new districts, and even carried to other countries.

During the course of last summer, a small pamphlet, on the artificial production of fish was published by Reeve & Co., which called particular attention to the French adoption of the joint discoveries of the German professor and the Scottish gardener, in filling the French streams and rivers with millions of fish of the most valuable kind.

Mr. Boccicus last year undertook the arduous task of transporting fecundated trout spawn to New Zealand. Gravel was placed in large iron boxes, with a supply of river water, in order to effect the necessary change; for in water totally stagnant the fish will not be produced. Owing to the warmth of the tropical atmosphere, in the journey the young were produced before the ordinary time. The usual period varies from 70 to 100 days, according to temperature; but in this case we believe Mr. Boccicus found them produced in about 42 days. The effect of a stream was obtained by constant dropping from a tank above the iron box; the water in which was, we believe, purified by the valisneria.

The originators of the French practice were two fishermen of the names of Gehin and Remy, of La Bres-e, who, finding the fish fail in their streams, began to collect the spawn and apply the milt themselves, which they deposited in boxes or baskets full of holes, and placed them in situations of safety in running streams. A French paper says, "Applying this operation, the year afterwards, to a great number of fish, they obtained several thousand trout; and, in a year or two more, the numbers had literally increased to millions."

The French government considered the matter of sufficient importance to take it up, and these two fishermen were taken into its pay, and made to apply the principle to the streams of the districts we have mentioned. The same paper goes on to say; "They have done so with the most singular success; rivers and lakes, in which there were no fish, now literally teem with them."

The plan is to be further encouraged. A commission of savans is appointed to superintend the process. Salmon, perch, tench, and even lobsters are to be domesticated—so far at least as being bred and reared, out of the reach of their numerous enemies.

Perhaps no animal will multiply so fast as the fish. The tenches produces 35,000 eggs, the mackerel 546,000, the cod fish 1,357,000. The herring produces also vast numbers, and, if only 2,000 of any one of these came to perfection, there would be in the second year, 12,000,000, in third 2,000,000,000. To protect only, therefore, is to ensure the production of millions of fishes; but how any fish now happens to escape their enemies, natural and artificial, seems positively more wonderful than their powers of production.

The breeders of fish artificially in this country are Mr. Boccicus, Mr. Gurney, of Caithlton, and Mr. Young, of Lochshin. What should hinder the plan being tried by all the landed proprietors near the sides of all the rivers in this and the sister kingdom? and especially why not try to introduce the salmon into rivers where it has not yet been found? Mr. Shaw appears certainly to have been the first to show the par and the smolt to be only stages of the salmon; and to prove that by the construction of side ponds,