FISH CULTURE.

Its Importance as an Economic Question—Latest Methods Employed by the U. S. Fish Commission.

[Original.]

As an economic question, the culture and propagation of fish is scarcely less important than the raising of cattle for meats and the production of cereals for breadstuffs. Yet few people ever stop to consider how the fish they daily consume are propagated. Fish-culture in its most restrictive sense, or fish-breeding, must sooner or later be resorted to in all densely-populated countries, for, with the utmost protection, nature, unaided, can do but little to meet the natural demand for fish as an article of food. he improvement of fish-culture in this country is so familiar to every one who has the slightest interest in the subject it is unnecessary to refer to it at length, except to show that the improvement in the condition of our fisheries is chiefly due to the wise and energetic manner in which Prof. Baird, the Commissioner of Fish and Fisheries, has managed the interests intrusted to his

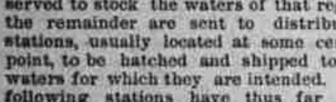
TAKING EGGS FROM THE FISH.

charge. He is recognized by all nations as "the first fish-culturist in the world," evidenced by the grand prize awarded to him by the International Fisheries Exhibition at Berlin in 1880.

The principal activity of the commissioner, however, has been directed (1) to the wholesale replenishment of our depleted waters, (2) the investigation of the fisheries past and present, (3) the introduction and multiplication of useful food fishes throughout the country. These were the main purposes for which the commission was founded.

In an article of this nature it is impossible to review even casually the important work accomplished by the commission, and it is only within the purview of a newspaper article to give a brief account of the methods employed for hatching and distributing fish. The policy of Prof. Baird has been to carry out the idea that it is better to expend a small amount of public money in making fish so abundant that they can be caught without restriction, and serve as cheap food for people at large, rather than to expend a much larger amount in preventing the people from catching the few that still remain after generations of improvidence.

The commission has thus established hatching stations in various States of the country. These are known as collecting and distributing stations. The former are located near the spawning grounds of those species for which they are especially intended. The eggs are received at these stations, and, enough having been reserved to stock the waters of that region, the remainder are sent to distributing stations, usually located at some central point, to be hatched and shipped to the waters for which they are intended. The following stations have thus far been established: Grand Lake Stream, Maine; Bucksport, Maine; Woods Hole, Mass. (permanent coast-station, which serves as a base of operations for the scientific investigations of the commission as a hatching station for eggs of the codfish); Cold Spring Harbor, Long Island, N. Y.; Havre de Grace, Md.; Washington, D. C. (here is situated the central hatching station, fully equipped for scientific experiments connected with the propagation of fishes; It is also the principal distributing station of the Fish Commission for both eggs and young fish to all portions of the United States); Wytheville, Va.; Saint Jerome's Creek, Point Lookout, Md.; Avoca, N. C.; Northville, Mich.; Alpena, Mich.; Baird, Shasta County, Cal.; Clackamas river, Oregon. The following is a list of the species artificially hatched in the United States since the art was first practiced here: Brook trout, white-fish, lake trout,

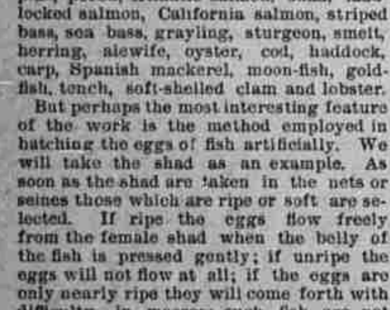


THE SHAD.

pike, perch, Atlantic salmon, shad, land-locked salmon, California salmon, striped bass, sea bass, grayling, sturgeon, smelt, herring, alewife, oyster, cod, haddock, carp, Spanish mackerel, moon-fish, gold-fish, tench, soft-shelled clam and lobster.

But perhaps the most interesting feature of the work is the method employed in hatching the eggs of fish artificially. We will take the shad as an example. As soon as the shad are taken in the nets or seines those which are ripe or soft are selected. If ripe the eggs flow freely from the female shad when the belly of the fish is pressed gently; if unripe the eggs will not flow at all; if the eggs are only nearly ripe they will come forth with difficulty, in masses; such fish are not taken. A short time before the shad spawns, clear eggs of large size will be found in the roe, while the rest are still hard; these become more and more numerous; after a time they separate and fall apart, a liquid stream of eggs flowing from the fish with the slightest pressure. The melter, or male shad, is rather smaller than the female, the sex being known by the flow of milt from the fish; a small quantity of milt will impregnate a large number of eggs; about one male in good condition to two or three females.

The spawner, or female shad, is easily known by its size and full appearance. When all the spawn is taken it will be shown by the blood appearing among the eggs. A male shad is then taken, two or three jets of milt are forced upon the eggs while the pan is swayed gently to and fro. A little water is added from time to time until the eggs rise, which will be, usually, in the course of half an hour. After impregnation the eggs will be found to have increased in size, and when they rise they can either be put on trays covered with cotton cloth or kept in the pan. In the latter case the water should be changed every hour. The bad eggs will float on top and are of a whitish color, being called water-blown; good eggs will be clear and like crystal in appearance. The eggs having been fertilized, the most difficult portion of the task remains, viz: the care of the eggs



HATCHING JAR. COLLECTING JAR.

until they are hatched, and the care of the young fry until they are old enough to care for themselves.

The apparatus employed for this work varies in principle to correspond to the physical peculiarities of the eggs.

As an example we will consider the process of hatching shad eggs, whose specific gravity is slightly greater than that of water. These eggs are placed together in large quantities, and to prevent their settling upon the bottom of the receptacle, it is necessary to introduce a gentle current from below. Several receptacles were made for the hatching of shad eggs, with only partially successful results, but finally the device now most in favor was perfected.

The cut shows the jars invented by Colonel Macdonald, which are recognized among fish-culturists as being the most approved method of hatching and collecting fish. One of the jars is used for hatching and the other for collecting. The jar consists essentially of a cylindrical glass vessel with hemispherical bottom. The top of the jar is closed by a metallic disc perforated with two five-eighths inch holes, one perfectly central, which admits the tube that introduces the water into the jar, and the other equally distant from the central hole and from the edge of the plate. The other tube serves a double purpose, first, as an outlet for the water, and second, to remove the dead eggs which pass off in the waste or are fed to the young fish in the aquaria. When the period of hatching approaches, instead of allowing the water from the hatching jars to pass directly into the sinks, it is necessary to conduct it through the collecting jars. This is precisely similar to the hatching jar in construction. The water passes from the hatching jar through the rubber tube into the eccentric opening of the receiving-jar. On the lower end of the central tube is placed a wire frame over which is drawn a bag made of cheap cotton, the texture of which is fine enough to permit the water to strain through, the meshes being so fine, however, that the suction of the water will not hold the young fry against it, as would be the case if wire screen was used. The water is allowed to pass out of this second receiving jar into the waste. The young fish, if they be shad or whitefish, begin to swim around in the hatching jar, drifting with the current. They pass into the exit tube and are carried over into the receiver in which they may be collected to any number desired, being retained there without injury until convenient to make shipment.

From 15,000 to 20,000 eggs may be placed in each jar. The constant flow of water keeps the eggs in motion, and in about three days they hatch out, the young fry being placed in tanks ready for shipment. Practically the same method is used for hatching various other kinds of fish.

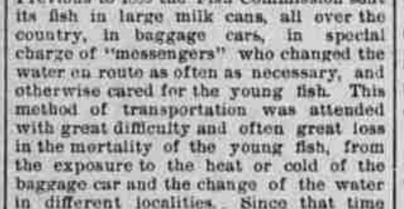
The current work of the commission in hatching young fish at the different stations shows gratifying results. At Washington 5,000,000 white fish eggs were hatched last week, the fry to be sent to Lake Erie. At Nashville and at Alpena, Mich., 125,000,000 white fish eggs were collected during the fall, of which 25,000,000 have been distributed to the State Commissioners for hatching and planting, and 100,000,000 have been reserved to be hatched at the Northville station, the fry to be placed in the ocean and the great lakes.

THE BLACK BASS.

The station at Woods Hall has been actively engaged in collecting, hatching and distributing the eggs of cod-fish, of which 26,000,000 have been hatched and planted in Vineyard Sound and other adjacent waters. It is probable that the total production of the season will exceed 100,000,000 cod-fish when eggs are obtained from the Ipswich Bay school. At Wytheville, Va., the collecting of California trout eggs is in full progress, over 100,000 eggs having been obtained, of which fifty per cent. will be distributed in lots of 5,000 and 10,000 to the different State commissions, the balance to be hatched and reared at the station, and distributed as yearling fish to the streams of the Appalachian region in Pennsylvania, Virginia, West Virginia, North Carolina, Georgia and Tennessee.

Another interesting feature of the work of the commission, and one which is, perhaps, more familiar to the general reader, is the method used for distributing fish. Previous to 1880 the Fish Commission sent its fish in large milk cans, all over the country, in baggage cars, in special charge of "messengers" who changed the water en route as often as necessary, and otherwise cared for the young fish. This method of transportation was attended with great difficulty and often great loss in the mortality of the young fish, from the exposure to the heat or cold of the baggage car and the change of the water in different localities. Since that time however, the commission has had built for its use cars especially adapted to the uses of transportation. These cars are so constructed that sufficient water can be carried, for the entire shipment, often covering several days. By a process of aeration the water is used again and again to replenish the water taken from the receptacles in which the fish are carried. These vessels are simply tin buckets with perforated covers, holding perhaps a quart of water, and are placed underneath the floor of the car. About one hundred cans are usually carried, the number of fish of course varying according to the size.

Over 1,500,000 white fish were recently transported in one shipment to Oregon and Washington Territory with a loss of only five hundred. These cars are provided with comfortable berths for the messengers, a kitchen, refrigerators, tanks, pump-



THE COMMON CARP.

ing-engines, hatching apparatus, and every thing necessary for the proper care of the fish while en route to their destination. The spring shipments of shad has already commenced, and millions of them are finding homes in the rivers all over the country.

Such is a brief sketch of some of the features of the United States Fish Commission, an institution peculiarly American in its conception, and without a parallel in any other governmental organization. It has achieved a world-wide reputation for its enterprise and originality of method. Its work is better appreciated abroad than in the United States, and at the International Fisheries Exhibition at Berlin and at London we carried away a majority of the prizes for supremacy both in scientific method and practical results. Throughout Europe the United States Fish Commission is being held up as one of the most striking evidences of the public spirit, intelligence and liberality of the American nation.

H. W. SPOFFORD.

Forcible, But Not Polite.

There is a newspaper museum (Zeitungs-Museum) in Aachen, whose directors are anxious to possess a copy of every rare journal. They wrote a courteous letter to the editor of *L'Avenir du Tonkin*, the journal founded by the French in Hanoi after the conquest of Tonquin, requesting him kindly to present two numbers to the museum. They received a letter, of which the following is a translation: "Hanoi, January 14, 1887.—To the Manager of the Zeitungs-Museum, in Aix-la-Chapelle: I thank you for giving me an opportunity of making myself disagreeable to the Germans, and inform you that I refuse to send you the two numbers of *L'Avenir du Tonkin* which you wished to possess. Receive the assurance of my implacable hatred to the German race. J. COUSIN."

He Wanted Money, of Course.

A man stepped into the First National Bank at Lockport, N. Y., one day recently with a check for $2,000. The teller asked him if he wanted currency. "No, confound it!" he replied, "I want the money."

FARM AND FIRESIDE.

—Farmers who read the papers are not often humbugged.

—Hard soap should be kept in a dry place several weeks before using. It will last much longer.

—The great value of the millions of pounds of pork sold each year in our markets is derived from corn.

—Do not use cracked dishes; they absorb oils or fats from different kinds of food which renders them unwholesome.

—A brilliant black varnish for iron stoves and fireplaces is made by stirring ivory-black into ordinary shellac varnish.

—Work done in season always brings better results than when it is postponed beyond its proper time, for it is then apt to become a fruitless task.

—One who has given the method a trial says that an excellent mode of ridding animals of lice is to dip a curry-comb in kerosene frequently while using it on the hide.

—We are quite as likely to find the better market for our products by the increase of the home demand as by looking to foreign markets where others are selling more cheaply than we can afford.—*Farm, Field and Stockman.*

—Fried Chicken a la Italienne: Cut up a chicken, dip in a batter which has mixed in it chopped tomatoes, one onion, thyme, parsley, pepper and salt; fry brown in plenty of boiling lard, and serve with tomato sauce.—*Louisville Courier-Journal.*

—Fried Parsnips: Scrape and leave in cold water for an hour, then cook half an hour in hot salted water, wipe, slice lengthwise, dip in melted butter, then in flour seasoned with salt and pepper, and fry in boiling dripping. Drain free of fat and dish.—*Boston Budget.*

—Water-cresses: Wash well, pick off decayed leaves and leave in ice water until you are ready to eat them. They should then be shaken free of wet and piled lightly in a glass dish. Eat with salt. They are a piquant appetizer on sultry mornings and very wholesome.—*Exchange.*

—Small Sugar Cakes: One heaping teacup of sugar, three-quarters of a teacup of butter, one-quarter of a teacup of sweet milk, two eggs well beaten, two teaspoonfuls of cream of tartar, and one teaspoonful of soda dissolved in hot water. Use flour sufficient to enable you to roll out the dough, one salt-spoonful of salt, nutmeg and cinnamon to taste. Cut into round cakes and bake quickly.—*Household.*

—The following preparation applied to the surface will prevent any rusting on plows or any other metal surfaces. Melt one ounce of resin in a gill of linseed oil, and when hot mix with two quarts of kerosense oil. This can be kept on hand and applied in a moment with a brush or rag to the metal surface of any tool that is not going to be used for a few days, preventing any rust, and saving much vexation when the time comes to use it again.—*St. Louis Republican.*

—If you have soiled white Spanish or cachemire lace do not throw it aside as worthless, for it may be colored with some of the dyes now to be found in small packages. The lace may then be used in a great many ways. One way is to trim the edge of tidies made of strips of ribbon and lace or of ribbons and velvet, or of those novelties for the backs of chairs made of a strip of plain silk placed on each side of an elegant strip of crazy patchwork.—*Indianapolis Journal.*

FARM IMPROVEMENTS.

Timely Suggestions for the Consideration of Thoughtful Agriculturists.

Every thing in nature is apparently a grand waste of power and effort. A weed matures three million seeds and perhaps a dozen grow. A pine in the forest during its life sheds incalculable myriads of seeds and only a few of them germinate. Trees produce fruit and seeds mature into plants only to be destroyed by insects; animals breed and multiply and then starve or perish by disease, or destroy each other. It seems as if the whole organic creation was made to finally perish and become food for invisible germs. The matter remains, and is changed constantly, but the force seems to be used without useful effect until man takes hold of his domain and "replenishes the earth." But man himself to a great extent follows this universal principle, and not only savage people destroy each other, and perish by self-inflicted neglects and injuries, but civilized nations bend their most untiring energies to arm themselves for mutual slaughter. The farmer is the conservative and protecting agent. He turns natural laws into defined channels and directs their operation. But he is still imperfect in this art, for he has not succeeded as yet in diverting the destructive action of these natural laws. Spring time is opportune for considering this subject so that better and more systematic efforts may be made at once for effect the coming season.

Insects prey upon crops and upon farm animals. Germs of disease, ever present in the atmosphere, attack the animals weakened by unhealthful food or other unwholesome conditions. Injurious animals, as dogs, ravage the flocks; the quarrelsome members of the herd wound and harass the weaker one; and in many ways the farmer finds his labor spent for naught. What can be done to avoid these injuries? Much that is in the power of the farmers. First the natural laws which control these things should be studied. The habits of destructive insects should be learned and systematic work done to destroy them. The live-stock should be better fed and cared for, the laws of nutrition studied and the nature of the foods be known. The evil results of foul air, filth, impure water and injudicious breeding must be realized and a healthful system of management be carried out. Injurious animals should be made harmless. Dogs should be kept in subjection; horns should be prevented by the simple process of removal of the germs when the animal is young; the land should be cultivated under the best methods, and at the same time the farmers should insist upon a reduction of the public burdens by economy in expenditure and the stoppage of all wastes and costly jobbery.—*Cor. N. Y. Tribune.*

—Here is a bit of French fun with a real funny notion in it; Monsieur, madame and Bebe were occupied in the purchase of pictures, and were discussing the merits of two canvasses, each representing a melon. The parents hesitated in their choice, when the question was solved by Bebe. "Take this one, mamma," said he; "it has not been cut."—*Golden Days.*

—"Mamma," asked little Edith, "is difficulty a real nice medicine?" "Why, Edith, what put such a ridiculous idea into your head?" "Uncle George said last night that his little boy's life was saved with difficulty, and I was wondering if it was any nicer than the nasty stuff you made me take when I had the measles."—*Boston Transcript.*

—It is supposed to be considerably over four thousand years since the great engineering works necessitated by the overflows of the Yellow river were undertaken by Yao and Shun that have made their names famous in the annals of China.

A FAMOUS DETECTIVE.

JAMES JACKSON, the famous State detective, resides in Sing Sing, and is generally in attendance at the prison. His duties are to examine carefully the face of every convict as he enters, and to scrutinize every visitor in order to prevent any discharged convict seeing his pals. Occasionally he has to make long journeys in pursuit of runaway prisoners or to identify criminals convicted in other States. He never makes a mistake; if once he looks a man in the eye he will know him under any disguise, as he tells his man by the look of his eyes. Once an escaped convict had his nose pared down one third, but Jackson detected him at once, notwithstanding this remarkable change of feature. Mr. Jackson is about 5 feet 8 inches in height, about 35 years old, of a light and sinewy build, with black hair and piercing black eyes, and is altogether remarkably handsome. He knows about 10,000 criminals, and it is simply wonderful that he can distinguish the features of every one. On his long journeys he eats very moderately and always takes one Brandreth pill at night. When much fatigued by the jolting of the cars on his tiresome trips he uses two Allcock's Porous Plasters on the small of the back, which give him renewed vigor and quickly relieve him of all weariness. These are the only two remedies he uses, and he attributes his vigor and remarkable health to Allcock's Porous Plasters and Brandreth's Pills. *Sing Sing, (N. Y.) Daily Register.*

A SON of a gun is apt to be a bore.—*Boston Post.*

"Don't Marry Him!"

"He is such a fickle, inconstant fellow, you will never be happy with him," said Esther's friends when they learned of her engagement to a young man who bore the reputation of being a sad flirt. Esther, however, knew that her lover had good qualities, and she was willing to take the risk. In nine cases out of ten it would have proved a mistake; but Esther was an uncommon girl and to every one's surprise Fred made a model husband. How was it? Well, Esther had a cheerful, sunny temper and a great deal of tact. Then she enjoyed perfect health and was always so sweet, neat and wholesome that Fred found his own home most pleasant, and his own wife more agreeable, than any other being. As the year passed and he saw other women of Esther's age grow sickly, faded and querulous, he realized more and more that he had "a jewel of a wife." Good health was half the secret of Esther's success. She retained her vitality and good looks, because she warded off feminine weaknesses and ailments by the use of Dr. Pierce's Favorite Prescription.

ADAM had a spare rib with apple sauce.—*Boston Post.*

Excursions to Ottawa, Kansas.

The Great Rock Island Route announces an excursion rate of one first-class fare for the round trip to Ottawa, Kan., and return, on account of the annual meeting of the German Baptist Brethren, tickets good for going passage May 25th to 29th inclusive, and for return passage thirty days from date of sale. FREE CHAIR CARS, magnificent Pullman Palace Sleeping Cars, Elegant Day Coaches, Unequaled Dining Cars, two daily trains each way. For further particulars address, E. A. HOLBROOK, G. T. and P. A. C. R. I. & P. R'y, Chicago, Ill.

A HOME RUN—running the sewing machine.—*Life.*

It is a Fact,

that Dr. Harter's Iron Tonic is cooling to the blood, controls excessive perspiration, and will safely tide you over that period characterized by headache, fainting spells, exhaustive spasmodic affections, and will give strength and new life to the entire system.

A NON EST opinion—the coroner's verdict.

DON'T hawk, hawk, and blow, blow, disgusting everybody, but use Dr. Sage's Catarrh Remedy.

AN inn-ovation—banquet at a hotel.—*Pretzel's Weekly.*

HOW MY THROAT HURTS! Why don't you use Hale's Honey of Horehound and Tar. Pike's Toothache Drops Cure in one minute.

THE barber's favorite city—lequa-city.—*Columbus Dispatch.*

IF afflicted with Sore Eyes use Dr. Isaac Thompson's Eye Water. Druggists sell it. 25c.

CRUEL. The washer-woman who daily wrings men's bosoms.

OXYGEN CURE. Throat, lung, nervous diseases. Book free. Dr. Geppert, Cincinnati, O.

A MAN who does business on a large scale—a coal-dealer.—*Life.*

BRONCHITIS is cured by frequent small doses of Piso's Cure for Consumption.

THE MARKETS.

CINCINNATI, May 16.

LIVE STOCK—Cattle—Common	$1 50	@ 2 50
Choice Butchers	3 75	@ 4 60
HOGS—Common	4 00	@ 4 60
Good Packers	4 70	@ 5 00
SHEEP—Good to choice	3 40	@ 4 00
LAMBS—Good to choice	6 50	@ 7 00
FLOUR—Family	3 50	@ 4 00
GRAIN—Wheat—No. 2 red		@ 86
No. 3 red	82	@ 84
Corn—No. 2 mixed		@ 43½
Oats—No. 2 mixed	30	@ 30¾
Rye—No. 2		@ 66
HAY—Timothy No. 1	10 00	@11 00
TOBACCO—Medium Leaf	6 00	@ 7 90
Good Leaf	8 00	@ 9 90
PROVISIONS—Pork—Mess	16 00	@16 25
Lard—Prime Steam		@ 6 87½
BUTTER—Choice dairy	14	@ 15
Choice to Fancy Creamery	17	@ 19
APPLES—Prime, per barrel	3 00	@ 3 50
POTATOES—Per bushel	50	@ 60

NEW YORK.

FLOUR—State and Western	2 50	@ 2 90
GRAIN—Wheat No. 2 Chicago		@ 94½
No. 2 red	96¾	@ 97
Corn—No. 2 mixed		@ 49¾
Oats—mixed	34	@ 36
PORK—Mess	15 25	@15 50
LARD—Western Steam		@ 7 02

CHICAGO.

FLOUR—Wisconsin winter	$3 90	@ 4 00
GRAIN—Wheat—No. 2 red		@ 86
No 2 Chicago spring		@ 85½
Corn No. 2		@ 38
Oats No. 2	26	@ 26¼
PORK—Mess	20 75	@21 00
LARD—Steam	6 60	@ 6 62½

BALTIMORE.

FLOUR—Family	3 60	@ 3 65
GRAIN—Wheat No. 2	95¾	@ 95½
Corn—Mixed		@ 48
Oats—Mixed	34	@ 35
PORK—Mess	15 50	@18 00
LARD—Refined	8¾	@ 8½
CATTLE—First quality	5 00	@ 5 25
HOGS	6 50	@ 7 00

INDIANAPOLIS.

GRAIN—Wheat No. 2 red	$	@ 84
Corn—Mixed		@ 38¾
Oats—Mixed		@ 28¾

LOUISVILLE.

FLOUR—A No. 1	$3 75	@ 3 90
GRAIN—Wheat—No. 2 red		@ 82
Corn—Mixed		@ 43
Oats—Mixed		@ 31
PORK—Mess		@17 00
LARD—Steam	6 25	@ 6 50

The Old Silver Spoon.

How fresh in my mind are the days of my sickness,
When I tossed me in pain, all fevered and sore;
The burning, the nausea, the sinking and weakness,
And even the old spoon that my medicine bore.
The old silver spoon, the family spoon,
The sick-chamber spoon that my medicine bore.

How loth were my fever-parched lips to receive it,
How nauseous the stuff that it bore to my tongue,
And the pain at my inwards, oh, naught could relieve it,
Though tears of disgust from my eyeballs it wrung.
The old silver spoon, the medicine spoon,
How awful the stuff that it left on my tongue.

Such is the effect of nauseous, griping medicines which make the sick-room a memory of horror. Dr. Pierce's Pleasant Purgative Pellets, on the contrary, are small, sugar-coated, easy to take, purely vegetable and perfectly effective. 25 cents a vial.

AN author is a queer animal. His tale grows out of his head.