THE STURGEON FISHERY.

BY H. C. HOVEY.

Having recently enjoyed facilities for informing myself as to the methods and results of the principal sturgeon fisheries in this country, it may be supposed that some of the facts thus gathered may be of general interest.

It seems that, in the month of May, when sturgeon most abound, the market is usually supplied with other and choicer varieties of fish. Hence, until recently, this really valuable food fish has been neglected and its commercial importance underestimated. This difficulty has been met and overcome by the enterprise of New York packers. The process consists in placing the sturgeon, as soon as caught and dressed, in a large freezer, where, by a patented method, they are frozen solid as they lie in boxes. This process is so perfected in the works at Salem, N. J., that 125 sturgeon, averaging 85 pounds each when dressed, can be frozen every seven hours. The fish are afterward taken out of the boxes and stored in large rooms, through the center of each of which a freezing apparatus extends that is charged anew every day. By this means the fish can be kept for months until they come into demand.

The sturgeon range from Georgia, in winter, to St. John, N. B., in summer, and are followed up throughout the season by men expert in their capture. Large gill nets are used in this business, each about 200 fathoms long, and with meshes a foot in size. The Delaware River is the principal field of operation. Sturgeon enter this stream about the 22d of May, and in such immense numbers that nets about a quarter length have to be used, larger ones being at that time unmanageable. Mr. Blackson, an experienced fisherman, tells me that he has seen them so abundant that his net would sink with their weight as soon as it was thrown out. The average catch per net is from twenty-five to thirty fish apiece, at each cast. This lasts about two weeks. The sturgeon move steadily up stream toward the head of the river, and then suddenly disappear about the 10th of June, after which they must be sought elsewhere. How they get out of the river without being caught is a mystery. All that the fishermen know about it is, that one day they are busy catching fish, and the next all their nets are empty!

The boats used in this business are all constructed on the same general plan; about 24 feet keel, 7 or 8 feet beam, capable of carrying about thirty sturgeon apiece. A boat load of big ones looks, oddly enough, like a load of small logs!

The flesh of the sturgeon, as is well known, is rather coarse and oily; and, as much depends on its right preparation for the table, we took some pains to inquire how it is cooked by the wives of the fishermen themselves, who ought to know as well as anybody, seeing that it constitutes a staple article of their diet. From several methods recommended, we give the two that seem the most promising:

The first method is to cut the flesh into slices and parboil them to get rid of the superfluous oil, and then fry them in a thin batter.

The second method is to cut up the meat into squares two inches thick, which are to be thoroughly boiled, and then pickled for two days in spiced vinegar, after which they are ready for eating, and are considered excellent by the fishermen.

The usual way of preparing sturgeon for market, however, is by smoking. Strips an inch or two thick are put through a pickling process, then hung on hooks over a slow fire of corn cobs or sawdust of hard wood. After thus smoking for a single night they are ready to be shipped to any part of the country.

The preparation of caviare is an important part of the business. While this is not yet in as general use in this country as in Russia and other parts of Europe, where it is so highly esteemed that no repast is served without it, it is coming into favor, especially in the Western and Southern States. There are two sorts of caviare, the soft and the hard; the latter being worth about twice as much as the former. The value of the best hard caviare, in the South, early in the spring, is said to be from fifteen to twenty cents a pound.

In order to make the best article it is necessary to strip the roe from the sturgeon as soon as possible after the fish has been caught. Before being dried, it is rubbed through a coarse sieve to break the eggs apart, and to free them from membranous tissue. Next the roe is thoroughly salted; after which it stands a certain length of time. Then it is emptied into fine sieves, where it remains till it is so dry as to roll like shot. The finished caviare is packed in casks previously lined with napkin linen, each layer being salted with fine table salt. Each keg holds about 150 pounds. With proper care, the caviare may be kept for a year or longer. For the trade it is often canned like fruit, in which condition it will stand transportation to warm countries, and will keep an indefinite length of time. It may be eaten as put up without further preparation; though it is thought to be improved in flavor by the addition of a little vinegar or lemon juice. Pressed caviare is a favorite with Russian soldiers, who are said to take a liberal supply in their knapsacks whenever they are going on a long march. Improvements might be made, no doubt, in the preparation of American caviare, and the subject is worthy of receiving the especial attention of packers.

"RIGHT-HANDEDNESS" extends very far along the animal series. Parrots hold their food by preference in the right foot, and, though we cannot speak positively, wasps, beetles, and spiders seem to use the right anterior foot most commonly.

Red, White, Blue, Green, and Violet Prints.

AT a recent meeting in this city of the Association of Operative Photographers, as reported in *The Photographic Times*, a large number of blue prints were exhibited by Mr. Heckel, and he gave his method of making them as follows: Take 1 oz. citrate of iron and ammonia in 7 to 8 oz. of water, and another solution of 1 oz. red prussiate of potash in 7 to 8 oz. of water; coat your paper with a Buckle's brush, applying the iron solution first, and when dry, coat with the prussiate solution, and the paper is ready for exposure. To judge of its proper time requires experience. Fix and wash in plain water only. Red prints are made by coating paper with a solution of 15 grs. nitrate of uranium to 1 oz. water, with which the paper is coated. Print till the image is fairly visible, and apply a solution of red prussiate of potash, which renders the print of a brownish red color. This has been done very successfully.

Mr. Ehrmann: The addition of liquid ammonia to the citrate of iron and ammonia solution, when employed for the making of blue prints, varies the tone of blue to such an extent that even a perfect violet has been attained. Red prints, as mentioned before, can also be modified to a variety of colors. He thought weaker solutions may possibly give better results as to color. He employed a one per cent. solution of the uranium nitrate and a two per cent. solution of the red prussiate. An after treatment with sesquichloride of iron renders the print green. By varying the strength of the solutions employed, different shades of color may be obtained. His experiments on gelatine positives, the results of which were laid before them some time ago, had convinced him that in a similar way all gradations of color from canary yellow to emerald green, and positive blue again, can be as readily obtained on a surface of paper as on gelatine.

Mr. Powers gave as his mode of making blue prints:

Solution No. 1.

Sesquichloride of iron	6 grains.
Chloride of copper	44 "
Hydrochloric acid	5 "
Water	1 ounce.

Coat and dry in dark room.

This paper is very sensitive to light. Expose and develop with

Solution No. 2.

Sulphuric acid	4 grains.
Sulphocyanide of potassium	9 "
Solution No. 1	10 "
Water	4 ounces.

The tone is blue, but may be changed to red and gradations of other colors with ferricyanide of potassium 30 grains to 1 ounce of water, and perchloride of iron as demanded. Fix with acetate of lead.

Mr. Murphy stated that he makes a very fine red on plain silvered paper by using 1 grain of chloride of sodium to 1 ounce water, into which the paper is immersed and very speedily removed. Sensitize with neutral nitrate of silver, 10 grains to the ounce. Fix in hypo. 1 to 32, made strongly alkaline with ammonia. Prints of that kind are frequently made for certain engraver's purposes, for which the silver deposit is finally bleached by bichloride of mercury.

Mr. Grenier: Dioxide of manganese and hydrochloric acid remove the yellow tone often remaining after the use of mercury.

Mr. Murphy: This bleaching may be effected to greater perfection with perchloride of iron.

The Flow of Water in Pipes.

Mr. Hamilton Smith, Jr., has prepared for the transactions of the American Society of Civil Engineers a very valuable record of experiments undertaken with the object of redetermining the laws governing the flow of water through pipes. The experiments were 88 in number, and conducted under widely differing conditions as to dimensions of pipes, bulk of water, and every other factor that has been recognized as affecting the result.

It is well known that American engineers have exceptional experience in the conveyance of water in pipes under extraordinary pressures, particularly in connection with Californian hydraulic mining operations. Of the experiments referred to 71 were made by Mr. Smith personally, with pipes ranging from 4 feet to ½ inch diameters, and with velocities varying from 20 feet to ⅛ foot per second.

The materials of which the pipes were made were wrought sheet and cast iron, glass, and wood; and their interior surfaces varied from the almost perfect smoothness of glass to the roughness of old iron much incrusted by the continued action of soft water. It appears from Mr. Smith's incidental observations that the common Californian practice, for water with heads of about 200 feet, is to use pipes made of common No. 14 sheet iron, single riveted, pitched inside and out, and simply put together, stove-pipe fashion, with slightly conical joints.

Details are given of the discharge of a pipe belonging to the Spring Valley Mining Company, laid in 1870, and said to remain in perfect condition. This pipe is made of double riveted sheet iron, three-eighths of an inch thick at the point of greatest pressure, where the actual head is no less than 887 feet. The maximum tensile strain on the iron is 17·549 pounds per square inch.

Round stones weighing about 25 lb. passed through the pipe with a velocity of nine feet per second, while the computed velocity of the water is 10·78 feet per second. It may be remarked, however, that the value of *m*, the variable coefficient depending upon the character of the interior of a pipe, is very low with small, rough pipes, while it increases with the velocity for smooth pipes, and also increases with the diameter. The importance of this question to the hydraulic engineer is manifest from the fact that the experiments show a variation in the value of *m* from 33 to 67.

An Inexhaustible Fish Supply.

In the opening lecture before the Fisheries Conferences, in London, Professor Huxley presented facts substantiating his statement that in fishing districts an acre of sea was more profuse in food production than an acre of land. He said that he had no doubt that there were some fisheries which were inexhaustible. Instancing the salmon rivers, he said it was quite clear that those who would protect the fish must address themselves to man, who was reachable by force of law, and that it not only might be possible, but it was actually practicable to so regulate the action of man with regard to a salmon river that no such process of extirpation should take place. But if we turned to the great sea fisheries, such as cod and herring fisheries, the case was entirely altered. He believed that the cod, herring, pilchard, mackerel, and similar fisheries were inexhaustible, and were entirely beyond the control of man, either to diminish the number of fish or to increase them by cultivation. But there were sea fisheries capable of being cultivated and controlled, in part at least, by man.

Seaweed for Boilers.

A new material for coating boilers, etc., for preventing radiation of heat, is described by Mr. Edward Stanford, F.C.S., as made of charcoal cemented by the new substance "algin," which he has succeeded in separating from the commoner sorts of seaweed. Charcoal has long been known as one of the best of solid non-conductors of heat. It would have been employed for this purpose before now but for the difficulty of agglutinating it. Mr. Stanford's "carbon cement" consists of 97 per cent. of charcoal and 3 per cent. of algin, which is quite sufficient to make it cohere. As the charcoal itself is made from seaweed, it is a somewhat remarkable fact the whole covering is thus made from the one material.

The solution of algin is also described, on the authority of Mr. Spiller, as the best thing yet discovered for arresting or preventing incrustation in steam boilers. Mr. Stanford describes most of the troublesome incrustations as organic compounds combined with alkalies. The algin solution is said to be highly efficacious in precipitating the lime in such a fine state of division that it can be easily blown out. It follows, therefore, that seaweed, in one form or another, is proposed as an excellent internal and external application for steam boilers.

Yellow Fever.

Dr. Dominigos Freire, appointed by the Brazilian Government to investigate the nature and cause of yellow fever outbreaks, has reported some of his researches. He has found in the soil of cemeteries where yellow fever subjects have been interred myriads of microbes identical with those seen in the vomit, blood, and urine of patients suffering from the fever, as well as vibriones in rapid motion. Dr. Freire believes that, after passing through the porosities of the earth, these germs disperse themselves in the atmosphere, while others are carried by storm rains to the towns, and there provoke epidemics of the disease. He proposes that the bodies of all persons who die of yellow fever be cremated.

Blinkers.

The question has often been asked, "Why do horses wear blinkers?" We cannot answer the question. It seems to us that they are useless, ugly, and, to some extent, injurious to the eyesight. The most beautiful feature of the horse is its eye. If it were not "hid from our gaze," it would serve to denote sickness, pain, or pleasure. Many a time would a driver spare the whip on seeing the imploring eye. The argument in favor of blinkers is, we believe, that horses are afraid of passing carriages. This objection, if valid, is of little weight, as such timidity would soon be overcome. We trust, now the cruel bearing rein has been cast aside, that blinkers will also be abandoned—a course which would, we feel assured, be attended with advantage to both man and horse.—*Lancet.*

The Illuminations at Moscow.

The following are details by which the illuminations at Moscow at the coronation were produced:

The Tower of Ivan the Great and its side galleries were lit up by 3,500 small Edison lamps, worked by 18 portable engines, which moved a number of dynamo-electric machines of every existing system. The portable engines and machines were kept at the other bank of the Moskwa. The sheds communicated with the tower by 70 overhead wires. On the ramparts of the Kremlin toward the river eight large and ten smaller electric suns threw their light over the river. The rest of the illuminations consisted in 200 000 lamps and 30,000 colored glass globes, 50,000 lanterns of Venetian glass, 600,000 tapers, and 10,800 pounds of fireworks.