

66.—FISH-CULTURE IN SOUTHERN CHINA.**By CHARLES SEYMOUR.**

[Dispatch No. 96 to the State Department.]

It must be borne in mind that the Chinese are not communicative in respect to any matter of business in which they are interested, and will not knowingly impart any information that may, in the slightest degree, be utilized by foreigners, or tend to induce or cause rivalry. In glean- ing this information I have had assistance from a foreign gentleman, who has held official relations to the Chinese during a residence of about a quarter of a century in China, and has had access to sources of knowl- edge regarding the various industries of this country to which a com- parative stranger could not reach. Through him I have reached many facts.

In an old and populous country like China, the supply of food is a question that demands serious attention, especially when the sub- sistence of a human adult has to be restricted, among the masses, to a cost of about \$2 per month, or about 6 or 7 cents per day. Rice in China is the staple article of food, as wheat and corn head the list in America. Vegetables take the second place in the Chinese cuisine. Fish stands next in the list of Chinese eatables; and although the poor and laboring masses are mainly restricted to rice and vegetables for diet, enormous quantities of fish are consumed; and to supply the demand for fish there are in all the villages, and in the suburbs of the cities, pools for fish-culture, and from these pools fish are scooped out to sup- ply the markets and peddlers, for sale to and distribution among con- sumers, who never buy a fresh fish out of water.

Enormous tubs containing water are daily filled with live fish that are brought direct from the fish-pools in fish-boats, into and through which by constant pumping fresh water is carried; and those huge fish- tubs carry thousands of fish to the Hong-Kong fishmarkets, by means of the daily steamers.

At all fish-stands in Canton and in the surrounding country fish are thus sold alive, and the consumer makes his own choice. If a pur- chaser wants only a portion of a fish, he is accommodated by having one side of a fish cut off without getting any bone with the meat, and as soon as a buyer is found for the other side of the fish the skeleton of the fish is hung up to attract buyers who want a fish-soup or chowder. In this way small buyers are enabled to get portions of fish weighing from 2 to 10 pounds, and thus indulge themselves in a dish that cannot be obtained every day by the poorest class.

Fish, then, is in demand everywhere, and no one among the natives seems to be indifferent to this article of food, although it must be

stated that few foreigners ever put freshwater fish on their tables, for reasons which will appear when it is known by what process Chinese fish-culture is carried on.

CARP CULTURE.—The carp is successfully cultivated, and nearly all of the fish-pools in this and surrounding cities, villages, and towns are supplied from one and the same fish-hatchery.

The locality where this great fish-hatchery has long flourished is known as Kow-Kong, in Kun-Chuk district, in the province of Quang-Tung, where fish-culture from the spawn, up to a suitable size, for transfer to fish-pools in all parts of the country, has been carried on for many centuries, without any rival locality becoming a successful competitor. The business is conducted so exclusively and carefully that outsiders are not very minutely informed as to the exact process.

The chief peculiarities of the locality known as Kow-Kong are that it is in the heart of the silk district of Southern China, and at a part of the West River (or western branch of the Canton River), full of alluvial deposit, undisturbed by boats, with about 12 feet depth of water on that reach, where the river is about half a mile in width and the shore or bank beautifully shaded by trees, and about 90 miles from the sea, and subject to moderate tidal changes.

It is believed, and doubtless it is true, that the refuse silk-worms from the silk-growing district attract fish to that point for food; and that the even temperature of the water and its exemption from disturbance, together with the rich deposit of alluvium, and the shadiness of the locality, have given that Kow-Kong reach on the West River peculiar advantages as a spawning ground for fish.

The spawning season generally occurs during the third and fourth moons of the Chinese year, which begins within a week or ten days of the western 1st of February.

The rainy season in Southern China usually begins about the 1st of March and sometimes by the middle of February.

The third and fourth months, or moons, of China would correspond nearly with our months of April and May, or toward the latter part or after the middle of the rainy season, extending through three or four moons. The fish spawn is then most plentiful. The waters being more or less muddy and thick at that time the spawn cannot be seen in it, and to ascertain if the spawn has arrived the fishermen have recourse to weighing a certain quantity of water, which is increased in weight by from 2 to 4 ounces of spawn if the spawning has commenced, according to an experienced fisherman's estimate. The spawn is caught only on the flood tide in closely woven bags with wide mouths. The insides of the bags are coated with a paste made from the white of eggs and flour, which is often renewed as it washes away. To this paste the spawn adheres. The mouths of the bags are then somewhat closed and kept above water while the lower parts of the bags are kept under water with the spawn, and after a couple of days they are removed

from the river to fish-pools or ponds which are about 20 feet square and are fed by tidal creeks from the river, flood-tide water being preferred.

After about six days the eggs have germinated into small fish. During this hatching process a covering of tree branches is put over the pond, about 4 feet above the water, to screen the pond from excessive light and heat and from the influences of capricious weather. When the fish are about 1 inch long they are sold to stock fish-ponds in various localities where fishermen are raising fish for markets.

Now comes the filthy process of feeding fish which prevails in Southern China. The fish ponds are located at every city and village on tidal rivers, streams, and creeks, and at the corner of each of these fish ponds is an accumulation of human excrement, which (after undergoing water-rinsing twice to extract urinal properties) is mixed with finely-cut young grass and fed to the fish. On this food and the tidal water they thrive and have no other nutriment.

The climatic conditions of a locality for fish-culture are worthy of consideration. The temperature of this portion of Southern China ranges during the year from 38° to 98° Fahrenheit in the shade, there being only a few days, perhaps a week, of these extremes. The temperature during the spring months of April and May ranges from 70° to 90°, the average being from 80° to 85°. Ice seldom forms. Once perhaps in half a dozen years frost makes a morning appearance, but quickly vanishes.

If further investigations of carp culture or fish-culture in Southern China are desired I can cause a thorough examination of this subject, but it is impossible to obtain more definite information without employing good men to go and visit the fish-hatchery district, and even then every statement has to be tested by facts from various sources.

It is possible that in the archives of the French legation, at Peking, there may be the results of a very thorough investigation into the industries of China by a corps of experts, who were attached to that legation when France was represented in China by a minister named Le Grene, about 1844. Among those experts who were employed in that work were gentlemen who were known to be very competent in their respective departments. Possibly fish-culture received due attention, as did silk and other branches of industry.

UNITED STATES CONSULATE,

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67.—NOTES ON THE HABITS OF THE GOLDEN IDE (*IDUS AURATUS*).

By RUD. HESSEL.

The golden ide (*Idus auratus*) likes a cool, clear water. Notwithstanding, it can be kept in ponds where the water reaches a higher temperature—from 70° to 80°. In clear, cool water, such as spring water, they will obtain a more brilliant color than in muddy water,