

FRESH FARMING OF JAPANESE



EGG DEPOSITS OF TURTLE COVERED WITH WIRE BASKETS.



SECOND-YEAR YOUNG OF TURTLE



Fresh farms, turtle ranches, oyster gardens, goldfish, clam, eel, carp, and mullet pastures, barnacle beds, salmon and trout patches abound in Japan.

The island kingdom—now first in war, and determined to be first in peace—is showing the world new things in the domestication and cultivation of sea foods. Literally, the Japanese are preparing to farm the bed of the ocean and supply the orient, at least, with the delicacies of the sea raised on scientific lines and cultivated to immense profit.

The Japanese, always a vegetable and fish eating nation, and until a few years ago a nation that ate no meat, have seized upon their natural advantages and are leading the world in the cultivation of sea food. The oyster farms of the island empire are paying heavy dividends from the sale of the succulent bivalve, and yielding fortunes in the by-product—pearls. The turtle ranches are turning out tens of thousands of delicious tortoises each year. Japan has stolen the goldfish from China and is selling a better species back to their slower neighbors. Hundreds of acres of fine streams are filled with the surplus from their salmon fisheries.

Having but 100,000 square miles of territory and 20,000 miles of shore line, with many bodies of fresh water, the Jap is dividing up the tillable sea and producing riches. Japs eat more fish per capita than any nation in the world—and, instead of depleting the supply, they are increasing it, while improving the species.

Family Controls Turtle Trust.

Perhaps the most interesting of these water ranches are the turtle farms of the Hattori family—the "turtle trust" of Japan—who, having discovered the system of producing delicious turtles in huge numbers, have secured a practical monopoly on the trade, and who sell about 60,000 "suppon" or soft shell snapping turtles, each year in the markets of Osaka, Tokio, and Nagoya—nearly \$10,000 worth of turtles each year from their farms.

These ranches are at Fukagawa, a suburb of Tokio, seven acres; the large farm at Maizaka, near Hamamatsu, which has twenty-five acres; and a small farm near Fukagawa, two acres in extent. Some American farmers would think themselves fortunate to produce \$10,000 worth of anything on thirty-four acres; but that is not all, for the Hattoris raise goldfish, eels, and other things.

The uncle of the present Hattori founded the turtle trust on the reclaimed land near the mouth of the Sumida river, and in 1896 caught a large turtle and founded the present family of "suppon" as it exists in their ponds today. In 1898 there were fifteen, and in 1875 they commenced their experiments in breeding turtles for the market. The natural supply was not large, and the "suppon" is esteemed a greater delicacy than the diamond back terrapin or the English green back. They experimented. The parents ate up the young. They tried again and evolved a scientific method.

Building the Turtle Farms.

They laid off their acres into beds, with sloping mud banks and deep mud at the bottom, with planks sunk into the earth to prevent burrowing out, and plank fences along the dikes to keep the turtles from crawling over. Then they rounded up all the old turtles into one large pond, and on the sunniest, warmest side they built up a big bank and spaced it up.

The female turtles crawled up this warm bank from late in May to early in August, planted their forefeet firmly in the mud, dug a hole with their hind feet, laid eighteen to twenty-eight eggs in the hole, covered them with warm dirt, and crawled back into the pond. Each evening a workman went over the bank and covered the new deposit of eggs with a stout wire netting, so that other turtles could not dig them up in digging their own nests—and this was continued until they stopped laying. Then a fence of boards and bamboo was built along the water's edge to keep the young from crawling into the parent pond and being eaten up; and sixty to ninety days later the young trooped forth and by natural instinct started for the water. The fence cut them off, but at short intervals were deep pottery basins, and into these the young crawled. Each day the workmen removed them and placed them in the "one year pond." Each year the ponds are changed—except the parent pond, to which the old are added—a pond for the yearlings, one for the 2 year olds, with the 3, 4, and 5 year olds in the market pond.

This season there are about 80,000 eggs on the sunny sides of the Hattori parent ponds, which means that over 60,000 yearlings will hide in the mud and that about the same number of older ones will be sold.

Each year the number is increasing, and the demand with it. Nor is the price going up, for, although the Hattori family has a monopoly on turtles, the price remains between \$3.25 and \$3.75 a "kwan"—and a "kwan" is about eight and a half pounds.

Breeding Varieties of Goldfish.

Four hundred years ago some traveling Jap brought goldfish from China and placed them in pools at Sakai, near Osaka. This fish, it is said, was the "wakin." Since then Japan has bred goldfish in great numbers and in startling variety. The wakin is long and slender, much like the crucian carp; the tail may be single, but should split open and be either three or four lobed.

The ryukin, or "Loochoo," goldfish is much shorter in body and is the most beautiful of the fish. Besides, there are the "ranchu" or "round headed"; the "oranda-shishigashiri" or "Dutch lion headed"; the "shukin," an exclusive breed of Akiyama, a fish breeder of Tokio; and the "dome," a telescope fish, with eyes protruding sideways from its head, and the "dome-ranchu," perhaps the queerest fish in all the world. The eyes have started skyward and turned up 90 degrees, the tail or tails sprout in all directions, and the fish has no dorsal fin.

Goldfish culture is carried on all over Japan, but principally at Tokio, Osaka, and Koyama, near Nara, where every family in the town raises goldfish.

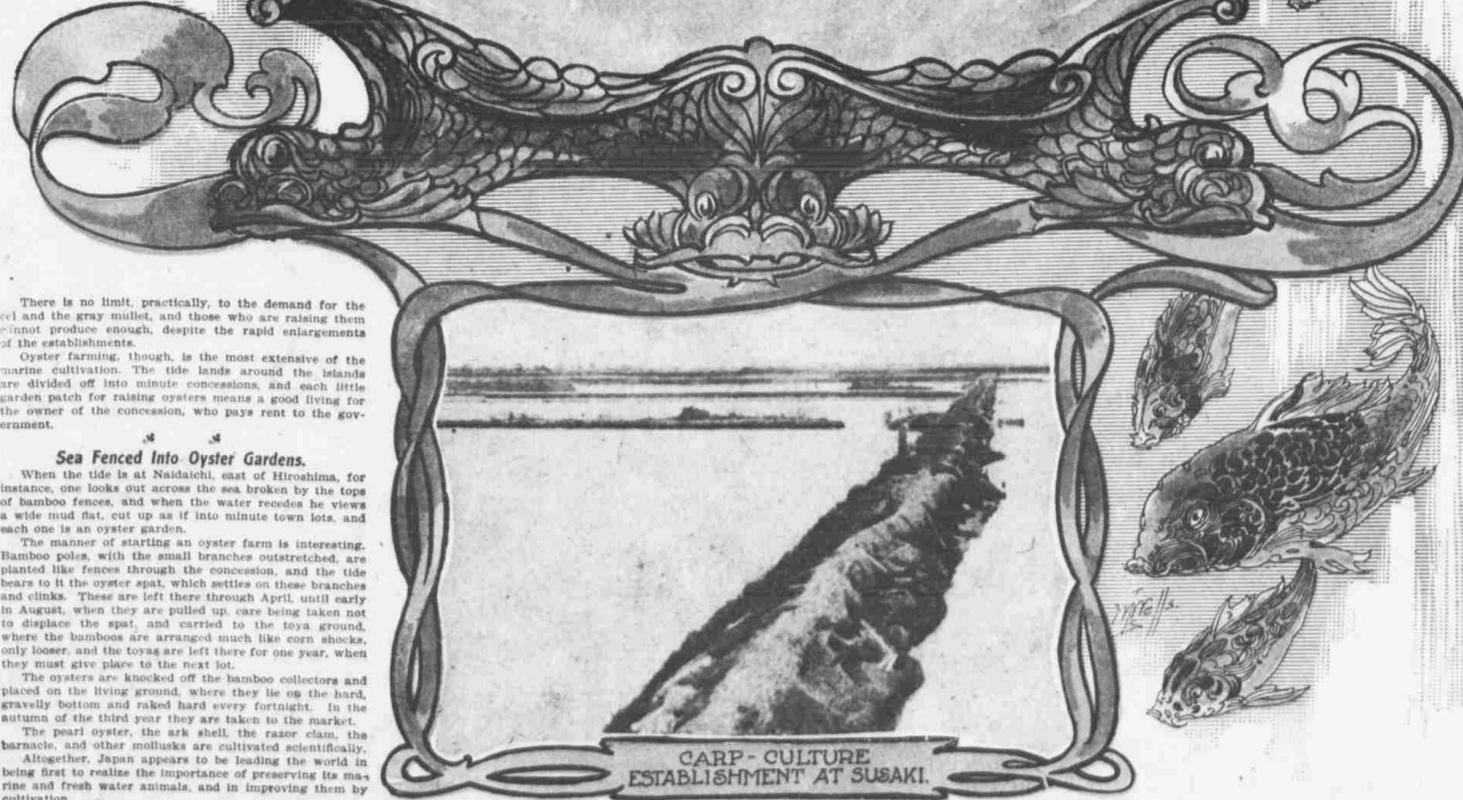
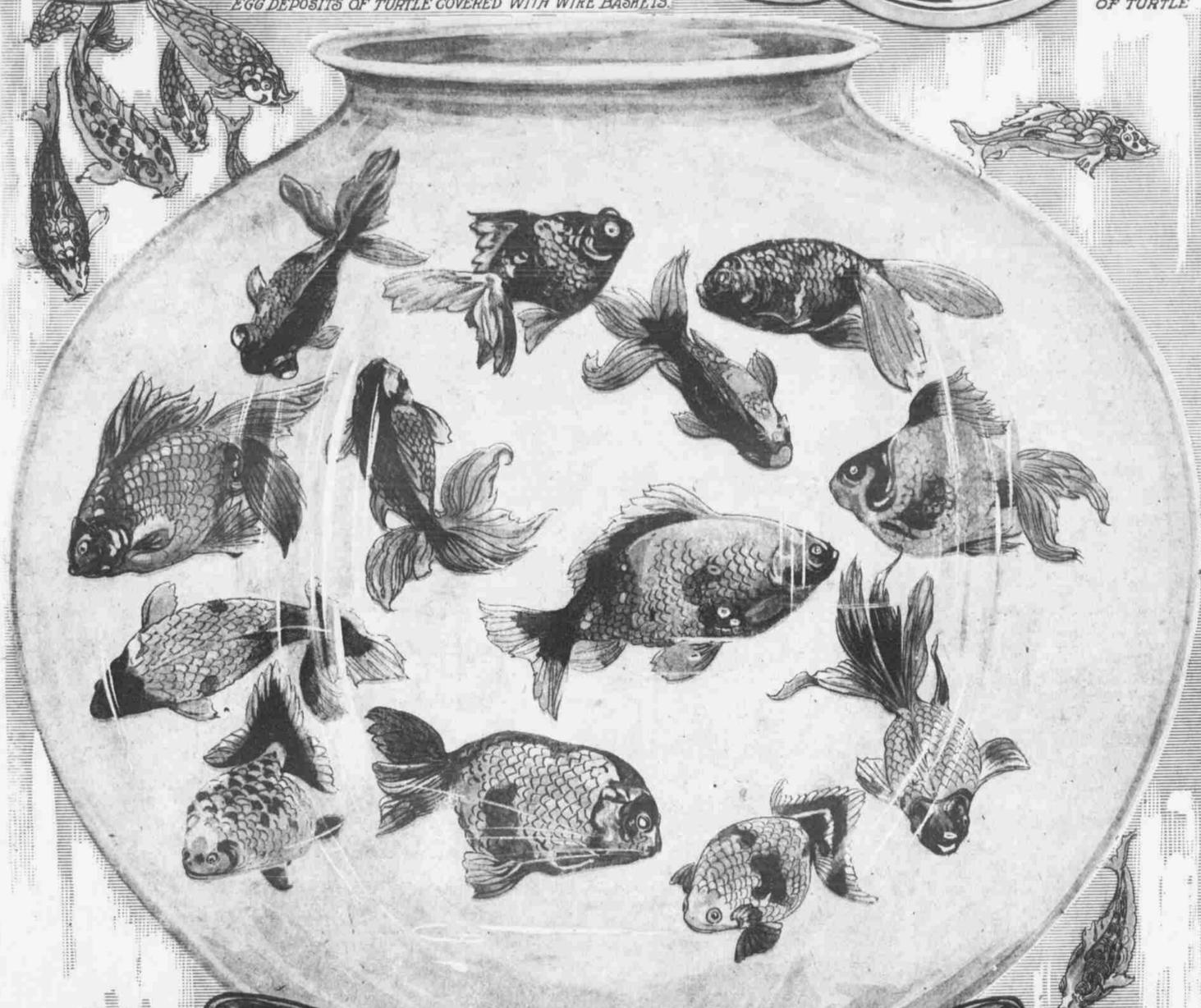
The breeding is carefully done by selection, only the choicest specimens being admitted to the breeding ponds. The young are fed carefully on the yolks of eggs, boiled for several days, then on earth worms and boiled cracked wheat. The feeding is done by lowering shallow dishes into the water, letting them lower and lower as cold weather approaches and the fish grow older.

Carp Culture on Huge Scale.

Carp culture is carried on on a huge scale all over the kingdom, and the carp ponds adjoin the rice paddies everywhere. The people of Sakurai Mura, in Shinano, raised 25,000,000 carp in one year for the market in the eastern provinces, and this in connection with rice culture.

Great care is taken in the feeding and the flavor of the carp is practically made to order, some carp raisers creating a huge demand for their fish by the careful feeding.

The eel, carp, and gray mullet are frequently raised together with the turtles. They are fed abundantly on crushed mollusks, fish worms, and such food. Hattori has developed eel culture as he has turtle farming, but he has no monopoly. The eels are marketed between the second and third years and yield enormous profit on the feeding. The feeding scene is wonderful, the entire pond seeming alive with the squirming eels, tens of thousands of them tangling into knots to reach the food.



There is no limit, practically, to the demand for the eel and the gray mullet, and those who are raising them cannot produce enough, despite the rapid enlargements of the establishments.

Oyster farming, though, is the most extensive of the marine cultivation. The tide lands around the islands are divided off into minute concessions, and each little garden patch for raising oysters means a good living for the owner of the concession, who pays rent to the government.

Sea Fenced Into Oyster Gardens.

When the tide is at Naidaiichi, east of Hiroshima, for instance, one looks out across the sea broken by the tops of bamboo fences, and when the water recedes he views a wide mud flat, cut up as if into minute town lots, and each one is an oyster garden.

The manner of starting an oyster farm is interesting. Bamboo poles, with the small branches outstretched, are planted like fences through the concession, and the tide bears to it the oyster spat, which settles on these branches and clings. These are left there through April, until early in August, when they are pulled up, care being taken not to displace the spat, and carried to the toya ground, where the bamboos are arranged much like corn shocks, only looser, and the toyas are left there for one year, when they must give place to the next lot.

The oysters are knocked off the bamboo collectors and placed on the living ground, where they lie on the hard, gravelly bottom and raked hard every fortnight. In the autumn of the third year they are taken to the market.

The pearl oyster, the ark shell, the razor clam, the barnacle, and other mollusks are cultivated scientifically. Altogether, Japan appears to be leading the world in being first to realize the importance of preserving its marine and fresh water animals, and in improving them by cultivation.

CARP-CULTURE ESTABLISHMENT AT SUSAKI.