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Philippine Trepang (*Beche de Mer*)

Trepang is a general name applied in the Philippines to all of the many species of animals belonging to the group Holothuriodea and known locally as *bêche de mer*, *balatan*, *bilate*, *munang*, *hisam*, sea cucumber, and cotton-spinner. Large quantities of these animals are gathered in the Philippines for export to China and Japan. Trepang is a staple food of all Oriental people and is an important item of export from the Philippine Islands.

Trepang in general appearance resembles pickled cucumbers. The

skin may be smooth, or covered with prickle-like teats arranged in rows or scattered over the body. In color they range from pale flesh-color to black. These animals, when dry, are hard, sausage-shaped, and appear to be altogether unpalatable and it is not until they have been cleaned, minced, and made into a most delicious soup by the skillful hand of the Chinese cook that the real value of this product of the sea is understood. *Bêche de mer* live among the white sand and coral in the sea-gardens and feed upon small sea-animals and sea-vegetation, so there is no reason why they should not rank as a delicious food product and come into general use among Europeans and Americans. I can, from experience, heartily recommend a trial of trepang soup¹ to those who delight in a dish free from the contaminations of the land, with a delicate aroma of the deep sea about it.

VARIETIES OF PHILIPPINE TREPANG.

In Manila all the large dealers in trepang are Chinese. They recognize five different varieties, as follows:

*No. 1.*²—Oë (Plate I, fig. 1). A large, uniformly black, perfectly smooth variety (*H. atra* Jæger). This species, when dry, is from 120 to 200 millimeters in length and 40 to 60 millimeters in diameter. This is regarded as the most desirable species found in the Islands and sells for the highest price, being valued at 65 to 98 centavos per kilogram wholesale, according to the size of the animal, and care in curing. I will call it the great smooth black trepang.

No. 2.—Gan Sim (Plate I, fig. 2), is a large brownish trepang, with two rows of teats on each side. The animal, when dry, is of a rather flat, oval shape, about 120 millimeters in length and 60 millimeters in width. Its back is but slightly roughened. This species is regarded as being next to the best variety, sells for 40 to 80 centavos per kilogram, and is in fair demand. We will call it the great oval brown trepang.

No. 3.—Bark Sim (Plate I, fig. 3) is the third grade of trepang and to this belongs the great mass of trepang shipped from the Islands. It includes a large variety of forms ranging in price from 35 to 70 centavos

¹ *To make trepang soup.*—Clean and wash out the trepang in cold water, slice and put them in a chopping bowl and mince fine, soak in cold water five hours; then boil for one hour, add salt and pepper and a quantity of beef or chicken stock and bring to a boil. Serve hot. [Sing Fat.]

² I have been unable to find anyone in the Philippines who recognized or could give me any information regarding the names given to the Philippine trepang by Simmonds in his *Commercial Products of the Sea*, although I have repeatedly asked dealers and fishermen both in Jolo and Manila. It is possible that his so-called "bankolungen" is the gan sim, his "munang" the oë, his "telepan" the moi whar che, his "sapatos grande" the smooth white ringed bark sim, his "sapatos china" is perhaps the great convoluted bark sim, and his "lowalowan" is possibly the bark sim, called the small black wrinkled trepang in the present paper.

per kilogram, the most abundant, perhaps, being small, black, slightly roughened, cylindrical in shape, and when dry about 90 millimeters long by 25 millimeters wide (Plate II, fig. 1). Another very common form of this grade is the Philippine convoluted trepang, a large, light brown species about 130 millimeters by 40 millimeters, cylindrical, with the body, when dry, thrown into deep folds (See Plate II, fig. 5). Another bark sim is a moderately roughened, cylindrical trepang of a dull yellowish-brown color and 150 by 35 millimeters in size (Plate II, fig. 3). Another is a dark brown, almost smooth form (when dry), with the back covered with small orange spots with black centers. This is a large species, 170 by 70 millimeters, and cylindrical in shape (Plate 4, fig. 4). I will call this the smooth white-ringed trepang. Another form very similar to the last I will term the rough white-ringed trepang. (Plate II, fig. 2.) This trepang is 160 by 48 millimeters in size, cylindrical, with the body decidedly tuberculate; it is rather dark brown in color with numerous white circles around the large tubercles of the sides and back. Another rather common trepang of the bark sim grade, is a small, very black form, with deep wrinkles in the body (Plate II, fig. 6). This variety when dry is cylindrical in shape and about 80 millimeters long by 20 millimeters deep. I will call it the small black-wrinkled trepang.

No. 4.—Moi Whar Che (Plate I, fig. 4). This trepang is a large, cylindrical black form, easily distinguished by the fact that the entire back is covered with numerous, very long teats which are black or reddish brown in color. This variety is quite abundant, but is regarded as fourth rate as a food product, the price being from 30 to 50 centavos per kilogram. I will term it the great prickly trepang.

No. 5.—Hong Che (Plate I, fig. 5) is the fifth grade of trepang, and resembles the last except that it is smaller and more cylindrical; the teats are more pointed and slightly longer. Its wholesale price is from 35 to 45 centavos per kilogram. Many of the young of the moi whar che are to be seen in this class, but are distinguished easily by their short teats. In size the hong che is from 50 to 90 millimeters in length by 16 to 20 millimeters in width.

There are numerous other grades among the 63 species of these animals found in the Philippines, but none are of sufficient importance or value to be recognized in trade. However, one very common form, called "yellow belly," is so abundant, especially about Mindoro, that it deserves at least to be catalogued. This form when dry is yellow-white on the belly and black on the back, about 60 millimeters in length and 25 in depth; its value is not above 12 pesos³ per picul. It is only the great abundance of this grade that makes it worth our consideration.

All of the above grades retail in Manila for fully 30 per cent advance on the prices obtained by the fisherman.

³One peso is equal to 50 cents United States currency, and 1 picul is 139 pounds.

DISTRIBUTION, HABITS, GROWTH, AND PRODUCTION OF PHILIPPINE TREPANG.

The wide distribution of these apparently helpless, sedentary sea-animals is a matter of interest and astonishment to all who give the subject any thought. Twenty of the species found in the Philippines are also common to Polynesia, 16 to the Malay Archipelago, 30 to the Red Sea and the coast of Africa, while 3 extend even to the west coast of America. The majority of the recorded forms are believed to be well distributed throughout the Philippines, but are most abundant in the Sulu Archipelago. The supply for Manila comes chiefly from Tacloban, Polillo, and Ambos Camarines. They are found in water of various depths, even in very shallow water and also on reefs dry at high tide, down to 137 fathoms and even to much greater depth. Sheltered places inside the coral reefs where the bottom is of coral sand seem to be favorite haunts of the bark sim and hong che forms, while moi whar che, gan sim, and oê seem to prefer water of greater depth just at the edge of the reef. The greater number of the trepang appear to pass large quantities of sand and mud through their alimentary canals; from this sand they extract the small animals and plants on which they feed. On Arboles Reef, Gulf of Davao, Mindanao, I once noticed a large number of *Colochirus quadrangulus* Less. feeding on sea-weed which at low tide was about 75 millimeters (3 inches) under water. They were so abundant that it was scarcely possible to step without treading them down, and in one scoop of an ordinary dip net I secured 57 of them. It is probable that during the season for depositing the eggs they all seek the reefs or rocky crevices. Mitsukuri,⁴ in his most interesting paper on the common Japanese trepang, writes, referring to the Island of Oki,

The people there have for a hundred years or more been in the habit of putting up loose stone-piles in the shallow sea in order to obtain a supply of this trepang.

Nowhere in the Philippines is this device put into practice although it doubtless would yield profitable results.

Practically nothing is known about the breeding time of the Philippine trepang and it is a subject well worth investigating. In Japan (as abstracted from the above paper), the trepang spawn in May and June, and at the end of the first year have a maximum size of 5 by 25 centimeters. They reach the adult condition at the end of the second year, but do not spawn until the end of the third; some individuals probably live two or three years after spawning. The young specimens are white and transparent, and they attach themselves to the roots of algæ, or seek rocky crevices in sheltered localities. Hence a rock pile affords a natural collecting ground for the very young as well as for the old. Japan has put some measures in force setting aside certain localities as

⁴Notes on the Habits and Life-History of *Stichopus japonicus* Selenka. *Annot. Zool. Jap.* (1903-06), 5, 1-21.

breeding reserves for trepang, upon which stone piles or dikes have been constructed, and in these places fishing for trepang is strictly forbidden. In this way the Japanese hope to conserve this valuable food supply.

There are so many natural breeding places in the Philippines along the coast and among the rocks on the shore line of the many islands, that our supply now is, and probably for years to come will be, much greater than the demand, or rather more than the fishermen under present conditions will take the trouble to dry and prepare for market.

METHODS OF FISHING FOR TREPANG.

In gathering trepang, the fisherman usually goes out at low tide wading in the shallow water, dragging a small canoe or *banca* behind him, into which he throws all the trepang he picks up; sometimes he fishes from a boat, with a long handled, one-pronged spear, with which he gathers up the trepang in water of 3 to 4 meters. In water of greater depth some fishermen dive and bring up the trepang in their hands. There are localities where small dredges undoubtedly could be used with good effect.

PREPARING TREPANG FOR MARKET.

The Filipino method of preparing trepang for the market is to boil them for a short time (from five to twenty minutes) in fresh water, after which they are split up the belly, eviscerated, and then thoroughly dried in the sun. Each variety seems to require a slightly special treatment particularly in regard to the length of time required for boiling, in order to bring out the best flavor. However, they should all be heated thoroughly throughout, and when taken out of the boiling water they should be hard and elastic, and should dry quickly like a hard boiled egg. The *oê* frequently is boiled only five minutes; it should be well stirred. Experience really is the only guide as to the length of time required for boiling. Sun-dried trepang are the best, and in the greatest demand, but the method of sun-drying is too slow for preparing a whole ship-load. The following method given by V. Simmonds⁵ is followed in preparing large shipments of trepang.

The first thing to do on arriving at an island where trepang is plentiful is to erect a curing house on shore. This house may be of any desired size but one 30 meters long by 15 meters wide, with sides 4 meters high, will be found convenient for preparing a ship's cargo. This structure may be built of native material such as mats, bamboo, etc., and roofed with a coconut thatch which must be put on well to keep out the rain. A small door should be left in each end of the house. Platforms for drying the trepang are then erected along one side of the entire length of the house and these should be 2 meters wide, the lower one about breast-high from the ground and the upper one 1 meter above that.

⁵The Commercial Products of the Sea. New York (1897), 111.

These are made of split pieces of bamboo or small slats. A trench 1 meter in width and a half meter deep is then dug beneath the lower platform along its entire length, for the fires. Tubs filled with salt water are placed at short intervals along the trench, with buckets near at hand for use in preventing the fire blazing up and burning the trepang or destroying the house.

The process of curing is as follows: The trepang is first caught and gutted and washed in fresh water; it is then carried into the curing house and placed on the lower platform where it is spread out about 14 centimeters (5 inches) thick, to dry. When this platform is covered with the trepang, the fires are lighted in the trench; they must constantly be kept going, day and night, and be carefully guarded. Much skill is required in properly drying the trepang as well as in boiling it, as too much heat will cause it to blister and get porous, like a sponge, whereas too little will lead to its spoiling and turning putrid within twenty-four hours after being boiled; care is requisite likewise in gutting, for if this is not properly attended to the animals will turn into a blubbery mass within a few hours after being caught. On the afternoon of the second day after the fires are lighted, they are extinguished for a short time and the trepang is shifted to the upper platform; splints of wood should be put in those not properly drying. The lower platform is then filled again with a fresh supply of trepang from the pots, and the fires are again lighted. The trepang on the lower platform should be turned frequently during the first twelve hours. After another two days the fires are again put out and the trepang on the upper platform shoved over at one end to make room for those on the lower platform, and the same proceeding repeated for the two following days, by which time (six days in all) the first day's product will be cured properly. The trepang is then taken off the upper platform and carefully examined, those not dry are put back again, and the quantity cured is stowed away in bags on shipboard or in a dry storehouse. The product soon becomes damp unless packed in air-tight casks. If held in storage for three months, it requires to be dried again for a short time in the sun.

Forty men are necessary to work a house of the above size to its greatest capacity.

UTILIZING TREPANG AS FOOD.

The chief use of trepang as food is in the form of a savory soup, as heretofore described. It is also eaten as a meat by certain natives of the Philippines, after it has been roasted. In some islands of the Busuanga group, the natives collect these animals and by irritation cause them to eject a viscous white fluid which swells up greatly when it comes in contact with sea-water and splits into numerous white threads, not unlike cotton; these threads are cooked and eaten and are regarded as a delicacy. However, as the animal frequently ejects almost all the viscera as well as the mucus, the dish probably would not appeal to Europeans or Americans.

The Chinese believe that trepang is not only a most delicious food, but that it also possesses excellent medicinal qualities.

QUANTITY AND VALUE OF EXPORTED PHILIPPINE TREPANG.

Sixty-six thousand eight hundred thirty-eight kilograms of trepang were exported from the Philippines in 1909. The export in 1910 was 120,969 kilograms, which, at the low price for third grade quality, would

be valued at 51,780 pesos. As a matter of fact much of it was first and second grade trepang so that probably the true value would more nearly approximate 75,000 pesos. According to British statistics, the Sulu Archipelago alone supplied Singapore in 1907 with trepang valued at 21,975 pesos. Singapore's total trade in trepang for that period was valued at 442,102 pesos, two-thirds of which was shipped to Hongkong. It would be much cheaper for Hongkong to buy directly from Manila; as a matter of fact, our last year's increase in export largely was due to the direct buying of Hongkong dealers.

China imports each year about 3 million kilograms of trepang, chiefly from the Malay Archipelago, Philippine Islands, and the South Pacific Islands. The export from Manila might easily be doubled without damage to the fisheries.

COMMERCIAL POSSIBILITIES IN PHILIPPINE TREPANG.

While it is true that trepang is one of the minor marine products of the Philippines, nevertheless, we should not lose sight of the fact that it is a staple and recognized article of diet with a country which has the largest population on the face of the globe, and where it finds a ready market; also, that it can be cheaply prepared, that the natural supply in the Islands is large, and that with but little care the output probably could be increased readily. Taking all these facts into consideration, it is rather a matter of astonishment that large canning companies, especially in the United States, have not awakened to the possibility of this product of the sea and added the delicious trepang soup to their list of conserved products.