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Fish

"The Fisheries of China"

J. Duncan

Campbell



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*Held in connection with*

*The GREAT INTERNATIONAL  
FISHERIES EXHIBITION*

THE  
FISHERIES OF CHINA

BY

J. DUNCAN CAMPBELL

COMMISSIONER FOR CHINA

LONDON

WILLIAM CLOWES AND SONS, LIMITED

13 CHARING CROSS, S.W.

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# *International Fisheries Exhibition,*

LONDON, 1883.

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CONFERENCE ON WEDNESDAY, OCT. 24, 1883.

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SIR AMBROSE SHEA, K.C.M.G., took the Chair.

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## FISHERIES OF CHINA.

AFTER the thousands of years that China has spent apart, the gulf of separation has now been fairly bridged over. Commercial treaties have opened the most important seaports and the interior under special regulations to foreigners, and the Chinese Government, while objecting "to have its hand forced," is watching and testing various foreign appliances, in order to judge how far they may, with advantage, be grafted on existing institutions. Thus, an Imperial College has been established at Peking for the study of Western languages and sciences; the coasts and the great river Yangtze have been lighted with the most improved apparatus; steamers are taking the place of junks; mines are being worked by foreign machinery; and the telegraph now brings Peking within a few hours of London. The appointment of Chinese Ministers abroad, of distinguished officials like the Marquis Tsêng, and the co-operation of China in the international exhibitions of foreign countries are significant proofs of the

importance that China attaches to the maintenance and extension of friendly relations and intercourse.

This is the sixth great International Exhibition in which China has taken an official part, viz., Vienna, 1873; Philadelphia, 1876; Paris, 1878; Berlin, 1880; Amsterdam, 1883; and London, 1883. On each of these occasions (excepting Amsterdam) the work has been entrusted by the Chinese Government to Sir Robert Hart, as the Inspector-General of Customs, and it has been executed under his directions by this important department of the Chinese Government, which employs about five hundred foreigners of various nationalities besides two thousand Chinese.

The Introductory Note to the Official Catalogue of the Chinese exhibits [China: Imperial Maritime Customs, Miscellaneous Series, No. 11] explains that the invitation to take part in the present Exhibition arrived too late for any extensive collection to be possible, but that steps were taken to procure specimens from Swatow, Ningpo, South Formosa, and Ichang, which is a river port in the centre of China and about one thousand miles from the mouth of the Yangtze. The gentlemen in the Customs Service who assisted in the preparation of the collection were Mr. Neumann (German), who had the general management and brought the collection to London as Secretary to the Chinese Commission; Mr. Morgan (English), Acting Commissioner of Customs at Ichang; Mr. Drew (American), Statistical Secretary of the Inspectorate-General; and Mr. Novion (French), Commissioner of Customs at South Formosa—thus showing the international interest taken by the Chinese Customs Service in furthering the objects of the Exhibition.

The distance of China from the scene of exhibition, the



shortness of notice received by China, and the difficulties of collection and transport must be taken into consideration in any comparison, if a comparison can be made, with countries accustomed to these competitions, possessing professional experts, public museums and private collections, and able, moreover, from proximity to London and facility of communication, to place their contributions *in situ* at a very much less expenditure of time, money, and trouble than was incurred by China to do justice to the International Exhibition.

No doubt there is much superiority in scientific and practical interest, as distinguished from the element of popular attraction, in the contributions from the United Kingdom, the United States and Canada, and the Scandinavian and other countries, as compared with China ; but the chief points of interest and instruction in the Chinese contribution consist in the types and models, the nets and other implements of distant antiquity, preserved and used to the present day, and shown to be adaptable with the latest resources and developments of science and practical sagacity in relation to the subject matters of the Exhibition.

The following is a short summary of some of the principal points or features in the Chinese exhibits, taking them in order of their classification in the Official Catalogue.

1st. *The Bamboo*.—Of all the materials used by the fisherman, the bamboo is the one that deserves the first notice. Its cheapness and durability, as well as the variety of purposes for which it is used, entitle it to the highest rank in domestic economy. The use of the bamboo is largely illustrated in the Chinese Collection. There are the catamarans or surf-boats of South Formosa, fishing-rods, supports for nets, crab and prawn pots, fish baskets,

&c., &c. Williams, in his 'Middle Kingdom,' designates the bamboo as the national plant of China, and says:—"It furnishes the bed for sleeping and the couch for reclining, the chopsticks for eating, the pipe for smoking, and the flute for entertaining; the chair to sit upon, the table to dine from, food to eat and fuel to cook it with, are alike derived from it; 'the ferule to govern the scholar and the book from which he studies,' the warrant to arrest the criminal, and the rod to punish him, all 'originate here'—from this magnificent plant, whose graceful beauty when growing is comparable to its varied usefulness when cut down."

2nd. *Nets*.—The Chinese nets are all hand-made from hemp, cotton, or silk; and, after being boiled in a decoction of mangrove bark, are steeped in pig's blood or wood oil to strengthen and preserve them. Silk nets, which for centuries have been used in China, are now being employed in European countries, but for cheapness they cannot compare with the Chinese models. There is an immense variety of nets in use by the Chinese fishermen, and amongst the specimens in the Chinese Collection are several deserving notice, some of them being similar to those used in western countries, such as the dip-net, casting-net, trawl-net, etc.

3rd. *Fishing-boats*.—If China contains as many millions of people as there are days in the year, and if at least one-tenth of the population derive their food from the water, *necessity* will have caused them to invent many ingenious ways for securing the finny tribes (Williams' 'Middle Kingdom.') Among such devices the "Cormorant" boat (p. 46 of Catalogue) deserves mention as exhibiting in a remarkable degree the shrewdness, skill, and patience of the Chinese fishermen. The "Moonlight"

Fishing-boat (pp. 20 and 45 of Catalogue) is another device, which is found also in India and Siberia. There are models, in the Chinese collection, of the fishing-boats of Swatow, Ningpo, South Formosa, and Ichang. In spite of their apparent clumsiness they turn as on a pivot and promptly answer the helm. They are good sea boats, and are built in watertight compartments, or rather in compartments *intended* to be watertight. The wonder is that, in the ages of the "Ark" and the "Argo," the Chinese should have possessed such practical and efficient vessels; for it is evident, from old books and drawings, that this was the type of boat then in use.

4th. *Harbours, etc.*—All along the coasts and the great river Yangtze, the fishermen have seen the gradual yet rapid extension of the Lights that have been erected by the Customs department of the Chinese Government during the last twenty years; and they cannot but appreciate the benefits that the Lights have conferred in aid of their industry and in the protection of their property. Quoting from the *Times* of 15th May last:—

"Conspicuous at the end of the Court are two large maps of the Celestial Empire, one showing its physical configuration and the other its provinces and towns, &c. The activity shown by the important Chinese department of State over which Sir Robert Hart presides, is exemplified by the many red discs on the China coast which indicate the lighthouses and lightships erected since he became Inspector-General of Customs at Peking in 1863. At that time there were but two small lights in the Canton district and a lightship at Shanghai. Now there are 73 lights, 4 lightships, 54 buoys, and 50 beacons, and it is the ambition of the head of this department to see the dangerous coasts of China at least as well lighted as the shores of the British Channel. Of one of the most important lighthouses—that on Breaker Point in the Swatow district—a model is exhibited. It is an iron tower

120 feet in height, which was constructed on a new plan by Sir W. G. Armstrong and Co., and so strongly braced and supported by exterior iron rods that it has withstood the shaking of two earthquakes and the force of several typhoons."

Such progress in the lighting of the coasts of China is perhaps without a parallel in the history of the cares and precautions that a Government can take for the protection and advantage of its fisheries and fishermen as well as the maritime commerce of the world. The work itself will be a lasting record of Sir Robert Hart's administration :

"Famam extendere factis,  
Hoc virtutis opus."

5th. *Boats in general*.—"The original model of the junk" (according to Williams) "is said to be a huge sea monster; the teeth at the cutwater define its mouth, while the long boards on each side of the bow form the armature of the head, the eyes being painted on them; the masts and sails are the fins, and the high stern is the tail frisking aloft." As regards the eyes, which are so conspicuous on all Chinese junks, most of the foreign steamers trading on the coast have them painted on their bows or paddle-boxes, as a concession to Chinese ideas; their use being defended in the picturesque dialect known as "Pidgin English" by the remark—

"Spose no got eye, how fashion can walkee!"

The large trading junks, of which there are some fine models in the Chinese Collection, are finding important rivals in the steamers of the China Merchants' Steam Navigation Company, which, commencing in 1872 with two vessels of 1,168 tons, had in 1880 a fleet of twenty-nine vessels of 20,747 tons; and considerable additions have since been made.

6th. *Economic condition of Fishermen.*—The Chinese fishermen are very frugal. In the Chinese Catalogue (pp. 4 & 5) are given some interesting particulars relating to their condition, earnings, guilds, etc. Without any knowledge of political economy or the laws of capital and labour, they have solved the question of distribution of profits in a practical manner and to the satisfaction of all. They are very charitable and help each other in times of distress, there being no benefit or insurance societies. In the Chinese Collection there are specimens of the garments worn by successive generations of Chinese fishermen, and proved by long experience to be the best adapted to the conditions of their work. There are also models of their huts, and of their Guildhalls and temples, showing not only the domestic economy but also the civil and religious organisation of the craft, and illustrating in a striking manner one curious line of connection between East and West—from the Guildhall of the fishermen at Haimên to the Fishmongers' Hall in London—from the fishermen's temples with their annual festivals on which large sums are expended, to the religious processions and services on the western shores of France.

7th. *Corals, etc.*—Shells of all descriptions are plentiful in China, and are used in various ways :—for windows, fog-horns, ash-cellars, necklaces, scoops, flower vases, etc., of which there are several specimens in the Chinese Collection. The unique Buddha shells (p. 49 of Catalogue), which have attracted the observation of visitors, constitute a very important and successful industry at Hangchow.

The cultivation of oysters is on a very large scale, and dates from a remote age. A model of an oyster bed is shown in the Chinese Collection, and a description of the oyster fishery is given at pp. 13 and 59 of the Catalogue.

Notwithstanding the enormous consumption of oysters from time immemorial in China, there appears to be no diminution of the supply. In the north on the shores of the Shantung promontory, at the mouths of the Yangtze and Ningpo rivers, all along the coasts of the Fohkien and Kwantung provinces, and on the seaboard of Formosa, the cultivation of oysters is carried on with much skill and success. Considering their dearness and scarcity in Europe, a thoroughly scientific inquiry as to the methods pursued by the Chinese would undoubtedly yield important results.

8th. *Fish-markets.—Appliances for Transport of Fish, etc.*—A model is shown of a Ningpo ice-house (p. 48 of Catalogue), which is used not for purposes of refrigeration, but for storing ice during hot weather. The ice is principally used for the preservation and transport of fish, and is supplied to the fishing grounds by ice-boats specially constructed. These ice-houses are of very primitive construction but are most effective, and are capable of preserving ice for a period of three years. There are also some interesting models of saltpans, and the manner of their use is described at page 11 of the Catalogue.

9th. *Fish Breeding.*—In the district of Swatow there is no regular system of pisciculture, and the only approach to it consists in fish-ponds that are described at page 11 of the Catalogue; but Monsieur Dabry de Thiersant in his important work, 'La Pisciculture et la Pêche en Chine,' enters very fully into the matter, and gives China the credit of having been the first to practise this art at a very remote age. In *Land and Water* there is also a very interesting Paper, written by Mr. Kopsch, Commissioner of Chinese Customs, on Pisciculture in Kiangsi.

10th. *Fish—Natural History.*—There is a valuable article on the ichthyology of China, by Sir John Richardson, in the

Report of the British Association for 1845, but there is no foreign work on the fishes of China like Dr. Day's exhaustive treatise on the fishes of India.

The collection of fish from Swatow, consisting of about 170 different specimens, were wrapped up in linen and packed in cotton saturated with spirits of wine, and arrived in perfect condition. Coloured drawings of the specimens were made by Chinese artists, immediately upon the fish being taken from the water, and these specimens form a kind of picture gallery in the Chinese Court. Similar drawings on a smaller scale were taken of the fish of South Formosa, of which there are ninety specimens exhibited. Nearly all the fish enumerated in the Catalogue (pp. 32 to 40) are fit for food, and amongst them are soles, eels, mullets, perch, and many other kinds that are familiar to us here. The salmon and trout are missing, but Mr. Wilmot, the Canadian Commissioner, is confident that they can be successfully introduced and reared in Chinese waters. There is also exhibited a variety of crabs, nearly all of which are used for food, whilst the shells are turned into scoops or other useful domestic articles.

11th. *History and Literature of Fishing*.—The Chinese possess very old works relating to fish and fisheries, as well as scrolls, mottoes, tablets, &c. Some of these are displayed on the sides of the Chinese Court. They carry the literature backwards into remote antiquity—to centuries before the dawn of Western literature on the subject. The Chinese Commission for the Fisheries Exhibition had, moreover, the advantage of securing the personal co-operation of the Chinese Minister in England, the Marquis Tsêng, and His Excellency himself contributed two large scrolls and various characters, written

by himself, containing historical and poetical allusions to fishing, which are described in the supplement to the Catalogue.

It may here be stated that the Catalogue of Exhibits and the List of lights on the Chinese Coast, are specimens of Chinese Customs' publications, printed at the Customs' Press, Shanghai, by Chinese compositors under a foreign superintendent.

12th. *Fine Arts*.—Reference has already been made to the drawings of fish painted by Chinese artists, and there are other pictures, in the shape of scrolls, showing the various modes of fishing. Such pictures are very common in Chinese dwellings. But the chief decorations of the Chinese Court consist in the allegorical productions of the Chinese artist, Têh-Ah-Kew, whose freehand drawing and brilliant colouring give point to the motto, "*Ex Oriente lux*."

13th. *Fishes of Commercial Value*.—No country shows the commercial value of fish in a stronger light than China. As an almost universal, or at any rate as a widely distributed article of food, fish is a more important staple in China than in any other country, and her exhibits may be considered as indicative rather than exhaustive evidences in this connection. The whole country displays an extraordinary development of industry and commerce in marine and fresh-water fish. The latter is cultivated in rivers, lakes, and ponds, and made use of as a common article of food throughout the empire. Fishes of a kind which in Europe are scarcely deemed worthy to be caught, and then for sport rather than food, are in China utilised and form the subject of an extensive commerce as the staple food of a large section of the inhabitants. Even the repulsive and hostile shark of the Western Nations becomes



an article of commercial value in China, and is habitually treated as an article of food for the million without dismay by the ancient Oriental wisdom.

In conclusion, attention may again be drawn to the peculiar nature of the Chinese Exhibit. Of necessity hastily gathered together from remote quarters, with no aid from public museums or private collections, the Chinese Exhibit does not compete with those of other nations. The Chinese fisheries, as now carried on, date from and have a succession of thousands of years, and the Exhibit ought therefore to be judged by way of contrast rather than comparison. It is by reason of this very difference from the general routine of the exhibits from other countries—introducing, as it does, some new and picturesque features characteristic of the nation—that the Chinese Exhibit has been so attractive to the public. But it is hoped that, beyond its popular attractions, it has also been a source of interest and instruction to the practical minds of those most conversant with the varying systems of fisheries throughout the world.

## DISCUSSION.

Mr. WILMOT said that as his name had been mentioned in the Paper he might say briefly he had no doubt the salmon could be introduced to any part of the world where the water was of such temperature and clearness as to suit their habits of life. When they found that through the operation of pisciculture salmon had been introduced from Great Britain to waters below the Equator, where they were not indigenous, he saw no reason why it should not be equally possible to introduce them elsewhere, particularly in a country like China, some of the rivers of which he was

strongly inclined to believe were frequented by salmon, but even if that were not the case he was quite sure that many of her more northerly rivers were adapted to this fish. It was a mere question of temperature and limpidity. The Sacramento river in California, where the atmosphere sometimes rose to  $120^{\circ}$  in the summer, was at one time overflowing with salmon, though it had been to some extent reduced by over-fishing now.

Mr. CHARLES FRYER proposed a vote of thanks to Mr. Campbell. He thought it was a very good omen that they had just had a Paper read on the fisheries of Newfoundland, with the Secretary of the Chinese Legation in the chair, whilst now they had had a Paper on the fisheries of China with the representative of Newfoundland in the chair. Sir Ambrose Shea had taken occasion to illustrate the proverb that blood was thicker than water, by referring to the undoubted loyalty of the colonists, but he might remark that water had something to do besides separating nations; they so far united them that all nations were agreed in recognising the importance of the fisheries: the concluding words of this Paper fully exemplified this point, and showed the lesson which might be learnt from the exhibits furnished by different countries. With regard to the fisheries of China, and to the enormous capture of fish there, he should like to ask whether he was right in thinking that the Chinese captured not only mature but immature fish at all times and in every possible manner. He understood that the Chinese in California surprised the Americans by the wonderfully small fish which they caught and ate, and if the same habit prevailed with the three hundred millions of Chinese in their own country, and they were continually catching these small fish in season and out of season, it afforded a strong argument against the possibility

of depleting the waters. With regard to fresh-water fish, China was far ahead of any other country in fish culture, and made up for the great drain on the resources of the rivers in this way, but so far as the sea was concerned he was not aware that fish culture was carried out. If the small fish were continually destroyed it was a strong argument against any interference, unless absolute necessity for it were proved, with modes of fishing that might unfortunately destroy small fish, if, as seemed often to be the case, this was unavoidable in catching the large ones.

Mr. SAYER, in seconding the vote of thanks, said that Englishmen ought to be very thankful for the knowledge which was now brought to them by gentlemen who contributed these Papers as to the fishing industries of other countries.

Mr. WILMOT said he could not allow Mr. Fryer's remarks to pass without a word or two. Being a strong advocate of the artificial propagation of fish, and of their protection generally, he felt bound to point out that the temperature and climate of China was very warm, and consequently the fish there produced their young in very warm water. They knew that under such circumstances fish were hatched in as many days as it took months in colder climates, and thus the propagation and natural increase of fish there would be a thousandfold greater than in England or in Canada. The salmon family took from three to six months for the eggs to incubate, whilst some other descriptions that laid their ova in the hot weather would hatch out in from sixty hours to six days. There was therefore no foundation for the idea put forth by Mr. Fryer that because protective laws might not be in operation in China they were equally unnecessary elsewhere.

Captain CURTIS, R.N., said the Yellow Book stated that

the Chinese caught small fish, with fine nets made of silk ; those with which they caught them were to be seen in the Exhibition ; but he understood that they were then transferred to ponds, and also, that when the water was cold they lit hanging fires to warm it, so that the young fish were taken care of—not destroyed or eaten when small ; in fact they catch the fry in shallow waters, and transfer them to ponds and lakes ; they are then sold alive.

Mr. FRYER said the fact that young fish were preserved and reared did not prove that small fish were not also very often eaten ; but the fact of fresh-water fish-culture did not touch the question of the sea fisheries to which he particularly referred.

Captain CURTIS added that the Chinese were to be congratulated on using luminous paint, which was not much employed in this country at present. As a seaman, he must bear testimony to the excellent qualities of the Chinese junks and their fishing-boats ; in fact, he thought naval architecture had not much improved the sea-going qualities of ships in this country ; he would sooner be in a Chinese junk than in an ironclad, as the junk would ride over the sea in a gale, whereas the sea would wash over the ironclad.

Mr. HERBERT E. HOUNSELL thought the remarks of Mr. Fryer ought not to go forth uncontradicted unless they were more fully substantiated. The idea he had thrown out that the Chinese caught small fish all the year round and ate them, had not yet met with any support.

It was a mistake to suppose that there were no kinds of fish which could be destroyed by over-fishing, which some people might fancy to be Mr. Fryer's opinion, though he did not believe such was meant by his remarks ; they had only to bear in mind the great decrease of soles within

an area of three or four miles from the coast. To corroborate this opinion, he could speak of their almost total disappearance from the West Bay, and also the disappearance of shoals of mackerel off Folkestone, and Kingsdown, near Deal; the population used to live on catching mackerel during the summer months, but within twenty years the constant increase of mackerel boats had broken up the shoals, and, although they were not destroyed, they were so much lessened that it no longer paid to catch the fish. He could also quote an instance of a trout-stream which was depopulated by over-fishing, and the Angling Society were compelled to forbid any fishing for three years. It was a matter of common sense that if too large a proportion were caught, although the powers of reproduction might be enormous, still there must be a fatal result. He hoped that at the close of the Exhibition the scientific men connected with it would still prosecute further inquiries into the habits of fish, in order to determine how far regulations were required for their protection.

Mr. FRYER said he certainly did not intend to express the opinion that it was impossible to destroy all fisheries. On the contrary, he had shown over and over again, that it was possible for certain inland and other fisheries to be exhausted. What he wished to state was, that before any hasty steps were taken to prevent the capture of fish, they should be quite certain that those steps were necessary; and it seemed to him that the case of China afforded an instance which should make them pause before any hasty steps towards legislation were taken.

Mr. NEUMANN said it was satisfactory that the Paper which had just been read should have called forth such a lively discussion. The question raised by Mr. Fryer was one which had sprung up at all the conferences that had

been held ; and, before the advocates of complete freedom of fisheries or those in favour of protection, or rather the interference of Government, could avail themselves of any data furnished by China it would be necessary for scientific men to make a thorough inquiry into the state of Chinese fisheries.

Surgeon-General GORDON, C.B., said it might be *à propos* to the question under discussion to state that a few years ago, when travelling through Burmah, he found that the natives carefully protected the young fry of fish, using such implements as enabled the smaller fish to escape ; and he was informed that there was a law absolutely prohibiting the capture of fish under a certain size.

The vote of thanks having been passed unanimously,

Mr. CAMPBELL, in replying, explained that the Paper he had read was not so much on the Fisheries of China as on the Exhibits from China to the Fisheries Exhibition ; and one object of the Paper was to state a few facts that were not generally known, but which, when known, might add to the interest of the Chinese Court and Collection.

Mr. FUNG YIH, Secretary to the Chinese Legation, proposed a vote of thanks to the Chairman. With regard to the bamboo which had been referred to in the Paper, it might be interesting for them to know that it had recently become a source of industry in England, one of the daily papers being made of it at, he understood, a reduction in cost of two-thirds. The motion was seconded by Mr. Hounsell and carried unanimously.

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