

numerous spines of the first dorsal, represented by the genus *gempylus*. Very recently an American tunny was brought into Fulton Market, and from its great size attracted general attention. It was nearly nine feet long, and weighed between 800 and 900 pounds—a magnificent fish, its entire make up denoting wonderful speed and activity in its native element, where, with their rich coloring, iridescent and silvery tints, they present a wondrous spectacle. It is rarely that they are captured so near New York city. In Rhode Island and by some of the more northern fishermen it is called the albicore, as well as American tunny, and its range is from Newfoundland to Florida. Rondelet figures a tunny under the name Thon, and another species which he calls Pelamyde, or Thon d'Aristotele. The first he denominates in Greek as Orkunos, which, he says, is the "Grand Thon." The generic name now used is evidently from the old Greek designation, and tunny is from thynnos, the more common term in use among the ancients. The fish seems to have been well known along the Mediterranean Sea. Rondelet figures a bize, which he calls also sarda, and which he says is called by Pliny pelamydes. It will be seen, then, that these names, which are retained by modern naturalists, were used by the earliest writers to designate species very closely allied.

Storer says: "The species known along our coast as horse mackerel and albicore comes on to Massachusetts Bay about the middle of June and remains until October. It is frequently taken for its oil, which is taken from the head and belly, a single specimen often yielding twenty gallons."

They grow to a great size, and in 1855 one was caught off Lynn, Mass., that weighed over 1,000 pounds, was 10 feet long, and 6 feet in girth. It was presented to the Lynn Natural History society by Dr. J. B. Holder, who was then the honorary curator. In a memorandum note in the History of Lynn, Dr. Holder says, "In this year (1850) they were very abundant, small ones being seen jumping out of the water; and I have measured several that were 10 feet in length."

After this they were rarely seen, but in 1871 a number were observed, as well as great quantities of a small tunny, *Orcynus alliteratus*, which, remarkable to relate, and showing their great range, had previously only been known in the Mediterranean Sea. The common tunny of the locality is the *Thynnus vulgaris*, and is said to have been seen in our waters. It attains a much greater size than its American representative (*Orcynus secundo-dorsalis*). Specimens have been found 20 feet in length, exceeding half a ton in weight. A casual observer would hardly note a specific difference between the two, so much do they resemble one another. From a very remote period the fisheries near the Island of Sicily have been valued, and in the summer vast shoals of them are caught in large nets or by means of what the Italians call tonaro.

In appearance the thynnus bears a close resemblance to our mackerel, except in point of size. Each jaw is furnished with a row of small sharp pointed teeth, slightly curved inward; the tongue and inside of the mouth are very dark colored; the cheeks covered with long narrow pointed scales; the operculum is smooth; the dorsal and anal fins are followed by nine small finlets, and the tail is crescent-shaped. The upper part of the body is very dark blue; the belly a light gray, spotted with silvery white; the first dorsal fin, pectorals, and ventrals black; the second dorsal and anal nearly flesh-colored, with a silvery tint; the finlets, above and below, yellowish, tipped with black. This description well applies to the American tunny, though the Fulton Market specimen had lost its brilliant colors when we saw it. Mr. Garrell, quoting from Mr. Couch, says that "the tunny appears on the Cornish coast of England in summer and autumn, but is not often taken because it does not take bait, or at least the fishermen use no bait that is acceptable to it, and its size and strength seldom suffer it to become entangled in the nets. It feeds on pilchards, herrings, and perhaps more other small fishes, but the skipper (*Esoc saurus*) seems to be its favorite feed, and it has been seen to leap in the air after them and endeavor to cut them down after the manner of the thrasher.

According to a French writer the greatest tunny fishery of the present day is that at Provence. Here the haul is made by an inclosed net called the *madrague*. The net consists of a combination of nets, which is quickly cast into the sea to head the tunnies at the moment of their passage. When the sentinels posted for the purpose have signaled the approach of a shoal of tunnies and its direction by the indications of a flag which points to the spot occupied by the finny tribe, the fishing boats are immediately directed to the spot indicated and ranged in curved lines, forming with the light floating net,

a half circular inclosure turned toward the shore, the interior of which is called the garden. The tunnies thus inclosed in this garden between the shore and the net become crazed with terror; as they advance along the shore they press upon the inclosure, or rather a *new* interior inclosure is formed with other nets held in reserve. In this second inclosure an opening is left through which the fish have to pass. In continuing thus to diminish the space by successive inclosures each occupies a smaller diameter, in which the fish are inclosed in about a fathom and a half of water. At this moment a seine is thrown into the garden, this is in turn hauled by the men into shallow water, and the small fish taken by hand, and the larger by hooks made for the purpose and thrust into the gills. A single day of such fishing will oftentimes produce 16,000 tunnies, ranging from twenty-five pounds upward. The madrague above mentioned is a permanent fishery, and consists of a vast inclosure formed of nets into various chambers, supported by corks and held in place by weights. The net is intended to arrest the shoals of tunnies as they leave shallow water for open sea. For this purpose a long alley or run is established between the sea shore and the park or madrague. The fish follow the run, and after passing from chamber to chamber, at last find their way into the interior. To force them near the "park" long nets are used, hauled by boats, and finally, when they are thoroughly in the toils, the net is raised to the surface, and the victims killed with poles and various weapons, the sport, if it can be called such, lasting the entire night.

As an eating fish it is there preferred to the salmon, and a French gourmand says of it, "For our part we put it far above salmon. Nothing is comparable to the fresh tunny thrown into a hot frying pan, and sprinkled with vinegar and salt. When properly cooked nothing can be more firm or savory. In short, nothing of the kind can rival or even be compared with the tunny as we find it at Marseilles and Cette."

The large tunnies of our coast are by no means such delicacies, though their cousins, the mackerels, when fresh and broiled—not fried—are equally up to the French ideal.

IS MAN THE HIGHEST ANIMAL.

The measure of zoological rank is the specialization exhibited by all the organs taken collectively. Specialization may be exaggerated in one or several organs, without the animal therefore attaining as a whole a high rank. This is the case in man. The measure of specialization is afforded by embryology, which shows in earlier stages the simplicity and uniformity of structure which in later stages is replaced by complexity. The human body preserves several embryonic features. In man we find three series of high differentiations, namely: in the brain, in the changes induced by or accompanying the upright position, and third, in the possibility of the thumb to the other digits. These are the principal, though of course not strictly the only characteristics of man, which show that he is more specialized than any other animal. In other respects he shows a still more striking inferiority. It is of course a familiar observation that his senses are less acute than those of many animals—he has neither the keen vision of the falcon, nor the delicate scent of the dog. He is equally inferior in many structural features. His teeth are of a low mammalian type, as is shown both by his dental formula and by the presence of cusps upon the crowns of the teeth, a peculiarity of the lower mammalia, entirely lost in the horse, the elephant, and many other "brutes." His limbs show a similar inferiority, since they are little modified, preserving even the full dumber of five digits, and in respect of these members man stands therefore very low, lower than the cow and the pig. He plants the whole sole of his foot upon the ground, yet none except the lower mammalia, together with man and his immediate congeners, are plantigrade. So too with his stomach, which is so simple as compared with that of a ruminant, and indeed, is of about the same grade as that of the carnivora. It makes, however, a still more forcible impression to learn that the human face, which we admire when withdrawn under a high intellectual forehead, is perhaps the most remarkable of all the indices that point out man's inferiority. In the mammalian embryo the face is formed under the fore brain or cerebral hemispheres. In our faces the foetal disposition is permanently retained, with changes, which when greatest are still inconsiderable. In quadrupeds the facial region acquires a prominent development leading to the specialization of the jaws and surrounding parts which brings the face to a condition much higher than that of the foetus. Hence the projecting