Table of Measurements—Continued.

Current number of specimen	10,761.		"*Guttatus*," 4,622 *a*.		"*Guttatus*," 4,622 *b*.		Averages.
Locality	Tompkinsville, N. Y.		Norfolk, Va.		Norfolk, Va.		
	Millimetres.	100ths of length.	Millimetres.	100ths of length.	Millimetres.	100ths of length.	100ths of length.
Pectoral:							
Distance from snout	.....	34	.....	37	.....	37	36
Length	.....	29	.....	28	.....	29	29
Ventral:							
Distance from snout	.....	24	.....	27	.....	25½	25½
Length	.....	25	.....	24	.....	24½	24½
Branchiostegals	VI	.....	VI	.....	VI	.....	.....
Dorsal	IV, 14	.....	V, 13	.....	V, 14	.....	.....
Anal	12	.....	13	.....	13	.....	.....
Caudal	16-17	.....	18	.....	18	.....	.....
Pectoral	19	.....	20	.....	20	.....	.....
Ventral	6	.....	6	.....	6	.....	.....
Number of scales in lateral line	.....	.....	113+	.....	.....	.....	.....

WASHINGTON, *May* 6, 1879.

ON THE OCCURRENCE OF HIPPOGLOSSUS VULGARIS, FLEM., AT UNALASHKA AND ST. MICHAEL'S, ALASKA.

By TARLETON H. BEAN.

No one has yet positively identified the halibut of the Pacific coast of North America with the *Hippoglossus vulgaris* of Fleming, so far as I can learn. Ayres, in 1854,* writing of the species observed in the market of San Francisco, says: "The great *Hippoglossus vulgaris*, universally known as the 'halibut,' the fishermen have assured me is sometimes caught near the Farallon Islands. Most of those sold in our market, however, if not all, are brought from the coast further north." In volume 2 of the same Proceedings (1859, p. 30), he writes: "Another species, in which the eyes are on the right side, is occasionally taken near the Farallon Islands, opposite the mouth of the Bay, which I do not feel warranted in separating from *H. vulgaris*, without a direct comparison of the two. Its fin-rays are D. 102, A. 73, P. 16, V. 6, C. 4, 1, 7, 8, 1, 4.

"It appears to be seldom quite as large as *H. californicus*."

The number of anal rays in this enumeration is smaller than usual, but not improbable.

Lord† gives a graphic account of the Indian mode of fishing for halibut, and remarks as to the species: "I believe the species to be the *Pleuronectes hippoglossus* of Linnæus, but of this I am by no means perfectly clear, as I had only an opportunity of examining this single specimen, that I estimated as weighing over 300 lbs.; and it was quite impossible to investigate its specific character," &c.

* Proc. Cal. Acad. Sci., i, 1854, 1st ed., p. 41, and 2d ed., p. 40.

† Naturalist in Vancouver Island and British Columbia, i, 1866, p. 149.

Dr. Cooper, in mentioning the Pleuronectoids of California, says:* "The two first are species of Halibut, one closely resembling the Atlantic fish, and grow over 4 feet long, the latter (No. 105, *H. vulgaris?*) sometimes weighing five hundred or six hundred pounds. Both are caught near San Francisco."

Mr. William H. Dall, in his work on "Alaska and its Resources," 1870, p. 484, states, that "The halibut are smaller than those of the eastern fisheries, but near Sitka and along the coast they have been taken from three to five hundred pounds in weight. They are not found north of the ice line in Bering sea, except, perhaps, in summer." In the report for 1870 of the Commissioner of Agriculture, p. 381, the same author employs the name "*Hippoglossus vulgaris?*" in connection with the paragraph on the halibut, and states that "Their range is from the Aleutian Islands southwest to Cape Flattery. . . . They extend westward into the Ochotsk sea with the cod and already form an article of commerce among the west-coast fishermen. They are said to surpass the eastern halibut in flavor when properly cured."

Mr. Henry W. Elliott, special agent of the Treasury Department, speaks thus of the halibut in a Report upon the Condition of Affairs in the Territory of Alaska, Washington, 1875, p. 167:

"Found throughout the territory on soundings south of the 60th parallel of north latitude. Halibut are quite abundant and of excellent quality, but the climate is such that the fishermen cannot properly dry or cure them for exportation even in small cargoes. They are, however, not abundant enough for exportation, and must therefore be regarded as only of local importance."

In a report upon the Customs District, Public Service, and Resources of Alaska Territory by William Gouverneur Morris, special agent of the Treasury Department, 1879, p. 115, is found the following information:

"While I was at Klawack, they were testing the boiler, new machinery, and other apparatus, and were trying the experiment of canning clams and halibut, both of which are so plenteous in that neighborhood as to be a perfect drug. I have since seen the result of this, and can pronounce the clams the very best so treated on the whole Pacific coast, and the halibut is of superior quality, preserving its flavor better than any yet produced from any other locality. The supply of these two articles of commerce alone, from this particular place, is only to be regulated by the demand."

The only examples of the Pacific halibut in the United States National Museum are those collected by Mr. W. H. Dall and Mr. Lucien M. Turner. Mr. Dall's is the single available one for comparison, and that lacks the caudal fin, which is fortunately present in the other. Although both specimens are in very poor condition, there is no difficulty in perceiving their identity with the Atlantic halibut. The individual forwarded by Mr. Dall (collector's number 1098, museum number 22466)

* Cronise's Nat. Wealth Cal., 1868, p. 493.

was taken at Unalashka, September 13, 1873, in 50 or 60 fathoms. Mr. Dall informed me that Dr. Steindachner saw it in San Francisco, and considered it identical with the *Hippoglossus vulgaris*. I have compared it carefully with Atlantic halibut from Eastport, Me., and fail to see any means of separating the two. The Alaska individuals are a little thicker; but that may be accounted for by the differences in the food supply. It is very desirable to have perfect specimens of the Pacific fish for examination; but, in the absence of such material, I have endeavored to make the most of what the museum has, and it is believed that the table of measurements will serve to confirm the views of those who regard the halibut of the Pacific identical with that of the Atlantic.

DESCRIPTION OF THE UNALASHKA SPECIMEN.

The museum catalogue number is 22466, and the collector's number 1098. The length of the fish to the origin of the middle caudal rays is 463 millimetres. The different proportions of the body are given in hundredths of this length.

The greatest height of the body (.32) is 4 times the length of the operculum (.08); its height at the ventrals (.25) is contained 4 times in the total length, and equals the distance of the pectoral from the snout (.25). The least height of the tail (.07½) is nearly equal to the length of the operculum (.08), and to the distance of the dorsal from the snout (.08). The length of the caudal peduncle (.12) equals that of the longest anal ray (.12). The lateral line follows the same course as in Eastern specimens.

The greatest length of the head (.25½) is contained nearly 4 times in the total length. The distance between the eyes (.03) equals ½ the distance from the snout to the orbit (.06). The length of the snout (.04½) equals almost ½ the length of the upper jaw (.09½). The length of the upper jaw is not quite equal to that of the pectoral of the blind side (.10). The maxilla extends to the vertical through the middle of the lower eye.

The length of the mandible (.11½) is contained 2¼ times in the length of the head. It extends to the vertical through the posterior margin of the lower eye.

The long diameter of the upper eye (.05) is contained 5 times in the length of the head, and twice in that of the pectoral of the blind side. The teeth agree perfectly in all respects with those of the Eastport individuals, that is, they are arranged in two series in the upper jaw, the outer being the stronger, and in a single series in the lower jaw.

The distance of the dorsal from the snout (.08) equals the length of the operculum. Its longest ray (.11⅓) does not quite equal the longest of the anal (.12). The 37th and 38th dorsal rays are the longest.

The distance of the anal from the snout (.34) equals ⅔ of the head's length. Its longest ray, the 17th, (.12) is contained 8½ times in the total length.

The tail is wanting in this individual, but present in that forwarded by Mr. Turner. It is of the usual *vulgaris* type.

The distance of the pectoral from the snout (.25) equals twice the length of the pectoral of the eyed side (.12½) and 2½ times that of the blind side (.10).

The distance of the ventral from the snout (.25) is contained 4 times in the total length. The length of the ventral (.05½) is contained 4½ times in that of the head.

The fin-rays are: D. 96. A. 77. P. II, 15. V. 6.

The radial formulæ of all the specimens are here summarized:

22466.	Unalashka.	D. 96;	A. 77;	P. II, 15;	V. 6; C. ——.
22467.	St. Michael's.	D. 100+;	A. 78;	P. II, 16;	V. 6; C. + 16 +.
10439.	Eastport, Me.	D. 103;	A. 78;	P. II, 14;	V. 6; C. + 16 +.
14622.	Eastport, Me.	D. 103;	A. broken;	P. II, 14;	V. 6; C. + 16 +.

Table of Measurements.

Current number of specimen	22,466.		10,439.		14,622.		22,467.
Locality	Unalashka, Sept. 13, 1873.		Eastport, Maine.		Eastport, Maine.		Saint Michael's, Alaska.
	Millimetres.	100ths of length.	Millimetres.	100ths of length.	Millimetres.	100ths of length.	Millimetres.
Extreme length	.....	.....	427	.....	428	.....	.....
Length to origin of middle caudal rays	463	.....	365	.....	370	.....	.....
Body:							
Greatest height	.....	32	.....	34	.....	36	.....
Greatest width	.....	8½	.....	7	.....	7½	.....
Height at ventrals	.....	23	.....	28	.....	29	168
Least height of tail	.....	7½	.....	7½	.....	8	.....
Length of caudal peduncle	.....	12	.....	12½	.....	13	.....
Head:							
Greatest length	.....	25½	.....	27	.....	26½	167
Greatest width	.....	.....	.....	.....	.....	.....	45
Width of interorbital area	.....	3	.....	3	.....	ca. 3	15
Length of snout	.....	4½	.....	4½	.....	4⅔	26
Length of operculum	.....	8	.....	8	.....	8	48
Length of upper jaw	.....	9½	.....	10	.....	9½	59
Length of mandible	.....	11½	.....	12½	.....	11⅔	74
Distance from snout to orbit	.....	6	.....	5⅔	.....	5⅔	.....
Diameter of upper eye	.....	5	.....	5½	.....	5⅓	23
Dorsal:							
Distance from snout	.....	8	.....	7½	.....	7½	46
Length of longest ray	.....	11½	.....	11	.....	10½	68
Anal:							
Distance from snout	.....	34	.....	34	.....	36	.....
Length of longest ray	.....	12	.....	11	.....	11	70
Caudal:							
Length of middle rays	.....	.....	.....	12½	.....	12½	68
Length of external rays	.....	.....	.....	18⅔	.....	18½	115
Pectoral:							
Distance from snout	.....	25	.....	25½	.....	25	.....
Length, eyed side	.....	12½	.....	13½	.....	11½	77
Length, blind side	.....	10	.....	10	.....	10	.....
Ventral:							
Distance from snout	.....	25	.....	26	.....	26	.....
Length	.....	5½	.....	6	.....	5½	.....
Dorsal	96	.....	103	.....	103	.....	100+
Anal	77	.....	78	.....	(Broken.)	.....	78
Caudal	.....	.....	+ 16 +	.....	+ 16 +	.....	II, 16, II
Pectoral	II, 15	.....	II, 14	.....	II, 14	.....	II, 16
Ventral	6	.....	6	.....	6	.....	.....
Length of pectoral of blind side	.....	.....	.....	.....	.....	.....	62

WASHINGTON, *May* 10, 1879.