

in life, and the legs are fringed with longer hairs; the hairs on the front edge of the merus of the chelipeds are red and long, forming a close fringe concealing the four large spines; there is another fringe of long hairs near the lower edge. The manus has but one distal spine, and a long proximal spine at the carpal articulation. The manus lacks the subdorsal ridge present in the other species, its place being covered by the iridescent patch; the dorsal ridge is subcarinate; its edge is obtuse and fringed with a row of red hairs on each side; it terminates in a strong sharp spine, slightly hooked inward, situated at about the distal fourth of the edge.

The areolations of the middle of the carapace, on perfect dry specimens, from which the pubescence has not been rubbed, form a rather conspicuous and curious face-like or mask-like figure, more noticeable than in the allied species.

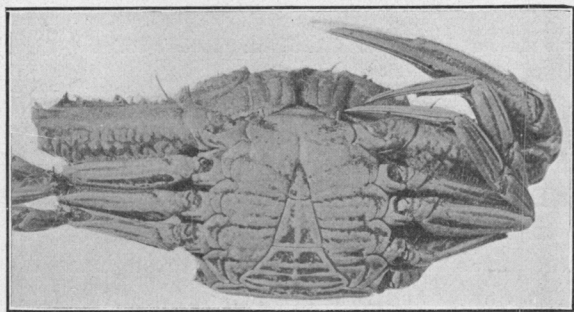


Figure 28.—*Achelous Ordwayi*, under side of carapace of male, nat. size.
Phot. A. H. V.

Specimens, with the carapace 32 to 38^{mm} long, taken April, 1901, in Castle Harbor, were in life more highly colored than the smaller ones. The carapace and legs were finely and elaborately variegated and mottled with red, yellowish brown and gray, producing the general effect of reddish brown. A small whitish spot, bordered with brown, appeared behind the bases of the posterior lateral spines. The under side was pale orange, pinkish around the mouth, deeper orange on the chelipeds and legs; and with some spots of orange-brown on the basal segments of the abdomen. The chelæ, above, were deep red-brown, the fingers crossed by two light orange-red bands; the iridescent area on the outer surface reflected prismatic colors, but especially green, red, and silvery tints. The iridescent

areas may be of use in attracting the sexes in the pairing season, but perhaps they may also serve for a lure to attract small fishes, or other prey. We had no opportunity to study this matter. One would naturally suppose that they might also attract enemies in the shape of larger predacious fishes, many of which are well known to be attracted by a white or bright metallic bait. But it must happen that the advantage gained is more than the disadvantage, or else the species would have become extinct.

Younger specimens, noted by my son, C. S. Verrill, in April, 1898, had the following colors in life: Carapace light gray, with darker shades over the cardiac region, and around the edges of the carapace. Ventral surfaces white. Chelipeds light gray, purple at the joints.

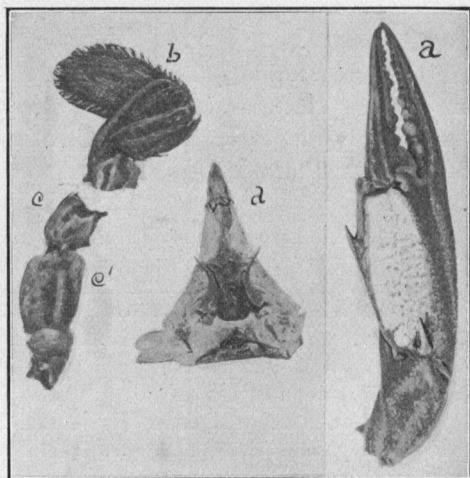


Figure 29.—A. *Ordwayi*, a, one of the chelæ, showing the iridescent area, $\times 1\frac{1}{2}$; b, c, parts of swimming leg; c', denticulated angle of merus; d, verges and abdomen of male, enlarged. Phot. A. H. V.

Ambulatory legs light gray, except the posterior legs, which have a red blotch on the last joint. Eye-stalks light gray, the eyes black. Chelæ with a brilliant iridescent area.

In alcohol the colors soon fade and the general color becomes yellowish or salmon, often showing some red mottlings; two bands of pale red often cross the chelæ, and the tips of the digits may be pale red; the fringe of long hairs on the merus often long retains its red color in alcohol.

Measurements.

No.	Sex	Carapace			Front between orbits	Chelæ		
		length	breadth total	breadth —spines		length	height —spine	
4037	♂	24	36	30.5	10	27	7	Bermuda
3162	♂	25.5	39	34	10.5	28	7	Bermuda
4087	♂	22	35	28	9.5	25	6	Off Hatteras
4083	♂	33	52	45	18.5	r. 37	10	Dominica
4083a	♂	33	51	43	11	r. 37	9.5	Dominica

This interesting species is not uncommon at Bermuda, in suitable localities. It lives in shallow bays, with whitish shell-sand bottoms. We found it near and at Walsingham Bay on Castle Harbor; Hungry Bay; the north side of Long Bird Island, at "The Reach," etc. It can rarely be caught except by the use of nets. It was also in the collections of J. M. Jones, G. Brown Goode, and the Field Museum of Natural History.

The type localities were Florida and St. Thomas.

It was taken off Cape Hatteras, in shallow water, by the U. S. Steamer "Albatross." It ranges from North Carolina through the W. Indies to Brazil. Off Florida Keys, 5-7 fathoms (Stimpson). Bahia, Brazil (Smith).

This species was dedicated to Albert Ordway, a classmate of the author, while a student of Professor Louis Agassiz, 1858 to 1861.*

* Mr. Ordway was, at that time, an enthusiastic student of Crustacea, and a young man of much ability. His best known work on Crustacea, written at that time, but published later, is that on the genus *Callinectes* (see Bibliography), in which he first demonstrated the great systematic importance of the form and structure of the male appendages in this family, and applied his discovery to the correct elucidation of the numerous species of this group, to which he also added six new species.

During the winter and spring of 1860 and 1861, the writer spent several months in Washington closely associated with Mr. Ordway and several other young zoölogists, among whom were Dr. Wm. Stimpson, E. D. Cope, Theodore Gill, Elliott Coues, F. W. Putnam. We were engaged in working upon the collections of the Smithsonian Institution, by the requests of the Secretary, Prof. Joseph Henry, and Assistant Secretary, Prof. S. F. Baird.

At that time the writer remembers seeing Dr. Stimpson, who was at first skeptical, give Mr. Ordway a severe test, as to his ability to distinguish the various forms of *Callinectes* by his new method. He put before him all the specimens in the large Smithsonian collection with no labels except catalogue numbers. Mr. Ordway very rapidly and correctly separated them, not only into their species, but assigned each to its proper geographical area, greatly to the surprise of Dr. Stimpson and others.

At the time when we were in Washington, political and sectional excitement was at fever heat, and the presentment of impending war was almost universal,

Achelous spinimanus (*pars*, Latr.) DeHaan.

- ? *Portunus spinimanus* (*pars*) Latreille, Encyc., t. x, p. 188 (*teste* A. M.-Edwards); Nouv. Dict. Hist. Nat., xxviii, p. 47, 1819.
- ? *Lupa spinimana* Leach, Desmarest, Consid. gén. sur la classe des Crust., p. 98, 1835. ? H. M.-Edwards, Hist. nat. Crust., i, p. 452, 1834. Gibbes, op. cit., p. 178. Dana, United States Expl. Exped., Crust., p. 273. Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 57.
- ? *Achelous spinimanus* DeHaan, Fauna Japonica, Crust., p. 8, 1833. White, List Crust. Brit. Mus., p. 28, 1847. Stimpson, Annals Lyc. Nat. Hist., New York, vol. vii, p. 221, 1860. A. M.-Edwards (*pars*), Arch. Mus. d'Hist. nat., ix, p. 341 (*non* pl. xxxii, fig. 1, 1*b*), 1861;* Miss. Sci. Mex., v, p. 230, pl. xxxix, figs. 2, 2*a*, 1879. Smith, Crust. Brazil, these Trans., ii, p. 9 (measurements, p. 24). S. I. Smith, Annual Report U. S. Fish Comm., for 1885, p. 30, 1886. Rankin, Trans. N. York Acad. Sci., xi, p. 233, 1898 (Bermuda). *Achelous spinimana* Kingsley, Proc. Acad. Nat. Sci., Philad., 1878, p. 5. *Portunus* (*Achelous*) *spinimanus* M. J. Rathbun, Bull. Lab. Nat. Hist. Univ. Iowa, 1899, p. 276; Brach. and Macr. Porto Rico, p. 45, 1901 (*descr.*).

FIGURES 30, 31.

The front is rather prominent. The inner orbital tooth is bilobed, its outer lobe with the four median teeth making six unequal frontal teeth, not including the inner lobe of the bilobed orbitals, of which

Mr. Ordway was very patriotic and took great interest in the exciting events of the time. Probably the unusual excitement of that time and place had much to do with his entering the army a little later.

When the war broke out he immediately enlisted and remained in the Army of the Potomac through the entire war. He distinguished himself for bravery and efficiency on various occasions and was rapidly promoted. At the close of the war he had attained the rank of Brevet Brigadier General, Aug. 13, 1865. After Richmond was captured he was appointed Provost Marshal of the city. He eventually married there and continued to live there some years, engaged in business, but he never resumed his zoological studies after the war.

He afterwards resided in Washington, D. C., and was Commander of the National Guard of the District of Columbia, and at one time Commander of the Loyal Legion. He was also president of the American Ordnance Company.

General Ordway was born in Boston, 1843. He died in New York, Nov. 21, 1897.

* The figure given by A. M.-Edwards, in this work, represents a species from the coast of Chili. It is evidently distinct from the one figured in his subsequent work from the West Indies. Which of the two is the true *spinimanus* of Latreille seems doubtful, but the name is now commonly applied to the West Indian species, or to both.

Probably all the early writers, cited above, confounded two or more species under this name. Their descriptions are too brief and indefinite to determine species of this genus. Probably the figure of the Chilian species given by A. M.-Edw. affords the earliest means for the accurate determination of any of those included under this specific name. If so, the name ought to be restricted

the middle two are distinctly larger than the others. The middle four are all rather elongated, and subacute. The posterior lateral tooth is stout, rather curved forward. The others are all nearly equal in size, acute. The merus of the chelipeds has five stout, rather close anterior teeth* and a large posterior distal one, according to Edwards' figure. The manus has a single distal tooth on a strong carina, at the distal fourth. This species, in respect to its areolation, lateral teeth, and six frontal teeth, is similar to *A. Smithii*, but in the latter the frontal teeth are blunt and the middle ones are less prominent; it also differs in having the merus of outer maxillipeds more prolonged. The chelipeds are shorter and stouter, the merus particularly so; its large posterior distal tooth seems to be distinctive. Personally I have seen no specimens agreeing well with Edwards' figure and description of 1879.

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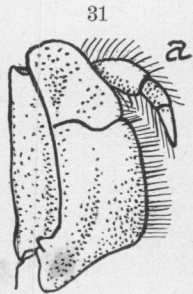
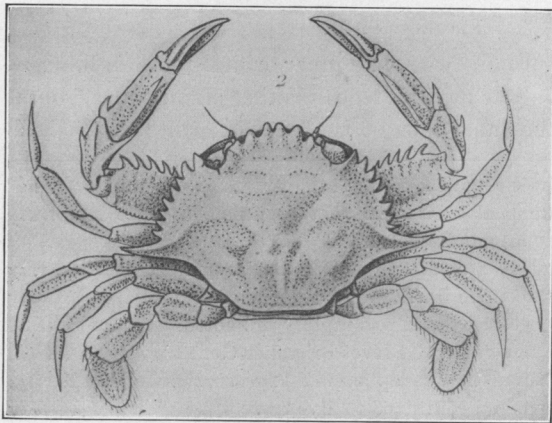


Figure 30.—*Achelous spinimanus*, about $\frac{1}{2}$ nat. size; 31, maxilliped, enlarged.

After A. M.-Edw.

Measurements for ratio of length to total breadth. (Part, *A. Smithii*.)

Length of carapace including frontal teeth	Breadth of carapace including spines	Ratio of length to breadth	Locality
37.0 ^{mm}	61.5 ^{mm}	1: 1.66	Brazil (Smith)
44.4	77.4	1: 1.74	Brazil (Smith, 829 ♀)
56.0	95.0	1: 1.70	Brazil (Smith)
54.2	90.0	1: 1.65	Porto Rico (Rath.)

to the Chilean species. In that case the Atlantic species should take the name, *A. Smithii*, unless there be an earlier one. None of the early writers, before A. M.-Edw. have given a figure of either form, so far as I know.

* Miss Rathbun, 1901, gives, in her description, only four, as in *Gibbesii*. In our No. 829, there are four on one side and five on the other.