

Notes on Species of Sagitta collected during a voyage from England to Australia.

By B. B. GRAY, F.L.S.

(Figures 1-4.)

(Read before the Royal Society of Queensland, 31st August, 1922).

THE *Sagitta* which are identified in this paper were collected by Doctor Moreau during a voyage from England to Australia *viâ* the Cape of Good Hope in the year 1919.

Thirteen species were obtained, three of which are regarded as new.

The method of collecting was by means of a tow-net attached to a sea tap, which was left open for an indefinite length of time.

An especial interest attaches to the material collected between Plymouth and Morocco, as in this haul twelve larval *Amphioxus* were taken.

I take this opportunity of thanking Professor T. Harvey Johnston, University, Brisbane, for his kindness in handing the specimens to me for identification.

Sagitta enflata Grassi.

SYNONYMY.—*S. lyra* Langerhans 1880; *S. gardineri* Doncaster 1902; *S. brachycephala* Moltschanoff 1907.

Several specimens of this species were obtained off the coast of West Africa in latitude 15° N. during August, 1919. Already recorded from the Atlantic, Indian, and Pacific Oceans between 40° N. and 40° S.

Sagitta hexaptera D'Orbigny.

SYNONYMY.—*S. mediterranea* Forbes 1843; *S. bipunctata* Krohn 1844; *S. tricuspidata* Kent 1870; *S. magna* Langerhans 1880; *S. longidentata* Grassi 1881; *S. darwini* Grassi 1883.

Individuals of this form were obtained during the passage from St. Paul's Rocks to 122° E. longitude in September, 1919. Already recorded from the Atlantic, Indian, Pacific, and Antarctic Oceans.

Sagitta macrocephala Fowler.

One specimen of the above species was captured off the coast of West Africa in 15° N. latitude, during August, 1919, which agreed in all particulars with the type description, and in addition possessed a small spine-like projection on each papilla of the vestibular ridge, very similar to those figured by Michael (1911, Pl. III., 16, 17) for *S. gigantea* and *S. lyra*.

A few very small individuals, collected off the same coast during a run of 100 miles near the equator, I have placed, though with some hesitation, under this species, as, although all the features except the head agreed with the descriptions, the latter was very much smaller in proportion to the body than is generally the case.

Already recorded from the Atlantic and Pacific Oceans.

Sagitta minima Grassi.

This species was obtained on three occasions during the month of August, 1919—viz., during the voyages from Plymouth to Morocco, and from Madeira to the Canary Islands; off the coast of West Africa in latitude 15° N. Already recorded from the Atlantic, Indian, and Pacific Oceans.

Sagitta neglecta Aida.

SYNONYMY.—*S. septata* Doncaster 1902.

Several individuals were captured in August, 1919, during the voyage from Plymouth to Morocco. Already recorded from the Pacific and Indo-Pacific.

Sagitta pulchra Doncaster.

This species was taken off the coast of West Africa in latitude 15° N. during August, 1919. Already recorded from the Pacific and Indian Oceans and the Tasman Sea.

Sagitta robusta Doncaster.

SYNONYMY.—*S. hispida* (non Conant) Aida 1897; *S. hispida* Doncaster 1902; *S. ferox* Doncaster 1902; *S. japonica* Galzow 1910.

Specimens were obtained on three occasions during August, 1919, between Madeira and the Canary Islands;

off the coast of West Africa, in latitude 15° N.; and between Plymouth and Morocco. Already recorded from the Indian, Atlantic, and Pacific Oceans.

***Sagitta regularis* Aida.**

SYNONYMY.—*S. bedfordii* Doncaster 1902.

Captured during the voyage from Plymouth to Morocco in August, 1919. Already recorded from the Indian and Pacific Oceans.

***Sagitta setosa* Langerhans.**

SYNONYMY.—*S. germanica* Leuchart 1847; *S. bipunctata* Busk 1856; *S. enflata* var. Hallez 1909.

Individuals of this species were taken during August, 1919, off the coast of West Africa, in latitude 15° N. Already recorded from the North Sea.

***Sagitta serratodentata* Krohn.**

This species was obtained in August, 1919, off the coast of West Africa, in latitude 15° N. Already recorded from the Atlantic, Indian, Pacific, and Antarctic Oceans.

***Sagitta* sp.**

A small unidentifiable *Sagitta* was obtained during the run from Adelaide to Bass Straits during August, 1919.

***Sagitta atlantica* sp. nov.**

(Fig. 1.)

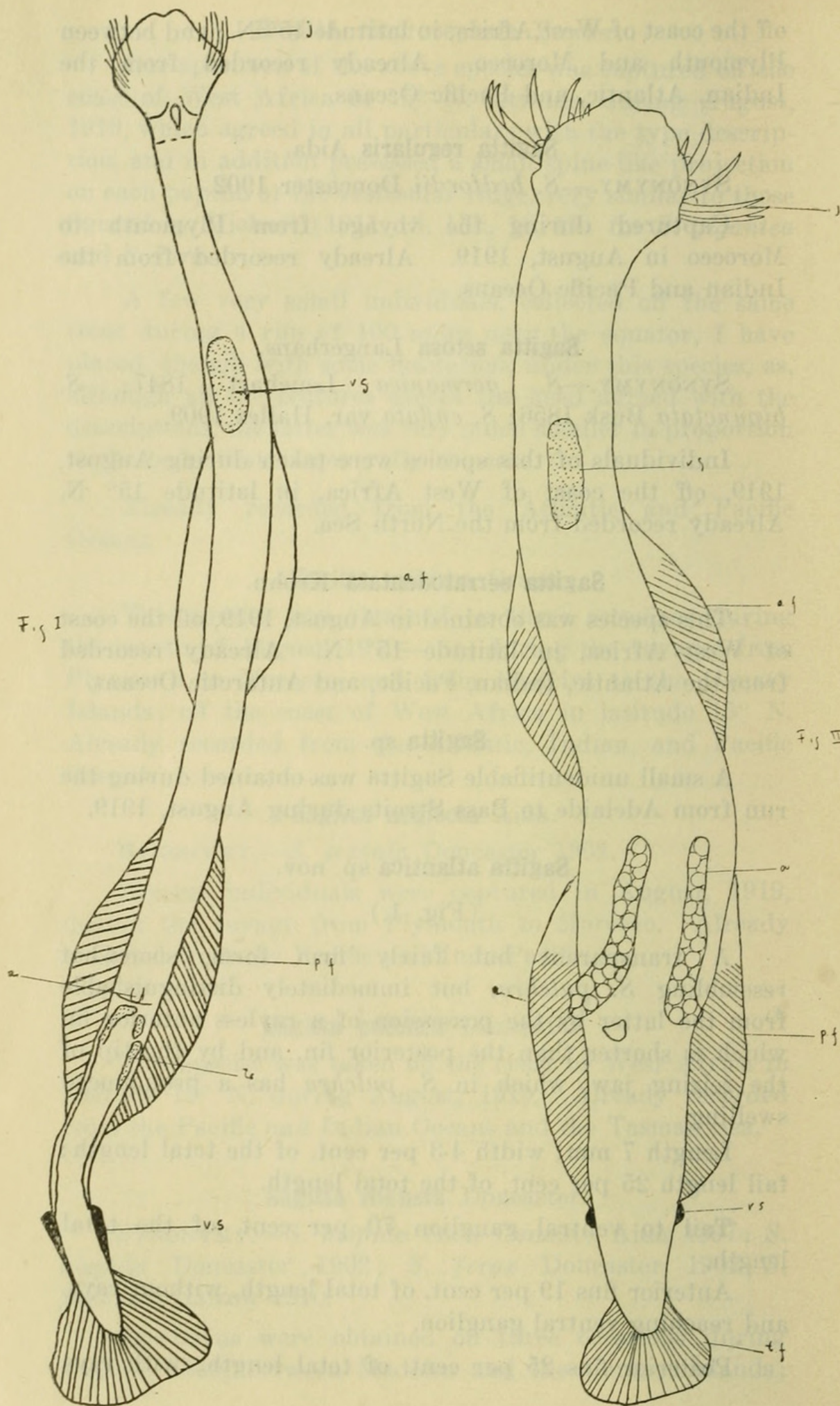
A transparent but fairly firm form, somewhat resembling *S. pulchra*, but immediately distinguishable from the latter by the possession of a rayless anterior fin which is shorter than the posterior fin, and by the tip of the seizing jaw, which in *S. pulchra* has a pronounced swelling.

Length 7 mm; width 4.3 per cent. of the total length; tail length 25 per cent. of the total length.

Tail to ventral ganglion 70 per cent. of the total length.

Anterior fins 19 per cent. of total length, without rays, and reaching ventral ganglion.

Posterior fins 25 per cent. of total length; with rays



except in a small anterior portion; 55 per cent. of the fins on the body; separated from the anterior fins by 10 per cent. of the total length of the body.

Anterior teeth 5; posterior teeth 8-9; seizing jaws 7.

Vesiculæ seminales fairly large, but not very prominent; they are touched by the tail fin, but are widely separated from the posterior fins.

Only one specimen was obtained; during the run from Madeira to the Canary Islands, on 27th August, 1919.

***Sagitta equatoria* sp. nov.**

(Fig. 2.)

A firm opaque form with a very large head, which resembles *S. macrocephala* in this feature and in the width of the body, but is readily distinguishable by the anterior fins, which in *S. macrocephala* are only half the length of the posterior, and by the possession of twelve posterior teeth as compared to thirty-six in *S. macrocephala*.

Length 7.2 mm; width 12 per cent. of the total length; tail length 35 per cent. of the total length; tail to ventral ganglion 64.4 of the total length.

Anterior fins 19 per cent. of the total length of the body, with a rayless anterior portion, and reaching the ventral ganglion.

Posterior fins 22 per cent. of the total length of the body, with a rayless anterior portion, and reaching the vesiculæ seminales; more than 50 per cent. of the fins in front of the tail septum.

Anterior teeth 10; posterior teeth 12.

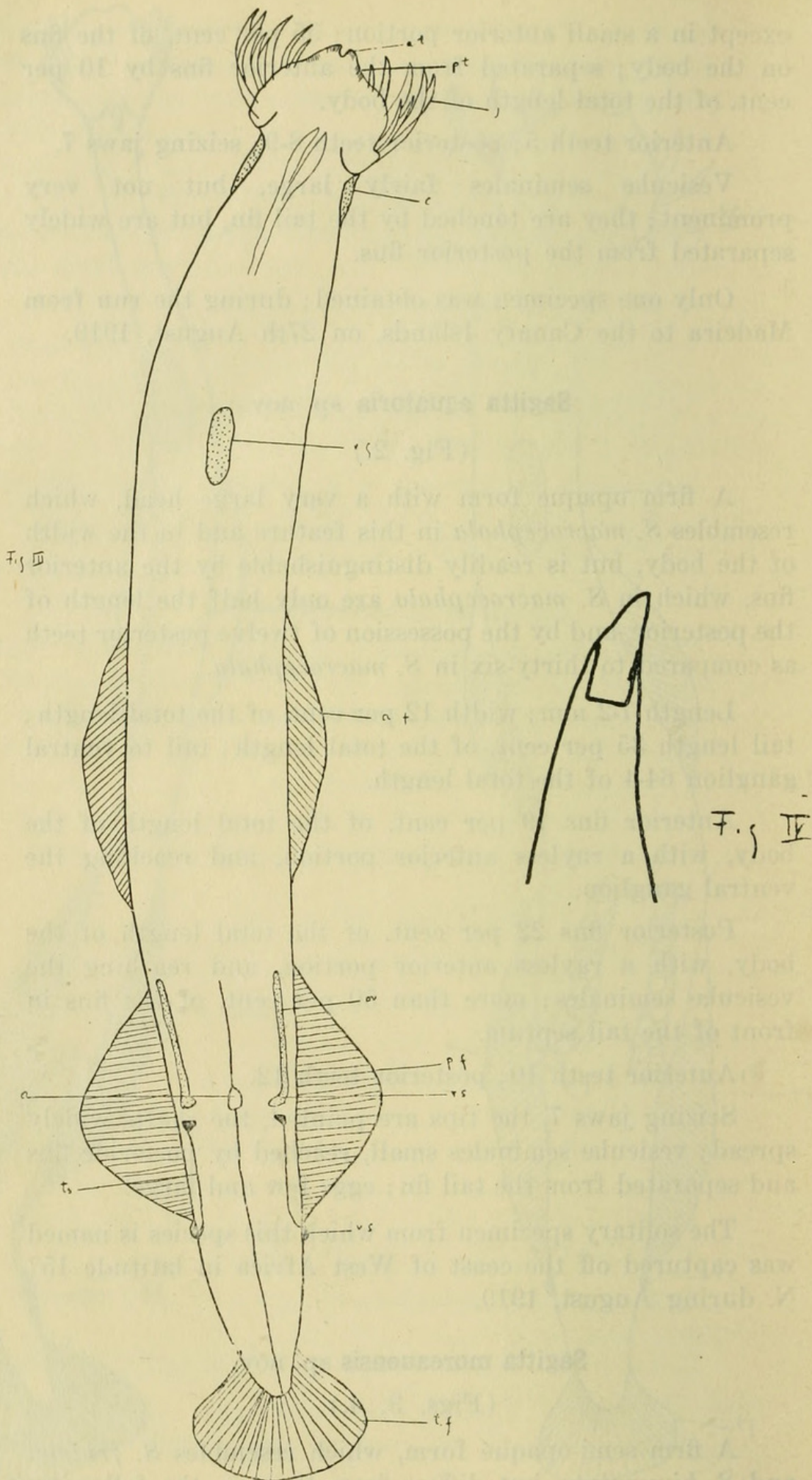
Seizing jaws 7, the tips are pointed, the shafts widely spread; vesiculæ seminales small, reached by posterior fins and separated from the tail fin; eggs few and large.

The solitary specimen from which this species is named was captured off the coast of West Africa in latitude 15° N. during August, 1919.

***Sagitta moreauensis* sp. nov.**

(Figs. 3, 4.)

A firm semi-opaque form, which resembles *S. fridrici* and *S. bipunctata*, but differs from these in the following



particulars:—The tail fin does not reach the vesiculæ seminales in the new species, but does so in *S. bipunctata*; the posterior fins are shorter than the anterior in the former, but are longer in the latter; in *S. bipunctata* there is a distinct constriction at the tail septum, but this is not the case in *S. moreauensis*. *S. fridrici* has less than 50 per cent. of the posterior fins on the body, and the vesiculæ seminales are reached by the tail fin. These features are not similar to *S. moreauensis*.

The solitary specimen which was captured reacted in a curious way to the reagents used in staining and mounting. When the specimen was examined and measured in formalin the width was 14 per cent. of the total length, and numerous sensory papillæ were present, but after mounting the width was reduced to 5 per cent. of the total length and the sensory papillæ had disappeared. All the other measurements remained unchanged.

Length 13.8 mm; width 14 per cent.; tail length 21 per cent. of the total length; tail to ventral ganglion 67 per cent. of the total length.

Anterior fins 21 per cent. of the total length; strong, oblique rays throughout; separated by a considerable distance from the ventral ganglion.

Posterior fins 18 per cent. of the total length, with strong rays throughout at right angles to the body; separated from the anterior fins by 5 per cent. of the total length; 50 per cent. in front of the tail septum; reach the vesiculæ seminales. Collarette small; anterior teeth 6, very long; posterior teeth 8-11; seizing jaws 10-12, widely spread; the tips of the jaws are embedded in shaft for one-half their length (Fig. 4). All the jaws are not visible in the figure, as some are masked by others when the head is in this particular position.

Vesiculæ seminales very small and inconspicuous; reached by the posterior fins, but not by the tail fin. Ovary with many small eggs.

The specimen was taken between Durban and St. Paul's Rocks during September, 1919.

All drawings have been made with a camera lucida from stained and mounted specimens, and corrected for distortion, shrinkage, and damage to the fins by drawings

and measurements made in a liquid medium before staining.

Measurements are given without the fins.

TABLE OF STATIONS.

Station.	<i>S. atlantica.</i>	<i>S. enflata.</i>	<i>S. equatoria.</i>	<i>S. hexaptera.</i>	<i>S. macrocephala.</i>	<i>S. minima.</i>	<i>S. moreauensis.</i>	<i>S. neglecta.</i>	<i>S. pulchra.</i>	<i>S. robusta.</i>	<i>S. regularis.</i>	<i>S. setosa.</i>	<i>S. serratodentata.</i>	<i>S. species.</i>	Approximate latitude.
1	×	..	×	..	×	×	50° N. to 35° N.
2	×	×	×	33° N. to 28° N.
3	..	×	×	..	×	×	×	×	..	×	×	..	15° N.
4	×	1° N. to 1° S.
5	×	30° S. to 38° S.
6	×	38° S.
7	×	35° S. to 40° S.

1.—Plymouth to Morocco; 2.—Madeira to the Canary Islands; 3.—West Coast of Africa 15° N. latitude; 4.—West Coast of Africa 1° N. latitude to 1° S. latitude; 5.—Durban to St. Paul's Rocks; 6.—St. Paul's Rocks to 122° E. longitude; 7.—Adelaide to Bass Straits.

KEY TO THE SPECIES OF SAGITTA.

The following key to the species of *Sagitta* has as far as possible been based on those characters which are least likely to be rendered unreliable through damage during capture and subsequent treatment. In species where various authorities do not agree as to the presence or absence of any particular feature, the species is entered twice in the key, so that whichever case is correct the species may be identified.

Collarette present	..	..	..	..	..	13
Collarette absent	..	..	..	..	..	1
1. Head very large	..	..	..	..	..	<i>macrocephala</i>
Head normal	..	..	..	..	..	2
2. Tip of seizing jaw hooked	..	..	..	..	..	3
Tip of seizing jaw not hooked	..	..	..	..	..	4
3. Shaft of seizing jaw serrated	..	..	..	..	..	<i>serratodentata</i>
Shaft of seizing jaw not serrated	..	..	..	..	..	<i>minima</i>
4. Neck constriction conspicuous	..	..	..	..	..	5
Neck constriction not conspicuous	..	..	..	..	..	10

5. Tail bilobed	<i>australis</i>
Tail not bilobed	6
6. Posterior teeth more than 15	7
Posterior teeth fewer than 15	9
7. Anterior fins with rays throughout	<i>elegans</i>
Anterior fin with clear inner zone	8
8. Width 8 per cent. to 12 per cent. of the total length	<i>enfiata</i>
Width 5 per cent. to 6 per cent. of the total length	<i>phillipini</i>
9. Anterior fin reaches ganglion	<i>lyra</i>
Anterior fin does not reach ganglion	<i>hexaptera</i>
10. Posterior teeth more than 15	<i>setosa</i>
Posterior teeth fewer than 15	11
11. Tail more than 30 per cent. of the total length	<i>equatoria</i>
Tail less than 30 per cent. of the total length	12
12. Lateral fins confluent	<i>maxima</i>
Lateral fins separated	<i>atlantica</i>
13. Collarette long	14
Collarette short	21
14. Collarette very conspicuous	15
Collarette not very conspicuous	18
15. Collarette extends to vesiculæ seminales	<i>californica</i>
Collarette does not extend to vesiculæ seminales	16
16. Vesiculæ seminales reached by posterior fins	17
Vesiculæ seminales not reached by posterior fins	<i>planctonis</i>
17. Vesiculæ seminales reached by tail fin	<i>robusta</i>
Vesiculæ seminales not reached by tail fin	<i>regularis</i>
18. Tail more than 25 per cent. total length of body	<i>neglecta</i>
Tail not more than 25 per cent. total length of body	19
19. Anterior fin with rays throughout	20
Anterior fin with clear inner zone	<i>enflata</i>
20. Vesiculæ seminales reached by tail fin	<i>helenæ</i>
Vesiculæ seminales not reached by tail fin	<i>elegans</i>
21. Vesiculæ seminales reached by posterior fins	22
Vesiculæ seminales not reached by posterior fins	27
22. Vesiculæ seminales reached by tail fin	23
Vesiculæ seminales not reached by tail fin	25
23. Posterior teeth more than 14	24
Posterior teeth fewer than 14	<i>putchra</i>
24. More than 50 per cent. of the posterior fin on body	<i>helenæ</i>
Less than 50 per cent. of posterior fin on body	<i>fridrici</i>
25. Tail more than 25 per cent. of total length	26
Tail not more than 25 per cent. of total length	<i>elegans</i>
26. Anterior fin longer than posterior	<i>neglecta</i>
Anterior fin shorter than posterior	<i>tenuis</i>

27. Width more than 7 per cent. of the total length 28
 Width less than 7 per cent. of the total length 29
28. Opaque and firm *moreauensis*
 Transparent and flaccid *enflata*
29. Seizing jaws 7 or more *bipunctata*
 Seizing jaws never more than 7 *decipiens*

Text figures, 1-4.

Fig. 1.—*Sagitta atlantica* sp. nov. This drawing is incorrect with regard to the posterior fin, which actually has a small rayless anterior portion.

Fig. 2.—*Sagitta equatoria* sp. nov.

Fig. 3.—*Sagitta moreauensis* sp. nov.

Fig. 4.—*Sagitta moreauensis* tip of seizing jaw.

Reference to lettering: a.—Anus. a.f.—Anterior fin. a.t.—Anterior teeth. c.—Collarette. j.—Seizing jaw. ov.—Ovary. p.f.—Posterior fin. r.s.—Receptaculum seminis. s.—Shaft. t.—Tail septum. tp.—Tip of seizing jaw. ts.—Testis. v.g.—Ventral ganglion. v.s.—Vesicula seminalis.

BIBLIOGRAPHY.

1911. MICHAEL, E. L.—Classification and Vertical Distribution of the Chaetognatha of the San Diego Region.
 University of California Publications in Zoology, 8 (3) 1911, pp. 21-186.
1919. MICHAEL, E. L.—Report on the Chaetognatha collected by the United States Fisheries steamer "Albatros" during the Philippine Expedition, 1907-1910. Smithsonian Institute, United States National Museum. Bulletin 100, vol. I, pt. 4, pp. 235-277.
1911. RITTER-ZAHONY, R. von.—*Revision der Chaetognathen*, Deutsche Sud-polar Exped.; XIII., Band. Zool. 5 Band. Heft. I



Gray, B. B. 1923. "Notes on Species of Sagitta collected during a voyage from England to Australia." *The Proceedings of the Royal Society of Queensland* 34, 171–180. <https://doi.org/10.5962/p.351483>.

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