

cal line through its centre, carries the point A through the cusp at A_1 (Fig. 2), with a sensible horizontal velocity. So that, instead of commencing the new curve under the same circumstances as at first, it does so with a certain horizontal velocity, which, accumulating gradually, finally reaches the amount requisite for the horizontal movement of A . Again, the friction of the vertical pivot which supports the wheel and rings retards the horizontal movement so attained, and thereby causes a gradual and constant decline of the point A . So that, in place of describing a circle in the horizontal plane through its first position, it actually describes a spherical helix, terminating in the vertical through the fixed point.

This investigation of the movement of a particular point in a body revolving freely round a fixed centre applies to many natural cases; the precession of the earth's axis is caused by a force which acts so as to pass constantly through the axis of figure, and not through the instantaneous axis. And the same conditions are found to hold in the case of deflections, caused by the resistance of the air, or the action of oblique currents in the flight of projectiles, such as rifle bullets, which have received a rapid rotation round axes passing through their centres of gravity; and I propose to make these the subject of the second part of the present communication.

VII.—On a new Genus and new Species of *Diastylidæ*. By
 C. SPENCE BATE, F. L. S., Honorary Member, Dublin
 Natural History Society; Honorary Member, Dublin Uni-
 versity Zoological and Botanical Association, &c.

[Read Friday Evening, May 28, 1858.]

[INTRODUCTORY NOTE.—Amongst the collection of Crustacea made by the late J. Vaughan Thompson in the south of Ireland, and purchased from him by the Royal College of Surgeons of Ireland, and by that body liberally presented to the Museum of the Royal Dublin Society, are three bottles of Crustacea belonging to the group *Diastylidæ*, as characterized by C. Spence Bate. To these the late Vaughan Thompson affixed in his manuscript catalogue the names of *Scorpionura maxima*, *vulgaris*, and *longicornis*. At the request of the Director of the Museum I undertook the task of carefully examining the Crustacea contained in this collection, with a view to their identification and due record;

many of the species having been hastily named in the manuscript catalogue. A careful examination of these *Scorpionuræ* led to the conclusion that while, as had been suggested by Professor Melville (*vide* "Proceedings Natural History Review," vol. iv. p. 153), one of them, viz., *Sc. maxima*, was identical with *Bodotria*, or *Alauna* of Goodsir, *Diastylis Rathkii* of C. Spence Bate's paper, the other two forms were distinct from any of those described by that author.

I, therefore, at the request of Dr. Carte, took occasion of a visit to Plymouth to submit to Mr. Spence Bate, as the best authority on the subject, these specimens. He kindly consented to examine them, and forwarded to me the following communication on the subject, along with the dissections and drawings from whence the illustrations have been engraved.—J. R. KINAHAN.]

An examination of the specimens of Diastylidæ, submitted by Professor Kinahan to me, has resulted in my finding that the collection contains the following species:—

DIASTYLIS RATHKII (*Kroyer sp.*)

Synonyms:—*Cuma Rathkii* (*Kroyer*); *Alauna rostrata* (*Goodsir*); *Scorpionura maxima* (*J. V. Thompson*, "Nat. Hist. Ireland," by W. Thompson, vol. iv. p. 394).

A single mutilated specimen.

VAUNTOMPSONIA, *n. g.*

Carapax angulos laterales ante oculos convenientes. Antennæ superiores nullæ. *Perei* segmenta quinque posteriora carapace nuda. *Pleopoda*, pare ultimo excepto, absunt. *Telson* parparvulum.

The lateral angles of the carapax meeting before the eyes; upper antennæ wanting; five posterior segments of the *pereiion* (thorax) not covered by the carapax; all the *pleopoda*, the last pair excepted, absent; *telson* rudimentary.

VAUNTOMPSÔNIA CRISTATA, *n. s.*

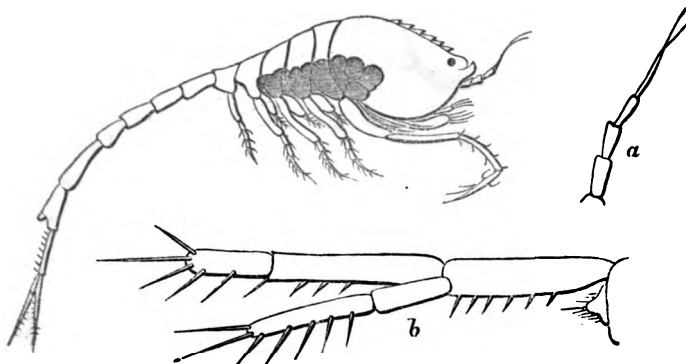
SCORPIONURA VULGARIS (*J. V. Thompson, MS.*).

Carapacis regione dorsali medio cristato denticulato.

The anterior portion of the central dorsal region of the carapax with a ridge of minute teeth; lower antennæ, four joints, the last a filamentary appendage; posterior *pleopoda*, with the rami unequally two-jointed, as long as the peduncle, and armed with stout spines arranged chiefly along the inner margin; *telson* triangular, squamiferous, ciliated.

Length, .25 inch.

The figure and description are from a female carrying ova; there are several specimens in the collection, two of them carrying ova.



a, antenna; b, posterior pleopod.

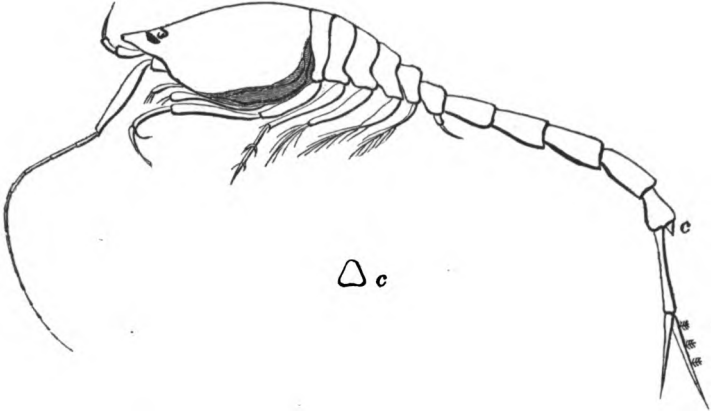
This species approximates nearer to *Cuma Edwardsii* (*Kroyer*) than to any other I am acquainted with. It probably forms with it, as suggested in my memoir on the British Diastylidæ ("Annals," Nat. Hist., 1856), a genus distinct from *Cuma*, and which may be readily distinguished by the character of *five* segments of the *pereion* being perfectly developed posterior to the carapace, whereas in *Cuma* there are but *four* thus developed.

Although I have not had an opportunity of dissecting a typical species of the genus *Cuma*, I do not hesitate to group the present species, and probably *C. Edwardsii*, as distinct from *Cuma*, since Goodsir asserts that both antennæ are present in those *Cumæ* which he examined, the upper in a rudimentary state, a character which I cannot find in *V. cristata*; this, taken with the altered condition of the *pereion*, justifies the presumption of a generic distinction.

In selecting a name, I have fixed on that of the discoverer, being one which is familiar to every carcinologist, and to which honour is due for valuable discoveries in this department of zoology. More than one of the name being eminent as naturalists, a license has been taken: the Christian name has been incorporated with the surname, and both spelled according to sound: the word is thus both shortened and rendered more easy for pronunciation by foreigners.

CYRIANASSA LONGICORNIS (*J. V. Thomp., MS. sp.*)

Pleopodia, paribus primo et sexto exceptis, nullis. Ceteris ut *Cyr. gracilis*.



No *pleopoda* developed on the second, third, fourth, and fifth segments; the other characters as *C. gracilis*.

All the appendages of the *pleon* are suppressed, except the first and sixth pairs; *telson* squamiform and rudimentary.

Length, .15 inch.

In the higher forms of Crustacea the *pleopoda* in the male are often altered in form, and sometimes even wanting, except when they are subservient to the sexual character. It may be, therefore, that the difference between the present species and *C. gracilis* is one of sex only.

A single specimen in the Royal Dublin Society's collection is the only one I have seen.

The specimen is shorter and more robust than *C. gracilis*; the segments are brought closer together; the dorsal surface of the *cephalon* and *pereion* is more arched; the antepenultimate joints of the peduncle of the lower antennæ do not extend beyond the anterior margin of the carapace. I have, therefore, thought it advisable for the present to retain Thompson's name, rather than absorb the species into that previously described. Having seen but a single specimen of each, I have not had the advantage of dissection to compare their separate details.