

the petasma on the first pair of pleopoda is slightly enlarged, and there are three small teeth or points attached to the lateral margins of the sixth somite of the pleon, the central tooth assuming a larger proportion to the others; but the telson still retains the simple condition of the female.

On the same plate, fig. 4 represents another specimen, about 7 mm. in length, that was taken in the tropical part of the Atlantic. This agrees with fig. 2 in most points, and is probably the same stage of a different species; it has, however, lost the minute denticle nearest to the posterior angle of the sixth somite, and apparently retained the larger one anterior to it; it has also lost the small denticle in front of the latter, but further in advance is a small process that appears to be a future tooth; so that we see in an incipient stage the gradual production of the two small teeth that appear to be the constant condition of the males in the species of this genus. The telson still retains its smooth condition.

Whether these several specimens belong to one species or not, it is difficult to determine, but as all species pass through similar stages that resemble each other as far as external evidence enables us to decide, it is most probable that these are derived from the two forms *Lucifer typus* and *Lucifer reynaudii*, which appear to live closely associated together. Dana, speaking of *Lucifer reynaudii*, says:<sup>1</sup>—

“In one male about half grown, the anterior tooth of the sixth segment of the abdomen was obsolete, and the posterior spine was quite short, although of the same general character as to its extremity, as in full grown males. This intermediate character in an immature male seems to confirm our inference, drawn from the general identity of character and their frequent association, that the animals described as such are actually male and female.”

*Geographical Distribution.*—The genus appears to range all over the tropical and subtropical regions of the Atlantic and Pacific Oceans, within a hundred fathoms of the surface, but according to Professor Brooks they are abundant on shallow shores.

*Lucifer typus*, Vaughan Thompson (Pl. LXXXIII.).

*Lucifer typus*, Vaughan Thompson, Zool. Researches, p. 58, pl. vii. fig. 2, 1829.

*Leucifer typus*, Milne-Edwards, Hist. Nat. Crust., t. ii. p. 469.

*Lucifer typus*, Faxon, Chesapeake Zool. Lab., 1878, p. 113.

„ *pacificus*, Dana, U.S. Explor. Exped., Crust., p. 673, pl. xlv. fig. 2 (young).

*Male.*—Antennal somite one-fourth the length of the animal, measured from the frontal margin to the extremity of the telson, and rather more than twice the length of the carapace.

The anterior five somites of the pleon are subequal in length, the first and fifth

<sup>1</sup> U.S. Explor. Exped., Crust., vol. i. p. 673.