

increased rapidity. Soon this pulsation becomes so rapid that several contractions may be counted in a second. However, we must turn our attention elsewhere, for the whole digestive tube is now in the most lively peristaltic movement, filling itself rapidly with blood, as is easily observed; the long œsophagus is particularly agitating, throwing itself from one side to another inside the neck, bending itself so violently as to remind one of the coiling of a rope when being shipped on deck."

Schiödte states that the sucking organ or beak is a "dark brown protruding haustellum, provided with hooks at each extremity, out of which an excessively delicate membranaceous tube, of varying length, is hanging. This pumping "ventricle" (which is undoubtedly homologous with the pumping stomach of most sucking insects, such as the Diptera, Lepidoptera and Hymenoptera) Schiödte has discovered in "those Coleopterous larvæ which have powerful organs for biting,

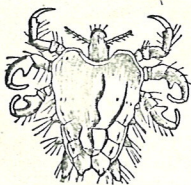


Fig. 559.

placed at a distance round a very minute mouth-opening, such as the larvæ of Carabi, Hydrophili, and Hister, as well as in the larvæ of Dytisci, which suck through the mandibles."

The same author also shows that the mouth of *Pediculus* differs from that of Hemiptera generally in the circumstance that the labium is capable of being retracted into the upper part of the head, which therefore presents a little fold, which is extended when the labium is protruded. He also shows that those parts which were, by mistake, thought to be palpi and mandibles by Erichson, Jurine and Landois, are simply lobes on the under side of a chitinous band.

In *Pediculus* the thorax is a little smaller than the elongated abdomen, and all the tarsi are two-jointed. The genus *Phthirus* has a very small thorax, with the abdomen much wider than the head, and the fore tarsi have but a single joint. *Phthirus pubis* Linn. (Fig. 559), the Crab louse, is found on the pubic region of man and also on the head.

MALLOPHAGA Nitzsch. The Bird-lice live on the hair of Mammalia and feathers of birds. In this group there are dis-

tinct jaws. The flattened body is corneous, hard above, and the head is horizontal, with three to five-jointed antennæ; the eyes are small and simple; the mandibles are small, like a hook, and the maxillary palpi, when present, for they are sometimes wanting, are four-jointed, while the labial palpi are two-jointed. The thorax is small and but two-jointed apparently, as the meso- and metathorax are united together. The abdomen is from nine to ten-jointed, while the short thick limbs have two-jointed tarsi and one or two claws.

These insects are considered by Burmeister as forming a passage from the Hemiptera into the Orthoptera, as they possess free biting mouth-parts, especially free mandibles, which are not as in the rest of the suborder fused together with the other parts to form a sucking tube. *Docophorus buteonis* Pack. (pl. 9,* fig. 3) lives on the Red Shouldered Hawk; and *D. hamatus* Pack. (Pl. 9, fig. 7) is found on the Snow Bunting.

Goniocotes Burnettii Pack. (Fig. 560) infests the domestic fowl. *Lipeurus corvi* Pack. (Pl. 9, fig. 2) is a parasite of the crow; *L. elongatus* Pack. (Pl. 9, fig. 4), and *L. gracilis* Pack. (Pl. 9, fig. 6) are long and slender forms. In the genus *Philopterus* of Nitzsch the antennæ are filiform, five-jointed, and the labial palpi are wanting. *Nirmus* is an allied genus; both live on birds. *N. thoracicus* Pack. (Pl. 9, fig. 5) lives on the Snow Bunting.

Trichodectes canis DeGeer lives on the dog, and has three-jointed antennæ. The females have two movable hooks on the penultimate ring of the abdomen. *T. subrostratus* is a parasite of the cat. *T. capree* Pack., lives on the goat. The Saddle-back Gull is inhabited by *Colpocephalum lari* Pack. (Pl. 9, fig. 1). *Gyropus* has no labial palpi. *G. porcelli* Schrank is a third of an inch long and lives on the Porpoise. Mr. C. Cooke has found *G. ovalis* on the Guinea pig in this country.

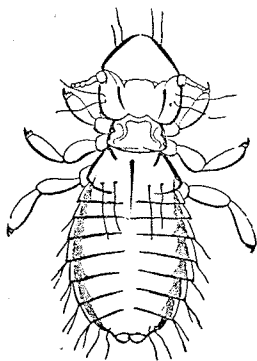
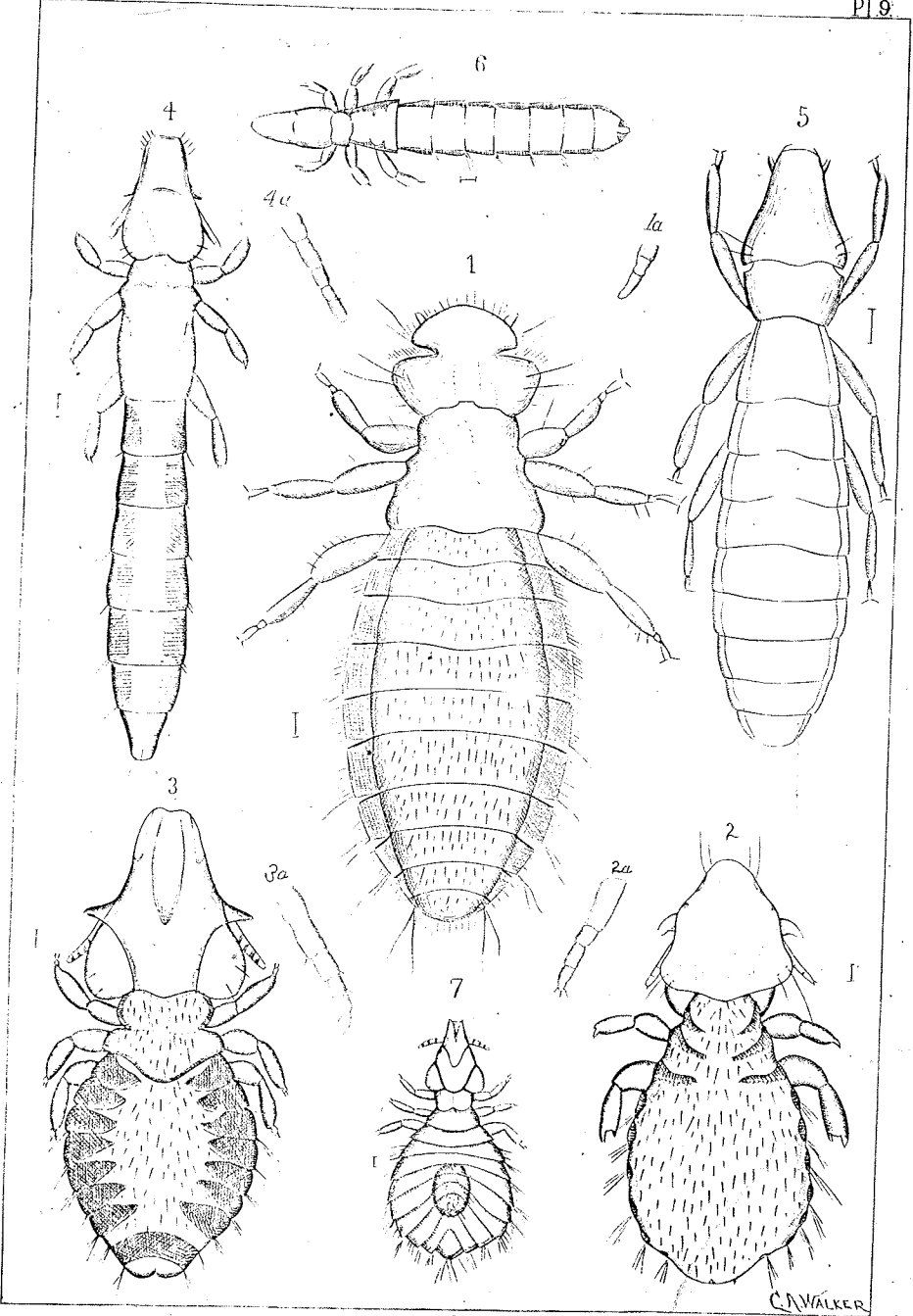


Fig. 560.

* EXPLANATION OF PLATE 9.— Fig. 1, *Colpocephalum lari* Pack.; 1a, antenna; Fig. 2, *Lipeurus corvi* Pack.; 2a, antenna; Fig. 3, *Docophorus buteonis* Pack.; 3a, antenna; Fig. 4, *Lipeurus elongatus* Pack.; 4a, antennæ; Fig. 5, *Nirmus thoracicus* Pack.; Fig. 6, *Lipeurus gracilis* Pack.; Fig. 7, *Docophorus hamatus* Pack.



4

6

5

4a

1

1a

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I

3

2

3a

2a

I

7

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