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Publisher: Taylor & Francis
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Annals and Magazine of Natural History: Series 4

Publication details, including instructions
for authors and subscription information:
<http://www.tandfonline.com/loi/tnah10>

Abdominal sense-organs in a fly

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Published online: 16 Oct 2009.

To cite this article: Dr. A.S. Packard Jun. (1871) Abdominal sense-organs in a fly, *Annals and Magazine of Natural History: Series 4*, 7:38, 174-175, DOI: [10.1080/00222937108696343](https://doi.org/10.1080/00222937108696343)

To link to this article: <http://dx.doi.org/10.1080/00222937108696343>

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"Max Schultze (Köll. und Sieb. Zeitschrift, vol. iv. p. 187) mentions that spermatophores exist in the Oligochaeta as in the Leeches. Budge, in 1850, in Troschel's 'Archiv' (Wiegmann's), described the sexual organs of *Tubifex rivulorum*, with which he confused, as appears from his figure, a *Limnodrilus*, describing parts of both worms. He figured the bodies from the spermatophoric reservoirs, but roughly. Leuckart, in his notice of this paper (Bericht, 1848-53), states his belief that the bodies are spermatophores, and the pouches spermatophoric receptacles.

"D'Udekem, who observed filaments in the spermatophoric pouches of *Nais proboscidea*, considered them as destined to aid in forming the egg-capsule, but subsequently agreed with Leuckart that they were probably spermatophores (Bull. Acad. Belgique, 2nd ser. tome xii.).

"D'Udekem also describes two 'hard pieces' at the male generative orifice in *Chaetogaster Mülleri*, which are apparently 'genital setae.' He describes the generative organs of *Æolosoma* in probably an imperfect state.

"I am indebted to Professor Leuckart for these references."

I remain, Gentlemen,

Truly yours,

E. RAY LANKESTER.

January 26, 1871.

Abdominal Sense-organs in a Fly. By Dr. A. S. PACKARD, Jun.

While engaged in naming a collection of microscopic preparations of insects mounted on slides by Mr. T. W. Starr of Philadelphia, for the collection of Dr. T. d'Oremieulx of New York, my attention was drawn to a sense-organ situated on the female anal appendages of a species of *Chrysopila*, allied to *C. ornata* (Say), a genus of flies allied closely to *Leptis*. The female appendages are rounded, somewhat spatulate, and of the usual form seen in other species of the genus. The appendage is covered with stiff coarse hairs, about fifty in number, arising from conspicuous, round, clear cells, while the whole surface, as seen under a Zentmayer's $\frac{4}{10}$ (A eye-piece), is densely covered with minute short hairs. On the posterior edge of the *upper* side of each appendage is situated a single large round sac, with the edge quite regular. Its diameter is equal to a third of the length of the appendage on which it is situated. Dense fine hairs, like those covering the appendage, project inwards from its edge. The bottom of this shallow pit is a clear transparent membrane not bearing any hairs. There are no special sense-organs on the antennæ of the same insect.

With these organs, which I suppose to be olfactory in their function, may be compared a very similar single sac situated on the *under* side of the end of the labial and maxillary palpi of a species of *Perla*, mounted on a slide in the same collection. Its diameter is nearly half as great as the palpal joint itself. Instead of being depressed, the sac in *Perla* is a little raised, forming a slightly marked, flat tubercle, which is round, slightly ovate, under a $\frac{4}{10}$

objective. The surface of the membrane (tympanule of Lespès) is naked. It is strongly probable that this is an olfactory organ, and placed on the underside of the palpi, next to the mouth, so as to enable the insect to select its proper food by its odour, giving an additional sensory function to the palpi of insects. There are no special sense-organs in the antennæ.

Lespès, in his note on the auditory sacs which he says are found in the antennæ of nearly all insects, says that, as we have in insects compound eyes, so we have *compound ears*. I might add that in the abdominal appendages of the cockroach we have a *compound nose*. In the palpi of *Perla*, and the abdominal appendages of *Chrysopila*, the "nose" is simple.

On examination I have found sense-organs in both pairs of antennæ of *Homarus americanus* (the lobster), such as are described by Farre, and also the more rudimentary form of supposed auditory organs in the common spiny lobster (*Palinurus*) of Key West, Florida.—*American Naturalist*, vol. iv. Dec. 1870.

On the Carboniferous Flora of Bear Island (lat. 74° 30' N.).

By PROFESSOR OSWALD HEER, F.M.G.S.

The author described the sequence of the strata supposed to belong to the Carboniferous and Devonian series in Bear Island, and indicated that the plant-bearing beds occurred immediately below those which, from their fossil contents, were to be referred to the Mountain-limestone. He enumerated eighteen species of plants, and stated that these indicated a close approximation of the flora to those of Tallowbridge and Kiltorkan in Ireland, the greywacke of the Vosges and the southern Black Forest, and the *Verneuilii*-shales of Aix and St. John's, New Brunswick. These concordant floras he considered to mark a peculiar set of beds, which he proposed to denominate the "Ursa-stage." The author remarked that the flora of Bear Island has nothing to do with any Devonian flora, and that consequently it and the other floras, which he regards as contemporaneous, must be referred to the Lower Carboniferous. Hence he argued that the line of separation between the Carboniferous and Devonian formations must be drawn below the yellow sandstones. The presence of fishes of Old-Red-Sandstone type in the overlying slates he regarded as furnishing no argument to invalidate this conclusion. The sandstones of Parry Island and Melville Island are also regarded by the author as belonging to the "Ursa-stage," which, by these additions, presents us with a flora of seventy-seven species of plants. The author remarked upon the singularity of plants of the same species having lived in regions so widely separated as to give them a range of $26\frac{1}{2}^{\circ}$ of latitude, and indicated the relations of such a luxuriant and abundant vegetation in high northern latitudes to necessary changes in climate and in the distribution of land and water.—*Proc. Geol. Soc.* Nov. 9, 1870.