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TWO ADDITIONAL ADVENTIVE EUROPEAN WASPS IN THE UNITED STATES (HYMENOPTERA: SPHECIDAE, CHRYSIDIDAE)

BY KARL V. KROMBEIN¹

The purpose of this note is to record the present distribution in the United States of two adventive wasps from Europe, and to give a few notes on their diagnostic characters. These wasps are the sphecid *Pemphredon (Cemonus) lethifer lethifer* (Shuckard), 1837, and the chrysidid *Omalus auratus* (Linnaeus), 1758.

For many years I have supposed that *P. lethifer* was the species Fox (Trans. Amer. Ent. Soc. 19: 312, 1892) identified as *inornatus* Say, 1824. However, a recent check of material in the Academy of Natural Sciences of Philadelphia showed that all specimens identified by Fox as *inornatus* are actually *tenax* Fox except for one male of *lethifer*. Say's description of *inornatus* from Pennsylvania is very brief, and could apply to any of the eastern species of the subgenus *Cemonus*. It seems preferable to treat *inornatus* as an unrecognized species, rather than to apply Say's name to the wasp that has been known as *lethifer* in Europe for so many years.

I am indebted to my colleague J. de Beaumont, Musée Zoologique at Lausanne, Switzerland, for examining a pair of *lethifer* from the United States. He stated that this pair was closer to specimens of typical *lethifer* from southern Europe than to those from central Europe, particularly in the punctuation of abdominal terga. However, other material from U. S. shows variation in this respect. I suspect that there have been multiple introductions of this wasp during the past three centuries from various parts of Europe. It nests in the soft pith of various domesticated plants such as roses and berries, and could readily have been brought in with stocks of these plants for propagation.

I have seen specimens of *lethifer* from the following states and provinces: Ontario, Massachusetts, Rhode Island, New York, Pennsylvania, Maryland, District of Columbia, Virginia, Florida, West Virginia, Ohio, Michigan, Indiana, Illinois, and Colorado.

I have seen no specimens of the European *P. lethifer fabricii* Müller from U. S. Dr. de Beaumont states that it nests in stems of *Phragmites* and in galls of *Lipara*, so there is much less likelihood of its introduction. The species may be distinguished from other members of subgenus *Cemonus* occurring in U. S. by the following

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combination of characters: Base of propodeal enclosure with short radiating rugulae, the rest of enclosure smooth; median lobe of clypeus of female truncate at apex, of male shallowly and broadly emarginate; third to sixth sterna of male with short appressed hair; fourth to seventh flagellar segments of male rounded out beneath.

The cuckoo wasp *Omalus auratus* is a parasite of *Pemphredon lethifer* and undoubtedly was introduced with nests of the latter. In the United States it has been reared from nests of *lethifer* in Maryland and Ohio. There are no records of its parasitizing other twig-nesting pemphredonines in U. S.

I have seen specimens of *auratus* from New York, Maryland and Ohio. It is separated from any of the currently recognized American *Omalus* by the combination of coppery abdomen, and long, scattered erect hair on pronotum and scutum.

PUBLICATIONS RECEIVED

An Introduction to the Behaviour of Invertebrates, by J. D. Carthy, 385 pp., 148 figs. 1958. The Macmillan Company. "Work on the behaviour of invertebrates in recent years has aimed at explanations of their ecology and life activities based on the results of analytical laboratory studies. Inevitably, interest centres on the functions of the sense organs, and this book is therefore concerned largely with the stimuli impinging on the animal and with their reception, as well as with the consequent reactions. . . . The book, which incorporates a good deal of original work, is the first to give a general conspectus of the great advances made in recent years in our knowledge of the behaviour of invertebrates."—quoted from the front flap. (Price, \$8.00).

Free-living Nematodes and other small Invertebrates of Puget Sound Beaches, by W. Wieser. University of Washington Publications in Biology, vol. 19, 189 pp., 109 drawings. 1959. "The first intensive study of nematodes in any region of the United States, this book is the result of an investigation into the distribution and ecology of nematodes, as well as gastrotrichs, archianelids, and associated animals of other groups inhabiting the beaches of Puget Sound." (Price, \$4.00).