

latter element is nearly as intense as that of samarium; while that of lanthanum was found by them to be about three times more active than samarium. We have, therefore, to conclude that this activity is not a property of the elements themselves, but belongs to the radioactive impurities present, a possibility mentioned by the above writers.

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¹ *J. Chem. Soc.*, 125, 897; 1922.

² *Sci. Pap. Inst. Phys. and Chem. Res.*, Tokyo, 66, 11; 1926.

³ *J. Amer. Chem. Soc.*, 55, 433; 1933.

A New British Record of *Orthopodomyia pulchripalpis*, Rondani (Diptera, Culicidæ)

ON March 8 we collected a number of mosquito larvæ from a rain-filled cavity in a local elm tree, and found them to be the second, third and fourth instars of the arboreal mosquito *Orthopodomyia pulchripalpis*, Rondani. So far as we are aware, this species has never been collected in the adult stage; its eggs have never been obtained; and records of its larvæ are few and far between.

The British localities in which tree-holes containing larvæ of *Orthopodomyia pulchripalpis* have so far been recorded are as follows:—Epping Forest, Essex (A. Macdonald, 1919, and H. Main, 1919); Kensington Gardens and Buckingham Palace Gardens, London (F. W. Edwards, 1926); Burnham Beeches, Bucks (P. A. Buxton, 1928); Cambridge (D. Keilin, 1929, and T. T. Macan, 1931); Ripley, Surrey (M. E. MacGregor, 1930); and Hardwick, Cambs (T. T. Macan, 1932).

In the present instance, the cavity containing the larvæ is a natural rot-hole; its entrance, which faces north-east, is about three feet from the ground. On the day following our discovery of the larvæ we scraped some vegetable matter from the walls of the cavity, and on examining this in our laboratory we found within it a few eggs, and a number of egg-shells, which are undoubtedly those of *O. pulchripalpis*. Both in structure and in surface markings these eggs appear to correspond exactly with a published illustration of the egg of the North American species *Orthopodomyia signifer*, Coquillett (formerly *Bancroftia signifer*, Coquillett). According to Dr. F. W. Edwards, *O. signifer* is structurally allied to *O. pulchripalpis*, but differs from it by having scattered white scales on the wings³. It seems probable to us that not only the adults of these two species but also their eggs may likewise be differentiated by coloration; for the eggs of *O. signifer* are said to be black², whereas the eggs that we have now obtained are light brown. Presumably, therefore, our local tree-hole has yielded the first known specimens of the egg of *O. pulchripalpis*.

An unusual feature exhibited by the egg-shells is the fact that the plane containing the opening made by the emerging larva is inclined at an angle of about 45° to the axis of the egg, instead of being at right angles thereto as in the genera *Aedes*, *Theobaldia* and *Culex*.

In published descriptions of the larva of *O. pulchripalpis*, attention has been directed to the remarkable enlargement of the thoracic portions of the two main tracheæ. We find that each main trachea has, in addition, two quite conspicuous dilata-

tions lying within the fifth to seventh abdominal segments. This peculiarity (which appears to have been hitherto overlooked) is especially noticeable in the second and third instars. We venture to suggest that these tracheal dilatations may have some relation to the air-sacs which lie within the seventh abdominal segment of the larva in the case of *Chaoborus* and *Mochlonyx*.

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¹ Howard, Dyar and Knab, "The Mosquitoes of North and Central America", vol. 2, plate 145.

² *Ibid.*, vol. 4, p. 890.

³ Edwards, F. W., "A Revision of the Mosquitoes of the Palearctic Region", *Bull. Ent. Res.*, vol. 12, p. 290.

Sporulation of *Helminthosporium avenæ* in Artificial Culture

IN 1923 an investigation was commenced on the fungus *Helminthosporium avenæ*. Recently an interesting observation was made and a note is now made of it.

Diversity of opinion exists as to the ease with which the various species of *Helminthosporium* produce spores in artificial culture. In view of conflicting statements, Turner and Millard¹ made a detailed study of a *Helminthosporium avenæ* culture. A wide range of media was used to embrace varying carbohydrate and nutrient contents, hydrogen ion concentration and sterilisation methods. No sporulation occurred on any of the cultures excepting on sterilised oat leaves, and then only sparsely.

I was myself unable to induce any marked sporulation until recently, when I inoculated two Petri dishes containing potato agar with mycelium from a non-sporing culture of *Helminthosporium avenæ*. Three days after the inoculation was made, the upper cover of the Petri dish was removed and a disc made from Sanalux glass was substituted. One half of the disc in both cases was painted over with Indian ink. Both cultures were then irradiated for ten minutes at a distance of one foot from a Hanovia quartz mercury-vapour home model alpine sun lamp, alternating current equipment, 200 volts. A subsequent irradiation was made for ten minutes, six days later. Seven days after this, the cultures were examined microscopically and it was noted that the mycelia on the irradiated halves were strongly pigmented and that very abundant sporulation had taken place: pigmentation was very slight on the non-irradiated halves and no sporulation had taken place.

Other experiments of a somewhat similar nature have shown that sporulation of *Helminthosporium avenæ* can be induced by irradiating with the light from a quartz mercury-vapour sun lamp; and also that sporulation will take place if non-sporing cultures are submitted, out of doors, to either strong diffuse light or sunlight. These experiments will be described elsewhere.

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¹ Turner, D. M. and W. A. Millard, *Ann. App. Biol.*, 18, No. 4, 543-546.