

prominent spots on costa, termen, and dorsum: fringes reddish-ochreous. Hindwings fuscous-violet: fringes fuscous, mixed with ochreous round apex.

The species may be separated from both *chrysargyra* and *aemula* by the dark apical strigae and the general darker colouring: the genitalia of the male show sufficiently definite differentiating characters.

Dun Mountain, Nelson. Five specimens taken in November and December in forest at elevations of from 1,000 ft. to 2,500 ft. Holotype (♂), allotype (♀), and three paratypes in coll. Cawthron Institute.

A Method of Injecting the Tracheae of Insects.

By H. B. KIRK, M.A., F.N.Z.Inst., Professor of Biology, Victoria University College, Wellington.

[Read before the Wellington Philosophical Society, 24th December, 1923; received by Editor, 31st December, 1923; issued separately, 28th August, 1924.]

THE following method of injecting the tracheae of insects is so simple and obvious that I find it hard to suppose that it is new. I cannot, however, find any mention of it, nor can I find any one that is acquainted with it.

Prepare metagelatine in the usual way, by adding ammonia to a gelatine solution and keeping the solution melted for some hours until, on cooling, it does not set. Add a solution of carmine, and pass the mixture through a thin filter-paper. Place the mixture in a small beaker or other vessel, and put the insect (killed by chloroform to which amyl-nitrite has been added) in the mixture, submerging it by means of a disc of perforated zinc or otherwise. Set the beaker in a desiccator fitted with an exhaust-tube. It is desirable that it should also have a stop-cock. Exhaust by means of a suction-pump. When the desiccator is as completely exhausted as possible, stop the pump and reopen the stop-cock a very little, allowing the air to enter slowly. The pressure of the air, of course, forces the mixture into the exhausted tracheae. The advantage of the stop-cock is that the pressure is not restored all at once, and thus the mixture has time to reach the finer tracheae.

Remove the insect, and at once make a slit in the body-wall to permit the access of liquid to the peri-visceral spaces. Place the insect in acid alcohol of 70 or 75 per cent. in order to set the gelatine and precipitate the carmine. Dissection may be made in twenty-four hours. If the operation has been successful, not only will the main tracheae and the air-sacs be filled, but the finer tracheolae as well. Unless much time has been lost before immersion of the insect in acid alcohol, the colouring-matter will not have diffused through the tracheal walls.

In the case of adult lepidopterous insects it may happen that one or more of the stigmata become closed by loose scales, so preventing the inflow of the gelatine mixture.

Among other applications of the method is the filling of the lungs of air-breathing vertebrates in case it is desired to obtain a cast of the lung-cavity.