

Note on the Habits of the Tachinid Fly,*Sphexapata (Miltogramma) conica.*

FABRE has given a graphic account of the patient watch of this parasitic cuckoo-fly at the mouth of the burrow of a species of *Bembex*, and of its cunning in seizing the moment when the "wasp" is half within the burrow to deposit its tiny egg, pregnant with disaster to the *Bembex* offspring, upon the body of the insect victim intended for the larder-nursery wherein the mother *Bembex*'s hopes are laid. He does not, however, appear to have witnessed in the tragedy a phase that recently came under my notice, and that is possibly restricted to, or perhaps only easily observed, in cases where the foster-host carries its prey along the surface of the ground, or at best flies only just clear of the ground.

On the afternoon of June 22, when on one of the heaths in this neighbourhood, I caught sight of a black Fossor, *Tachytes unicolor*, carrying a paralysed grasshopper. I followed, hoping to secure a photograph of its operations at the burrow. Soon I discovered that I was not the only follower, for at a distance of about four inches there followed a small Tachinid fly, which Mr. J. E. Collin has kindly identified as *Sphexapata conica*. The fly followed the "wasp" with the utmost accuracy, maintaining its distance with a precision that suggested a rigid connection between the two insects; if the "wasp" flew, the fly flew; if the "wasp" crawled, or indeed took but a single step, the fly did exactly the same; and always keeping distance accurately. For more than fourteen yards—and there may have been many more before I came upon the scene—did the fly thus follow in the wake of the "wasp," until at length the burrow was reached. The "wasp" at once entered, leaving the grasshopper lying, belly upwards, at the burrow's mouth; but before the owner was out of sight the fly darted upon the grasshopper, without a moment's delay deposited an egg on its thorax, and flew off—into my net.

Fabre says nothing as to the distance at which the fly stations itself when keeping watch at the mouth of the burrow, nor of the interval between each individual when several "in a geometrical line" are awaiting the critical moment; but the constancy with which the fly kept station in the journey across the heath, and the precision with which every movement of the "wasp" was copied, suggested that at that particular distance a clearer visual image was secured than at any other. Be this as it may, the fact is worth consideration in discussing insect vision.

To this note I may appropriately add an observation made last year while watching an *Ammophila sabulosa* filling in its completely stocked burrow. On a stone close by there sat a small fly absolutely motionless, and apparently intently watching the proceedings. As soon as *Ammophila* had finished its work and flown off, the fly leapt from its perch, and at once began to scratch away the sand and small stones in an endeavour to get at the larvæ in the subterranean larder. Fortunately, *Ammophila* had packed its burrow too well, and the fly flew off defeated. This fly closely resembled *Sphexapata conica*, but may have been an allied species.

Sharp ("Camb. Nat. Hist.," vol. vii., p. 509) mentions the fact that *Miltogramma* follows Hymenoptera carrying prey.

OSWALD H. LATTER.

Charterhouse, Godalming, July 4.

Temperature Variations at 10,000 ft.

A SERIES of 500 aeroplane observations in North-East France in 1918-19 throws some light on the problem of temperature variations in the upper air. The correlation coefficient between pressure and tem-

perature at 10,000 ft., taking all the observations together, is 0.73. If the seasonal variations are allowed for by taking the deviations from Mr. W. H. Dines's smoothed monthly means, the coefficient is 0.69. The former value is higher, as the annual variations of temperature and pressure in the upper air are in the same phase. Both figures are rather lower than the value 0.77 for 3 km. obtained by Mr. Dines from balloon soundings, the observations being grouped in three-monthly periods. The value 0.69 implies that a proportion $\sqrt{1-0.69^2}$, or 72 per cent., of the standard deviation is still unaccounted for. The partial correlation coefficient between the temperature and the southerly component of the wind velocity at 10,000 ft. (allowing for the pressure) is 0.44, so that the southerly component accounts for 10 per cent. of the temperature variations which are independent of the pressure, or 7 per cent. of the total variations. The effect of the west component of the wind velocity is practically negligible at all seasons.

There are strong grounds for believing that a large proportion of the temperature variations depends upon whether the air supply was drawn originally from the polar basin or the equatorial belt. This view is supported by the humidity observations which were made at the same time as those for temperature. For reasons set out in a paper which I hope to publish, the original source of the air supply is not very closely related to the wind velocity at the place of observation, both polar and equatorial currents frequently following curved paths. This factor of air supply operates in a very irregular manner, with the result that the correlation coefficients vary greatly from month to month. The coefficient connecting pressure and temperature at 10,000 ft. for the period January-February, 1919, based on fifty observations, is as low as 0.09. In the winter especially there are large fluctuations of the upper-air temperature, the changes occasionally exceeding 30° F. within forty-eight hours both at 10,000 ft. and 14,000 ft.

Mr. Dines gives a value 0.86 to the pressure-temperature correlation coefficient from 5 km. to 8 km., but this accounts for only half the temperature variations.

C. K. M. DOUGLAS.

Meteorological Office, Air Ministry, W.C.2,

July 8.

The Brent Valley Bird Sanctuary.

SUNDAY next, July 18, is the two hundredth anniversary of the birth of Gilbert White of Selborne, who did more than any other of our countrymen to create an interest in birds. The moment is therefore ripe for an appeal upon their behalf, and for suggesting how a fitting memorial to him may be established.

The work which the Selborne Society has done in the Brent Valley Bird Sanctuary, in the way of preserving birds and testing nesting-boxes for use elsewhere, is well known and has some considerable value. The owners of the freehold wish now to develop their estate, and if the money necessary to buy the property is not forthcoming the sanctuary will go.

Matters have been made as easy as possible for us, and we have been asked only 4,500l. for twenty-two acres of building land which comes into the London postal district.

May I, as chairman of the Bird Sanctuary Committee, invite the help particularly of those who are fond of birds and of open spaces to save the wood? Those who have been immediately interested in the work have subscribed 300 guineas to start the fund.

WILFRED MARK WEBB.

The Hermitage, Hanwell, W.7, July 10.