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THE FAIR ISLE APPARATUS FOR COLLECTING BIRD ECTO-PARASITES.

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(Plate 44).

It is obvious that a bird observatory or private ringing station, which handles and examines large numbers of live birds of different species and ecology, has unique opportunities for conducting both qualitative and quantitative studies on bird ecto-parasites. In order to make the most of these opportunities a highly efficient collecting technique is essential.

Trials were carried out at Fair Isle Bird Observatory with a simple arrangement consisting of a wide-mouthed glass jar large enough to admit the body and wings of a small bird. Filter paper or a piece of white blotting-paper was placed on the floor of the jar, and a swab of cotton-wool soaked in chloroform introduced. A square of oiled silk with a small hole cut in the middle was slipped over the bird's head and its edges pressed down over the rim of the jar, thus preventing the escape of fumes and keeping the bird's head clear. It was found that the bird was best supported when gripped lightly round the neck with the first and second fingers: it was encouraged to flutter, so that the anaesthetised parasites were shaken from the feathers. This inexpensive arrangement proved very satisfactory for collecting fleas and hippoboscids flies, and its efficiency in this respect was probably 100 per cent: but it was rather wasteful of chloroform, and not a very practical way of collecting the more minute organisms.

Following discussion of these trials, an improved "Fair Isle Apparatus" was designed and made for the Observatory in 1953 by Dr. W. A. Timperley of Sheffield. A photograph of this equipment is reproduced on plate 44. In place of the jar there is a strong plastic cylinder, open at both ends, its base resting on a white porcelain tile on the laboratory bench. Attached to the cylinder by spring clips on opposite sides are narrow glass bottles in which the chloroform is contained. Air is supplied by compressing a rubber bulb which is connected to the bottles by short lengths of rubber tubing terminating in glass inlet tubes (A, A on plate 44) whose ends are of sintered glass and reach below the surface of the liquid. The resulting vapour is forced into the cylinder via the small outlet tubes (B, B on plate 44). As formerly, a cape of oiled silk is used to close the top of the cylinder and protect the bird's head. Treatment should last for a minute or so, but it may have to be prolonged slightly if the bird cannot be induced to flutter.

After the operation the cylinder is lifted clear of the glazed white

tile and the surface examined with a hand-lens for parasites, which are collected into tubes of industrial spirit. We find an "Ultra Lens", which incorporates a 2-volt flashlamp, most adequate for this. Afterwards the tile is cleaned and the cylinder replaced in readiness for the next bird.

We have two models of the "Fair Isle Apparatus" in use, one with a cylinder measuring 20 × 10cm. for Passerines up to the size of a Blackbird (*Turdus merula*), and the other with dimensions 24 × 15cm. suitable for examining Merlins (*Falco columbarius*) and Sparrow Hawks (*Accipiter nisus*). A longer examination is necessary in the case of these bigger birds since there is a considerably greater volume of air to be replaced by chloroform fumes. Messrs. J. Preston, Laboratory Furnishers, 208 West Street, Sheffield 1, can supply this equipment, and the cost of the smaller model works out at about £4.

Advantages of the new apparatus over the old are that it is much more economical in the use of chloroform, the side-bottles having ground glass stoppers held tight by springs so that waste evaporation is reduced to a minimum; the bottles are always charged and the apparatus ready for immediate use; a strong and even concentration of vapour can be obtained; and the collection of the parasites is greatly facilitated and minute forms can be recovered without difficulty.

I might add a final note on the laboratory procedure at Fair Isle, since this is of the utmost importance if any quantitative study of flea or flat-fly infestation is undertaken. Immediately it is removed from the catching-box of the trap the bird is put into a linen bag and carried to the laboratory. It is first weighed on the beam-balance, the bag being "rolled up" with the bird still inside, to prevent it from struggling. The bird is then taken from the bag and searched for parasites: measuring and ringing etc. must follow, not precede, this operation, otherwise parasites may escape. After the tare is taken the bag should be placed in the chloroform vapour for half-a-minute, and then searched carefully for any parasites which may have been displaced from the bird during carrying or weighing.

I am very grateful to Dr. Timperley for his interest in this phase of our work and for the trouble he has taken to produce the apparatus described above.