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THE COLLECTION AND
PRESERVATION OF INSECTS

By L. E. KOCH, B.Sc., Entomologist

INSECTS may be collected with the aid of a collecting-net or a suction-tube and killed in an appropriate bottle containing a killing agent. The insects are then pinned and mounted on a spreading-board. When the specimens are dry they are removed from the board, suitably labelled, and put away in a store box. Certain insects which cannot be mounted immediately after collection are relaxed in moist jars. Larval and pupal stages are stored in labelled tubes containing alcohol.

The collection of insects ranks among the best of hobbies and also forms a necessary adjunct to most branches of professional entomology. An insect specimen represents a species which, to the more serious hobbyist and professional entomologist, will need to be properly identified. Insects should be prepared in the approved manner to display their taxonomic characters to best advantage and they should bear adequate labels.

The instructions in this article by no means represent a full coverage of all the collecting, preparing and preserving methods but they should help to serve as a useful guide to some of the more popular and fundamental techniques used for all but the smallest insects.
COLLECTING NET

A simple frame for a collecting net can be made by bending one-eighth inch iron or steel wire or cane to form a loop of about 15 inches in diameter and fixing the straight ends firmly to a handle. A handle should be both strong and light and one about two or three feet long may be found most convenient.

The method of making the net bag is shown in Fig. 1B. The opening of the net where it is attached to the ring should be reinforced with a strong cloth such as light canvas, heavy muslin or linen, in the form of a tube about two inches in diameter. This should help to increase the life of the net because most wear takes place around the rim.

SUCTION-TUBE OR ASPIRATOR

This piece of apparatus (Fig. 2B) is used to collect small insects: to catch them rapidly, to pick individual insects from an assortment, or to collect them off plant material.

KILLING AGENTS

The most satisfactory killing agent is cyanide. This may be used either in the form of calcium cyanide, calcium cyan-amide, sodium cyanide, or best as potassium cyanide.

Many liquids have vapours which kill insects. Some of the liquids commonly used are acetic ether (contained in nail polish remover), tetrachlorethane, carbon tetrachloride, ether, benzene, chloroform,
ammonia, and petrol. Many of these poisons are inflammable.

These liquids are best used by pouring a few drops on absorbent material which is in the bottom of a suitable bottle. It is a good plan to put a few layers of blotting paper over the absorbent material to prevent the insects from coming into direct contact with the liquid.

WARNING.—Cyanide is a deadly poison and must be used only in a specially prepared killing bottle such as the one described below. The killing bottle must be labelled as such, and old bottles that are no longer required must be burnt in a furnace or buried. If a killing bottle should break, the broken pieces must be handled very carefully and they should all be burnt or buried.

PAPER ENVELOPES

Butterflies, moths, and dragonflies, which have large wings and relatively small bodies, may be stored in triangular paper envelopes if mounting immediately after killing is impractical. Dragonflies should be folded alive in the envelopes and left to die. This is necessary because killing agents cause dragonflies to lose their beautiful colours. The insect’s wings are folded over its back and only one specimen is put in each envelope. Stiff paper is generally used for making the envelope. Fig. 3 shows how the paper is folded. Information about the species being stored should be written on the envelope before the specimen is inserted.

RELAXING

Specimens that are to be mounted dry must be in a relaxed condition while being mounted. They must be sufficiently relaxed to enable the body and appendages to be easily movable so that they can be arranged as required on the mounting board. It is best, whenever possible, to mount all insects soon after they have been killed, before they have become dry and stiff. Large insects normally take longer to stiffen than small ones and the
stiffening may be delayed considerably if the insects are kept in an ethyl acetate killing bottle.

Specimens that are dry and stiff are relaxed by placing them in a relaxing jar. This is a large container which has a layer of sand or other suitable absorbent material saturated with water. To the absorbent layer is also added a small quantity of naphthalene, paradichlorobenzene, phenol, or ethyl acetate to prevent the formation of mould. A layer of blotting paper on the absorbent layer prevents the insects from coming into direct contact with the water.

PINNING

The pin is inserted directly through the body of the insect. Special entomological pins must always be used for mounting insects and the insect is pinned with the thickest size of pin it will take without significant damage to the insect. The pin should be applied at the correct point in the body and this point depends on the order to which the insect belongs. In Fig. 4, the position of the pin for insects belonging to some of the common orders is indicated. The insect is mounted at the correct height ($\frac{3}{8}$ in.) below the pin head and must not be tilted on the pin.

SPREADING

A spreading board consists of two flat, parallel pieces of soft-wood, covered with smooth paper with a cork-lined groove between their inner edges. Most collectors have an assortment of boards of various sizes. The particular board chosen depends upon the wingspan and the width of the abdomen of the insect being mounted. The spreading of insects is easy in principle but requires much practice before it can be done easily and neatly. Fig. 5 shows how the spreading is done. The strips of paper, cellophane or tracing cloth are secured by pins so placed that they do not pass through the wings. The antennae and legs are arranged symmetrically and held in position with pins. If the abdomen shows a tendency to drop, it is supported by pins crossed beneath it. The data for each insect is written on a label and pinned to the board beside the specimen.

The spreading board is placed in a dry, dust-free, airy place until the insects on it have dried. The insects are usually
thoroughly dry in about three weeks but
the time taken can vary and depends on
the size of the insects and the prevailing
conditions of temperature and humidity.
It is better to leave insects overlong on
the spreading boards, rather than to risk
taking them off too soon because if this
is done the wings, legs and antennae may
droop. In removing insects from the
boards care should be taken not to break
the antennae or legs.

LABELLING

Adequate labelling is very important.
The labels of good quality stiff paper, are
transfixed by the pin of the appropriate
specimen. The information should be
clearly written and should include the
exact locality of capture, the date of
capture and the name of the collector and
preferably also the name of the host plant
and the type of habitat. Figure 6 shows
the position of the label.

STORE BOX

Special boxes are available for the stor­
age of insects. However, insects may be
stored in any wooden or cardboard box or
bottle deep enough to take pins. Cigar
boxes are satisfactory. The best substance
for the bottom of the container is a layer
of compressed cork of sufficient thickness
to enable the pinned specimen to be held
firmly in place. A small amount of pest­
proofing substance such as camphor, nap­
thalene, or paradichlorobenzene should be
placed in the container. A tight-fitting
lid should be used to keep the container
free of dust. Most specimens fade if ex­
posed to light for any length of time so
care must be taken, especially in the case
of containers made of glass, to store the
specimens in a dark place.

PRESERVATION OF IMMATURE
STAGES

The larval and pupal stages of insects
are stored in 70-80 per cent. alcohol, after
they have been killed by dropping them for
a few seconds into boiling water. These
specimens are stored in glass tubes having
rubber or plastic stoppers. A label giving
information, including date and locality of
capture, is written with black Indian ink
(if unavailable, use pencil) on a piece of
white card of suitable size and placed in
the tube with the specimen.

ACKNOWLEDGMENT

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Government Entomologist, for advice and
direction in the preparation of this article.

GOVERNMENT VETERINARIAN FOR ALBANY

Mr. J. M. Armstrong, B.V.Sc., of the Animal Division of the Department of
Agriculture has been appointed to the Albany District Office of the Department.

In announcing this appointment, the Minister for Agriculture (Mr. C. D. Nalder),
said that this was in pursuance of the Department’s policy of stationing veterinarians
at key centres for the control of infectious livestock diseases and to investigate and
advise upon animal health problems. He said however that it should be clearly
understood that it was not the Department’s function to provide a practitioner
service for the treatment of individual cases of sickness in farm animals.

The Minister said that the Department now has veterinary officers at Albany,
Bunbury and Geraldton in addition to those operating from the metropolitan area.

Mr. Armstrong is a West Australian and was the first veterinarian to qualify
under the Department’s cadetship scheme inaugurated in 1949. He graduated with
honours at the Sydney University Veterinary School and spent some years as
veterinary pathologist at the Animal Health and Nutrition Laboratories, Holly­
wood. His personal preference was for veterinary work in the field however,
and the recent appointment of an American veterinary scientist, Dr. M. R. Gardiner,
to the position of Senior Veterinary Pathologist at the Animal Health and Nutrition
Laboratories, made it possible to release him for duty in the Lower Great Southern
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