Reprinted from Volume 100, September/October, 1964. Date of publication, May 24, 1965.

A GLASS CONTAINER FOR THE EXPERIMENTAL REARING OF LOCUSTS

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INTRODUCTION

A programme of research on the desert locust (*Schistocerca gregaria* (Forsk.)) has necessitated the rearing of large numbers of locusts in small colonies. Maintaining these in orthodox cages (Hunter-Jones, 1961) is exceedingly difficult and the large amount of ancillary work involved in sterilising cages (even those of all-metal construction (Dudley, Gregory and Payne, 1962)) renders them impracticable. Cages for such a programme of work must satisfy a number of criteria: they must be small, admitting to the optimal conditions of space needed by four or five adult locusts; they must be easy to clean and sterilise (preferably by autoclaving); the contents—both adults and eggs, when laid—should be observable; and, if large numbers of the cages are to be employed, they should be relatively inexpensive. The use of screw-topped glass jars after a relatively uncomplicated modification has adequately met these conditions.

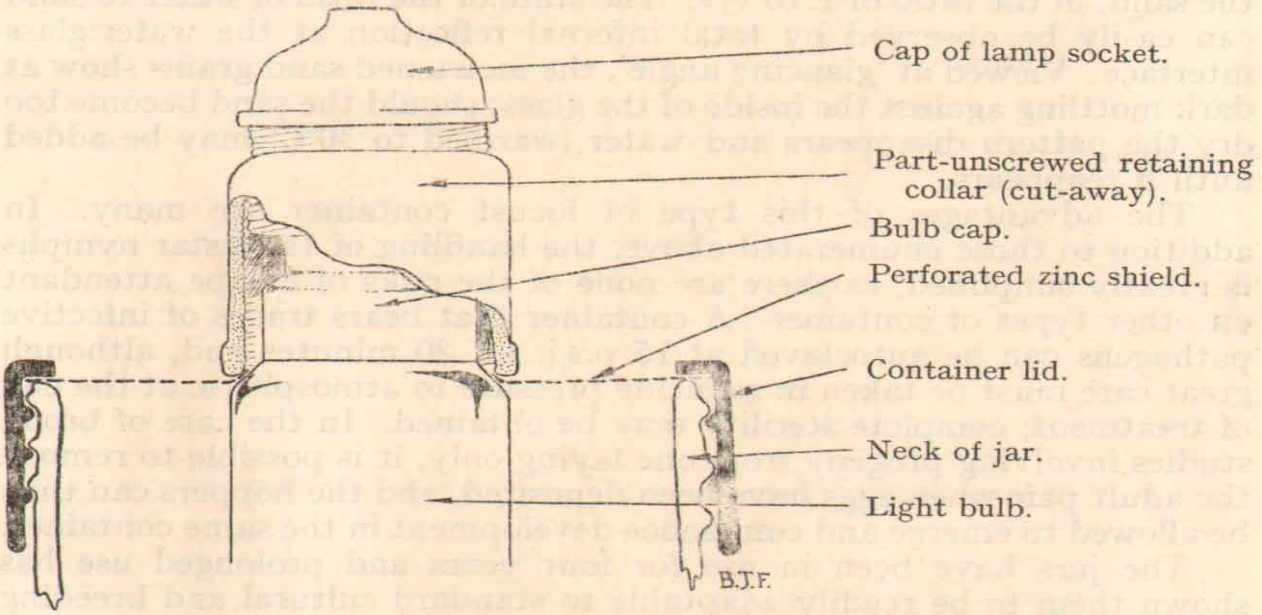

Fig. 1.—Cut-away view of light-bulb assembly in locust container.

METHOD OF CONSTRUCTION

Jars of rectangular cross-section approximately 7 in. by 4 in. by 12 in. in size were utilised. Initially sweet-jars with polyethylene lids were used, but aluminium-capped jars designed for more academic purposes were utilised when larger numbers were required, and when the efficacy of the technique had been ascertained. The centre of the lid is cut away by shears, or by the application of a chisel to cut through the material successively around the rim of the lid. Perforated zinc sheeting is then cut to fit tightly inside the modified lid, and a circular aperture of 1 in. diameter is cut in the centre of the metal.

An electric light bulb can be fitted through this aperture in one of two ways: it may be secured behind the locking ring on an orthodox bayonet socket in the position normally allotted to the lamp-shade, or the bulb can be secured as shown in the diagram (fig. 1). 'Candle-type' holders are used here, their wide retaining collar being screwed tightly home *before* positioning the zinc sheet over it; the bulb is then fitted through the aperture in the metal disc, and as the collar is unscrewed it gradually presses the zinc against the upper pole of the electric light bulb. In this way the bulb is retained as closely as possible to the lid of the container and so greater economy of space is provided below the light. A 60-watt bulb fitted in the way shown in fig. 1 will give an excellently heated container for the locusts, and only the glass in the region of the periphery of the lid is liable to temperatures in excess of those tolerated by the locusts. This constitutes less of a hazard than the centrally placed bulb advocated for use in larger metal cages.

Sand in the cages is carefully controlled to a depth of 3.0 in. This allows the adult female locusts to deposit their eggs against the glass at the base of the jar. The number, location, viability and stage of development of the eggs can be observed with maximum ease by this technique, and the individuals redistributed with ease as appropriate. The humidity of the atmosphere is controlled by the addition of water to the sand, in the ratio of 1:10 v/v. The state of the ratio of water to sand can easily be observed by total internal reflection at the water:glass interface. Viewed at 'glancing angle', the moistened sand grains show as dark mottling against the inside of the glass; should the sand become too dry the pattern disappears and water (warmed to 30°C) may be added until it reappears.

The advantages of this type of locust container are many. In addition to those enumerated above, the handling of 1st instar nymphs is greatly simplified, as there are none of the risks of escape attendant on other types of container. A container that bears traces of infective pathogens can be autoclaved at 15 p.s.i. for 20 minutes and, although great care must be taken in reducing pressure to atmospheric at the end of treatment, complete sterility may be obtained. In the case of brood studies involving progeny from one laying only, it is possible to remove the adult pair when eggs have been deposited, and the hoppers can then be allowed to emerge and commence development in the same container.

The jars have been in use for four years and prolonged use has shown them to be readily adaptable to standard cultural and breeding techniques.

SUMMARY

A glass container for locusts is described. The method of construction is detailed, and it is shown to have many advantages over larger units when used for the propagation of small individual colonies. The container may prove suitable for housing and breeding other insetcs and arachnids.

REFERENCES

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October 9th, 1964.