products, XY. In step (6) the sum of *progressive totals of* Y is the sum of squares for Y, and the sum of *progressive totals of* X is once again the sum of the cross-products, XY. Incidentally, the sum of the progressive card count will also be the sum of the variable which is the intermediate control. These data may then be combined by conventional formulas to yield the product-moment coefficient and the standard deviation for X and Y.

When zero is represented in the score range, the directions are modified to the extent that the sums of progressive totals do not include the progressive totals tabulated for the last, or zero, control card.

There is still some hand labor in translating the machine computations and tabulations to correlation results. Some installations may be able to handle part of that labor also. For example, if the tabulator is fitted with digit selectors, it will print the final scattergram directly (*2*). However, most offices are not equipped with expensive special features. The above operations require only a sorting machine and a numerical tabulator with a progressive-totals plug or switch and so can be carried out by any ordinary installation.

References

1. Brandt, A. E. Uses of the progressive digit method. In *Punched-card method in colleges and universities.* New York: Columbia Univ. Press, 1935. Pp. 423–436.
2. Dwyer, P. S., and Meacham, A. D. *J. Amer. statist. Ass.*, 1937, **32**, 654–662.
3. Mendenhall, R. M., and Warren, R. *J. educ. Psychol.*, 1930, **21**, 53–62.

Plastic Cages for Insects

Martin D. Young and Robert W. Burgess

Malaria Research Laboratory, National Institute of Health, South Carolina State Hospital, Columbia

During the course of feeding and handling large numbers of mosquitoes used in the experimental transmission of malaria, it seemed desirable to find a more satisfactory cage. The ones formerly in use (*1*) were convenient but were relatively expensive and easily broken, being of hand-blown glass (Fig. 1).

Two companies (Lusteroid Container Company, South Orange, New Jersey, and Celluplastic Corporation, Newark, New Jersey) were found that made cages out of cellulose nitrate base material according to our size specifications.

The cages used are of two sizes: 2½ inches long by 1½ inches inside diameter, and 2 inches long by 1⅝ inches inside diameter. They are cylindrical in shape and open at both ends with the edges rolled back in a flange (Fig. 1). This flange serves as a barrier which holds a rubber band which in turn secures the bobbinet end coverings. The larger size holds up to five mosquitoes conveniently; the smaller size is for individual mosquitoes.

During the past two years about 9,000 of these cages made by the Lusteroid Container Company have been used with quite satisfactory results. The advantages of the plastic jar are that (a) there is practically no danger of breakage when it is dropped

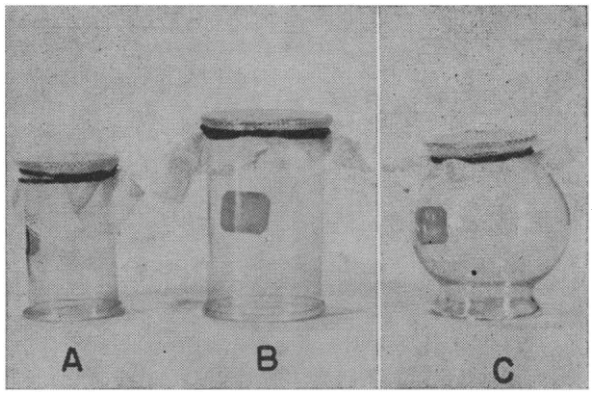

Fig. 1. Plastic and glass feeding jars with bobbinet in place on one end: A and B—small and large plastic jars; C—hand-blown glass jar.

or crushed—an important consideration when infectious insects are being handled or shipped; (b) the cost is low, less than $.04 each when purchased in large quantities, or about one-tenth the cost of the hand-blown glass cages; and (c) the jar is easily washed and stored.

The glass cages were heavier and stayed in position better during experimental feeding. However, with a little care the plastic jar was satisfactory. Also, the glass cages provided slight magnification of insects due to curvature of the sides. This was not significant, however, in the over-all appraisal.

The plastic cages are readily cleaned in either soapy cold water or alcohol. Some of the first cages received seemed to have a residuum toxic to mosquitoes, but this disappeared after thorough washing.

For over two years other types of plastic materials have been utilized in cage construction. Plastic screen, 16-mesh per inch, satisfactorily replaces galvanized screen for adult colony cages and does not rust.

Satisfactory emergence cages have been constructed of sheet plastic, 22 inches by 10 inches, bent into a semicylinder and tacked to a wooden base 10 inches square. The back of this cage is of plastic screen and the front is a muslin sleeve.

The above suggests the use of plastics instead of glass for various other types of insect cages.

Reference

1. Burgess, R. W., and Young, M. D. *J. nat. mal. Soc.*, 1944, **3**, 241–247.