

the presence of numerous mosquitoes inside buildings in the park, aspiration samples were taken. Thirteen female and six male *A. aegypti* were collected by this method.

Recognizing that a potentially large infestation was present, the following control measures were instituted:

1. Two consecutive fogging operations were conducted using 1 percent Vapona (DDVP) at a rate of 40 gallons per hour in the areas of the park, camp, buildings, landfill, and train station.

2. Discarded artificial containers were collected, taken to the landfill and buried. The sides of the landfill were regarded to cover any exposed tires and other artificial containers.

3. A spot spraying program was conducted using fuel oil #2 on treeholes and large artificial containers in the area included within a 3-mile radius of the point where the mosquitoes were originally found.

Since the completion of this comprehensive control program, no more *A. aegypti* have been recovered in light trap collections or in subsequent larval surveys. However, further surveillance has been indicated for next year as there is the possibility of overwintering individuals inside the many buildings within the park.

Although *A. aegypti* has been reported as far north as Boston 42° 27' as well as in New York 45° 52' N (Chandler, 1945), its occurrence has been sporadic and never permanent in these latitudes (Christophers, 1960). Therefore, it is concluded that this infestation is the result of recent accidental transport of either adult or eggs or both. The train station near Croton Point was perhaps the source of the initial infestation. With rail connections to many parts of the United States, including the south, it seems possible that *A. aegypti* adults could have been transported to the area by a northbound train.

Since the landfill receives solid waste from a rather large geographical area, it also seems possible that *A. aegypti* eggs may have been in an article (e.g. tire) discarded by a person who had returned from a recent trip to infested areas within the country or abroad.

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#### References

Chandler, A. C. 1945. Factors influencing the uneven distribution of *Aedes aegypti* in Texas cities. Amer. J. Trop. Med. 25:145-149.

Christophers, S. R. 1960. *Aedes aegypti* (L.) The Yellow Fever Mosquito. Its Life History, Bionomics and Structure. Cambridge University Press, Cambridge, England.

#### ASPIRATOR WITH PAPER CUP FOR COLLECTING MOSQUITOES AND OTHER INSECTS

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Paper cups covered with mosquito netting constitute very suitable and inexpensive small cages to hold and transport live mosquitoes and other insects. Such cages are widely used by entomologists both for laboratory and field work. The insects are usually collected with suction tubes and transferred to the paper cup through a hole in the mosquito netting. The aspirator described in the present note allows the collection of the insects directly in the paper cup which is inserted in the suction tube. This aspirator is designed as a mouth aspirator but it can be easily combined with hand-held vacuum cleaners or other electric suction devices whose utilization for mosquito collection has been described by various authors (Dell'Uomo, 1961, 1967; Bailey, 1966; Carver, 1967; Trpiš, 1968; Jackson and Grothaus, 1971).

**DESCRIPTION OF THE ASPIRATOR.** The design of the aspirator depends, of course, on the size of the paper cups which are available in the market. Our aspirator was developed for using small paper cups 53 mm high and with maximum and minimum external diameters of 56 and 43 mm respectively. The suction apparatus, made in plexiglass, is illustrated in Figure 1. It appears as a usual wide bore reservoir suction tube but with the paper cup working as a detachable collecting cage. The cylindrical chamber (A) has an anterior wider section to contain the paper cup and a posterior section to avoid the central strong aspiration which would damage the insects. The posterior wall (B) of the cylindrical chamber and its central tube (C) are fixed. The external end of tube C is connected with rubber (or flexible plastic) tubing ending with a mouth piece. The internal end of tube C is connected with a second tube (D) with lateral holes whose function is to disperse the aspiration on a wider surface. The anterior wall (E) of the cylindrical chamber is threaded while its central tube consists of an internal fixed part (F) and an external threaded one (G). The internal tube F is inserted into the paper cup, which has in its bottom a hole of corresponding size. After the insects are collected,

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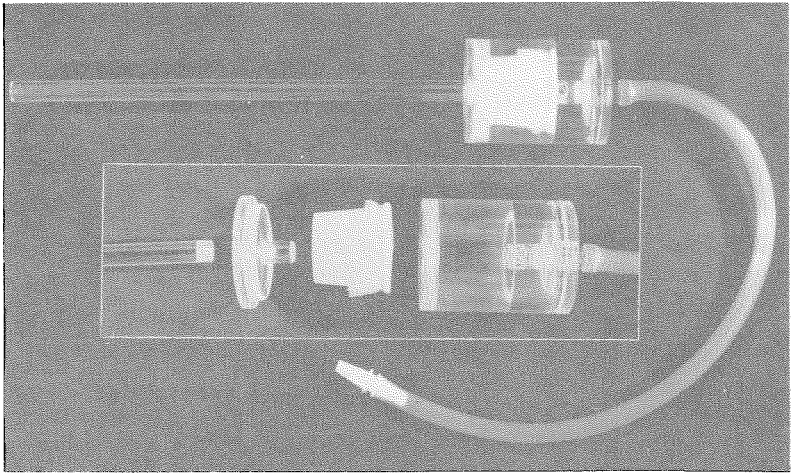
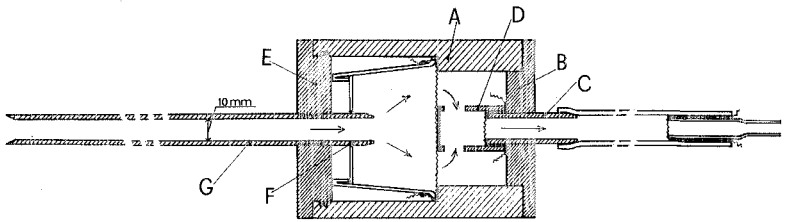


FIG. 1.—Diagram of aspirator with paper cup in cross section (above) and photographs of the same apparatus (below).

the cup is easily detached and the hole is closed with a cotton ball. The external tube F is threaded to allow the use of tubes of different length and shape according to the collection needs. The mosquito netting fixed with rubber on the paper cup works as filter of the aspirator. A second filter is provided by inserting a mosquito netting between tubes B and C.

#### References Cited

- Bailey, S. F. 1966. A suction-type collecting apparatus for mosquitoes. *Mosq. News* 26:585.
- Carver, H. D. 1967. A portable aspirator for collecting mosquitoes. *Mosq. News* 27:428-429.
- Dell'Uomo G. 1961. Un catturatore automatico per insetti per uso di laboratorio. *Riv. Parassit.* 22:75-77.
- Dell'Uomo G. 1967. Un aspiratore portatile per cattura di zanzare, azionato a batteria. *Riv. Parassit.* 28:221-223.
- Jackson, S. C. and Grothaus, R. H. 1971. A combination aspirator and killing tube for collecting mosquitoes and other insects. *Mosq. News* 31:112-113.
- Trpiš, M. 1968. A suction apparatus for collecting mosquitoes and other insects. *Mosq. News* 28:647-648.