and blunt (Fig. 1). In the Samoan material two types of abnormal spines were observed. In 55 specimens one or both of the spines were divided longitudinally (Fig. 2). The division varied from a simple notch at the apex to separation to the basal tubercle. In 3 specimens the twin spines had individual basal tubercles (Fig. 3). The most bizarre deformity was the presence of separate twin spines, one of which was further divided to the basal tubercle (Fig. 4).

Among the 296 larvae examined, 59 had some deformity of the clypeal spines. The abnormality was unilateral in 43 larvae and bilateral in 15. On one larva the right spine was broken off.

At least one abnormal larva was found in 12 of the 13 collections. These collections were made over a period of 13 months and over approximately 15 miles of coastal area.

DISCUSSION. Gaud and Laurent (1950) believed that the duplication of clypeal hairs in anopheline larvae resulted from injury to the hair bud. Because of the high prevalence of abnormal clypeal spines in the Samoan *C. sitiens*, this explanation, while possible, seems improbable. Teratology (abnormal development of the embryo) is a more likely cause. The malformations may have been genetically transmitted. The recovery of such larvae from collections made over a period of 13 months suggests this possibility.

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Deinocerites cancer THEOBALD RECOVERED FROM TREE HOLES AT MIAMI, FLORIDA

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Eight larvae removed from a basin-type hole in *Ficus* species at Miami, Florida, November 21, 1963 were identified as *Deinocerites cancer* Theob. In addition, larvae of *Aedes triseriatus* Say and *Culex nigripalpus* Theob. were recovered simultaneously from the tree hole, located about five feet above ground level.

D. cancer is commonly known as a crabhole mosquito; it is found principally in the ground holes made by species of crabs of the families Gecarcinidae and Ocypodidae (Belkin and Hogue 1959). These holes may contain either fresh water or that which is of various degrees of salinity. In addition to being taken from crabholes, this mosquito has also been reported from tin cans (Dyar 1928) and flooded post holes (Carpenter and LaCasse, 1959), while Stutz and Heidt (1963) have also noted *D. cancer* larvae in a wooden bucket, an abandoned septic tank, and a tin can.

The fact that *D. cancer* occurs in a tree hole habitat had been noted earlier (Porter *et al.*, 1961.) However, in that instance the tree hole was just slightly above ground level in an area with many existing crabholes. This area, too, had recently been subjected to heavy flooding which conceivably could have flushed the *D. cancer* larvae into the tree hole.

In the current observation, however, the relatively high location of the tree hole rules out the possibility of flooding and indicates that adult *D. cancer* definitely deposited eggs in this type of habitat.

The presence of *C. nigripalpus* with *D. cancer* in crabholes is frequently observed, while the presence of *A. triseriatus* with *C. nigripalpus* can be expected in tree holes. The association of this crabhole mosquito with an *Aedes triseriatus* larva, however, is unusual.

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A SIMPLE DEVICE FOR ANESTHETIZING MOSQUITOES WITH CARBON DIOXIDE

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Preparation of mosquitoes for insecticide tests or the transfer to recovery containers of exposed batches of any winged insects generally requires some method of immobilizing them temporarily with as little mechanical or toxic damage as possible.

Various "stupefaction methods" have been described by Busvine (1957) who pointed out that in recent years carbon dioxide has been increasingly used.

The use of carbon dioxide presents no technical problem in the laboratory where CO_2 cylinders of various sizes and with valves of various designs can be easily installed. The problem becomes more difficult in the field especially with tests for estimating the activity of residual insecticide deposits.

A few years ago Bruce-Chwatt and Elliott used CO_2 routinely in Nigeria for anesthetizing anopheline mosquitos for bio-assays in the field. Instead of a conventional, bulky, cylinder, they employed the well-known Porton Aerosol Projector. This convenient apparatus, normally used for atomizing an insecticide solution propelled by a CO_2 cartridge, was, naturally, used without an insecticide. The stream of pure CO_2 obtained by depressing the regulator valve was directed through a rubber tube inserted in the nozzle. The apparatus proved to be much handier than a cylinder, lighter and more compact. To the best of our knowledge, it has not been used by other workers, perhaps because the description of it was contained in a department report for limited circulation.

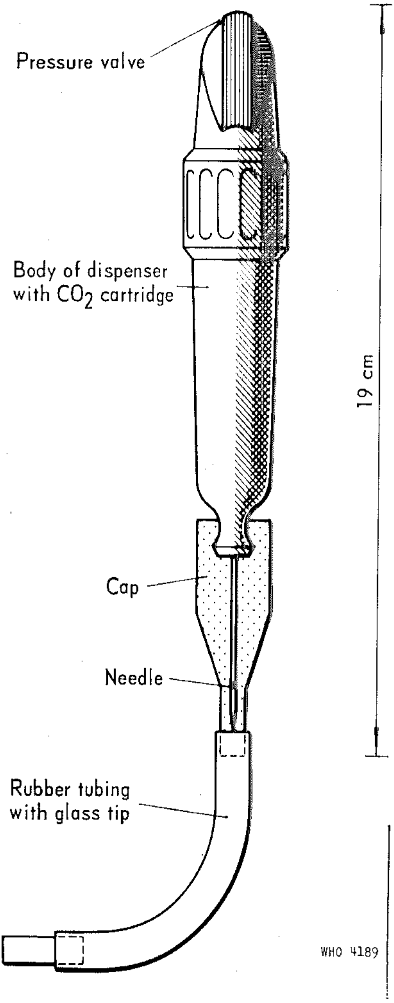

FIG. 1.—Carbon dioxide dispenser with rubber tubing attachment.

A further simplification of the technique of using CO_2 in the field is here proposed. Recently a new and efficient device for removing corks from bottles of wine appeared on the market in Britain. The principle of it is to inject, through a thick-bore needle pushed through the cork, a small quantity of CO_2 relased from a "Sparklet" bulb inserted in the handle of the device known as "Corkmaster." It appears that this little tool (19 cm long, 3 cm in diameter, and weighing 120 g.) represents the handiest CO_2 dispenser ever described (Fig. 1).

For very small quantities of carbon dioxide the needle can be used; for larger quantities, it is suggested that the oblong removable cap which protects the needle be cut off at the tip and an appropriate rubber tubing fitted over so that the stream of gas can be easily directed. The valve is very sensitive and the amount of gas can be well regulated by thumb pressure.

One CO_2 cartridge should suffice for many tests and additional cartridges can be carried in the pocket. The present price of this dispenser is about $4.00 and a box of 10 cartridges costs $0.85.

Some workers in the laboratory or in the field (Whittemore and Bryant) who use carbon dioxide in the course of their investigations may find the described device handy, convenient, simple and cheap. It might be of value if the results of their tests could provide some information on the practicability of the proposed method.

It should be stressed that the approved instructions for standardized bio-assay of insecticidal deposits (WHO, 1963) do not call for the use of CO_2 and that the use of aspirator tubes is recommended until further notice.

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