

OPERATIONAL NOTES

P. BRUCE BROCKWAY, JR.

During the past few months there has seemed to be a gathering interest in the Operational Notes and we are happy that some of our authors have been sending in notes on equipment and other operational data that are very useful in mosquito control activities.

Bob Armstrong writes us of his use of a booster pump used in conjunction with his DYNAFOG SR. He writes as follows:

"We have recently been using a JABSCO 'Minnie Puppy' pump to supply insecticide to the DYNAFOG SR. fog generator. This is a d.c. battery-operated pump designed as a bilge pump for small motor boats. Operated from the battery of the fogging truck it pumps insecticide from two 55 gallon barrels and has more than enough pressure and volume for the DYNAFOG SR. A bypass valve returns the excess flow of insecticide to the barrels.

"The DYNAFOG SR. seems to produce a better and 'heavier' fog at 45 g.p.h. than it did at 20 to 30 g.p.h. judging from field observations. Four gallons of 90% malathion miscible are diluted with 100 gallons of fuel oil to make the fogging solution.

"The 'Minnie Puppy' pump has a neoprene impeller that swells after several hours of use. We take this impeller out after the evening's fogging operation and let it dry for a day or more. Another impeller is used the following night. The inside pump shaft gasket also swells and bulges out of place. It has to be replaced occasionally.

"We consider the pump arrangement a make-shift affair and would like to have suggestions from the experiences of other mosquito control workers. We would also like to know if others have increased the DYNAFOG output to 45-50 g.p.h. and find the fog more effective at that increased rate."

Then, going to the other side of our country—Ted Raley and his associates have perfected a granule "shooter" that has proved most useful in his district for applying granule insecticides. This little "shooter" could be most useful in most any mosquito control district. Ted's write-up appears elsewhere in this Section.

Returning to the East coast area, Russell Gies, of Media, Delaware County, Pennsylvania, writes that in eastern Pennsylvania there is a trend toward more insecticidal fogging for whole towns as people generally see a measure of improvement of results where fogging is done. Furthermore, Russ is encountering the same problem as many of us who have districts where suburbs are expanding and new homes are constantly under construction. He states, "In rapidly growing sub-

urbs construction of sewers is lagging behind, so more mosquito breeding is taking place as a result of sewage pollution." We all have this same problem to one degree or another. Perhaps the reader would have a suggestion for Russ.

It is also interesting to know that Russ was able to apply his DDT "Attaclay" at a cost of \$1.96 per acre. This includes the entire cost of not only the material but all related expenses. How does this cost compare with other Districts? Russ has used a fixed wing airplane for treating this same area for 16 consecutive years with 1/2 pound per acre per application and there have been 3 or 4 treatments each year. He notes that in spite of this amount of chemical insecticide, wildlife has increased and the conservation officials in a wildlife refuge told him that now they have five times as many ducks and songbirds as compared to some years ago, and that wading birds, fish, frogs, and other such animals have also increased. Resistance studies through the use of W.H.O. test kits do not indicate any DDT resistance in the *Culex pipiens* or *Aedes vexans*.

The Delaware County Mosquito Control Commission has had "Ten Commandments for Mosquito Control" printed and the Commandments are distributed by the local Boy Scouts. These "Ten Commandments" should be followed in any mosquito control district. Although many of our readers may know them or their counterpart by heart, they are reprinted below for good measure:

1. Eliminate all standing water around your premises to prevent mosquito breeding.
2. Flatten all tin cans or puncture both ends and dispose of any water holding receptacles such as old paint cans, old tires, etc.; wherever water may collect.
3. Drain clogged roof gutters and flat roofs.
4. Seal cesspool covers and screen vents.
5. Change water twice a week in troughs, bird baths, fountains, etc.
6. Be sure that screens fit tightly, that doors open out and that screen mesh is not larger than 16 to the inch.
7. In rural areas cover all standing receptacles such as rainbarrels with tight netting.
8. Empty the watering can, the wheelbarrow, etc. after using around the gardens.
9. Treat foundation or other water holding excavations, wheel tracks, depressions caused by improper grading and small swampy areas with kerosene oil or fuel oil at weekly intervals. Spray screens and around door and window frames with a household DDT spray 2 or 3 times during the summer to help keep mosquitoes out. Mosquitoes that do find their

way indoors may be killed by using an aerosol insecticide "bomb."

10. Cut down tall grasses, weeds and other excess vegetation that harbors mosquitoes during the day on your own or on adjacent property.

Many of the mosquito control districts and many of the state organizations have been making an intensive study of personnel and employment problems as well as establishing one form or another of job classification. This is one field that was neglected during the early years of mosquito control in some areas. However, during recent years while we are trying to maintain a respect for individual accomplishments and reward the conscientious worker, some mosquito control organizations have made conscientious efforts not only toward protecting their employees, but also giving them a specified plan to follow in order to get a higher job classification. Some districts are under Civil Service regulations, others are not, but usually some reference is made to Civil Service regulations. The San Joaquin Mosquito Abatement District of Stockton, California, under the management of Mr. Brumbaugh, has made some commendable steps in the field of employee relationships, and I am sure that their employees are rewarding the Abatement District by giving better service to their governmental agency. First of all, the District has recognized problems of employees and has recognized the need for ratings. Furthermore, each employee is given recognition for his performance of his duties. Diplomacy and understanding are most necessary. They have developed a fair and unbiased rating program and although they admit that there are some difficulties that have arisen from this rating program, they are gradually being overcome. Employees have different attitudes, feelings, and behaviors and these are respected. High employee productivity is closely related to high employee morale. All these suggestions and discussions of their performance are very well described in an article written by Mr. Brumbaugh under the heading of "A Constructive Approach To Performance Rating." Those districts which are studying employee problems should contact the San Joaquin Mosquito Abatement District for their suggestions and information.

Examinations for field employees have always been a problem to mosquito abatement districts because each district faces different problems not only in terrain but most certainly in the species of mosquitoes and their habits. San Joaquin has a good example of such an examination for their inspectors.

A copy of their October, 1959 Classification Manual would be most useful to districts facing the problem of employee classification responsibilities and rights.

ELECTRIC EYE SWITCH FOR LIGHT TRAPS

It has always annoyed me when I have found out that one or more of our light traps had been

out of order for the night because a householder had turned off the switch for the power to the trap or perhaps the area had a power failure for a few hours which in turn caused the light trap to turn on at the wrong time of the night. There are also problems concerning the light trap clock itself that would confuse trap counts and samples. These problems, plus many others, caused the writer to investigate the possibility of using an electric eye for turning the trap on and off automatically. We were, indeed, very fortunate to find that one of the leading electric eye manufacturers was located locally and Mr. Don Sell of the Don-Ell Corporation gave us suggestions and cooperation which ultimately led to a very satisfactory electric eye switch for our light traps.



Light trap with electric eye mounted on bonnet of trap. Lower left hand corner is the electric eye and above it the old-fashioned clock.

These switches are small, and according to all the tests that we have made they are foolproof; furthermore, they are easy to install on the standard light traps, such as those manufactured by the Concession Supply Company of Toledo. Test switches and power outlets can easily be spliced into the wiring system if desired.

This device is the answer to the light switch problem of a district that desires mosquito samples collected during early evening, night, and early morning hours. The switch is sensitive to the lack of light and is activated to turn the trap on as the sun goes down. During the month of June, the average time of light trap "on" period was from about 8:15 p.m. to 5 a.m. It is recommended that the eye be pointed toward the east and that it be mounted on the top of the bonnet of the trap rather than on the side of the unit.

Clocks require electricity to operate, but this unit does not require this source of energy except during the twilight or dark hours. Maintenance and access to the clock unit is eliminated.

We were very pleased to realize that the cost of the electric eye switch was about one-third of that on an electric clock, and it is much easier to install on a light trap. Presently, the Toledo Area Sanitary District is using six of these units and we are well satisfied with the service that they are giving us.—P. B. B., Jr.

VIBRATION-PROOF MOSQUITO TRAP

A. H. CAMP

Operations Manager, Lake County Mosquito Abatement District, Lakeport, California

For several years we have been operating mosquito light traps in cooperation with the Bureau of Vector Control, Department of Public Health in California. These are "American Model" traps. Even using "Vibration Service" light bulbs, these traps take considerable bulb replacement.

Last fall we decided the bulb failure was due to vibration from the fan motor, so we tried to find a way to eliminate it. We finally came up with the idea of changing the solid motor mounts to springs, using three quite stiff coil springs fastened to the tube sides, suspending the motor in the center of the tube. We feel this has been very satisfactory. Normally we would have replaced four to six bulbs by this time of year and this year we have replaced only two.

A GRANULE "SHOOTER"

T. G. RALEY

Manager, Consolidated Mosquito Abatement District, Selma, California

Applying the new hard core insecticide granules by a controlled air flow intrigued Lee Crawford, Foreman, Consolidated Mosquito Abatement District in the fall of 1960. Faced with the task of larviciding miles of weed-grown drain ditches, cattail-filled ponds and other large mosquito sources where liquid sprays had always given uncertain results, he started searching for something better and faster than the HORN hand applicator to apply granules. Power spreaders mounted on the vehicle were excellent for open areas with low vegetation but this type of mosquito source was only a small fraction of the total problem. Something that would shoot the granules over high vegetation, fences, ditch banks and other obstructions in a directed pattern seemed the best approach, so Lee started experimenting.

Each District Jeep is equipped with a constant pressure spray unit, supplied by a heavy duty air compressor operated from a power take-off on the



FIG. 1.—Consolidated Mosquito Abatement District's "home-made" airgun.



FIG. 2.—Operator applying granules with the airgun in comparative comfort.

vehicle. After much trial and error an airgun (Fig. 1) was developed that served the need well. An operator sitting in the Jeep (Fig. 2) could shoot the granules 35 to 40 feet in any direction desired. Shooting into the wind shortened the throw somewhat but rarely required moving to rougher ground to treat down wind, or stopped the operation. Blow-back and poor aiming has occurred but this presented no hazard from the hard-surfaced, dust-free granules. Larval kills in even the heaviest vegetation are excellent.

The application of granules with an airgun has very quickly developed into a welcome aid in aquatic larvae control. Commercial sand blasting equipment to replace the home-made guns and insecticide can now be supplied at reasonable rates. Equipment costs will probably determine whether the inexpensive district-made gun or the finely tooled commercial gun is used. Either will do a good job of getting the granules over and into areas covered with vegetation.