

## CONTROL OF SALT-MARSH SAND FLIES AND MOSQUITOES WITH DDT INSECTICIDES

W. G. BRUCE AND E. B. BLAKESLEE<sup>1</sup>

Salt-marsh sand flies and mosquitoes hinder real-estate development in the coastal areas of the South Atlantic States. The control of these insects has been aided to a great extent by the use of new insecticides and modern equipment for dispersing them.

In 1930 Federal funds were appropriated for the study of sand flies in these areas. A laboratory was set up for this purpose at Charleston, South Carolina. A hotel built in 1928 on Wilmington Island, 10 miles from Savannah, Georgia, at a cost of approximately two million dollars (Fig. 1), was then in the hands of receivers because so many guests had been driven away by these insects. It had been opened only at intervals since its construction because of extreme insect annoyance. The receivers made the property available for sand fly control studies in 1932. Insecticides available at that time made chemical control impractical, and studies were discontinued in this area in 1935.

This hotel was selected for the inaugural meeting of the International Monetary Conference, March 8 to 22, 1946. The dates for the meeting were at a time of the year when salt-marsh sand fly annoyance was greatest. The management requested emergency aid from the Bureau of Entomology and Plant Quarantine in the control of these pests.

Wilmington Island consists of 3,042 acres of dry ground surrounded by 7,718 acres of marshland. A marsh of nearly 75 acres lies to the north of the hotel property, separated from it by a fringe of

trees about 1,000 feet wide. An 18-hole golf course lies to the east, and is partly wooded. An area to the south is thickly timbered. The Wilmington River borders the hotel property on the west. A tidal creek bisects the island from the east.

The emergency situation was met by the use of three general types of control—residual coatings, thermal aerosols, and airplane sprays.

A residual coating consisting of an oil solution containing 5 per cent of DDT was applied by mopping to all window and door screens. The same solution was applied to screen hoods fitted over all outdoor lights. Similar coatings of a xylene emulsion containing 2.5 per cent of DDT were applied to the garage, the kennels, and the understructure of the boat dock. Outside wall surfaces of the hotel and servants' quarters and surrounding shrubbery were sprayed to a height of about 12 feet with a water suspension containing 1 per cent of DDT. The walled front of the swimming-pool terrace and the balustrade around the pool were sprayed with a 2.5 per cent DDT suspension.

Thermal aerosols, or fogs, produced by a thermal aerosol generator loaned by the U. S. Public Health Service were applied at intervals over all, or parts, of the grounds, golf course, and adjacent wooded areas. The aerosol formulation was 3¾ pounds of technical DDT in 1 gallon of commercial xylene and 4 gallons of SAE No. 10 motor oil. Operating temperatures ranged from 450° to 600° F. The latter temperature proved most effective. The generator was not entirely satisfactory and appeared to require improvement in design.

An airplane sprayed the entire area twice on March 8 with 10 gallons of a 20

<sup>1</sup>United States Department of Agriculture, Agricultural Research Administration, Bureau of Entomology and Plant Quarantine.

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per cent DDT-oil solution and a few days later with the same quantity of a 30 per cent DDT-oil solution. The rates of application were estimated at 0.1 and 0.15 pound of DDT per acre. The applications gave almost total relief of sand fly annoyance during the time of the conference. The swimming pool, terrace, golf course, and game areas were used by the guests without material discomfort. No annoyance was evident inside the hotel.

It is difficult properly to evaluate each of the control measures employed on this work. Owing to the relatively light sprays of DDT applied by airplane, the value of these applications is now considered doubtful. The aerosol fogs proved of sufficient usefulness, as a last-minute emergency, to be classed as of second value. Flights of sand flies came into the protected areas with light winds on several occasions. When atmospheric conditions were favorable, the entire area was fogged. Post-fogging checks showed that sand flies had been satisfactorily con-

trolled. The period of protection ranged from 24 to 48 hours. Residual applications are now considered to have been the most effective of the several methods tried.

The management of the hotel was delighted with the results of these experiments, and asked for a continuation of the control work, but this was not possible. However, it was recommended that a high-speed, blower-type sprayer (Fig. 2) be purchased for the application of oil solutions or emulsions containing 5 per cent of DDT, and that these materials be applied over the entire property at about 2-week intervals during seasons of insect annoyance. These recommendations have been carried out for nearly 20 months.

Results from these efforts have been entirely satisfactory. The hotel has remained open every day since the conference, and no insect annoyance has been reported. It has already become necessary to enlarge the hotel accommodations.

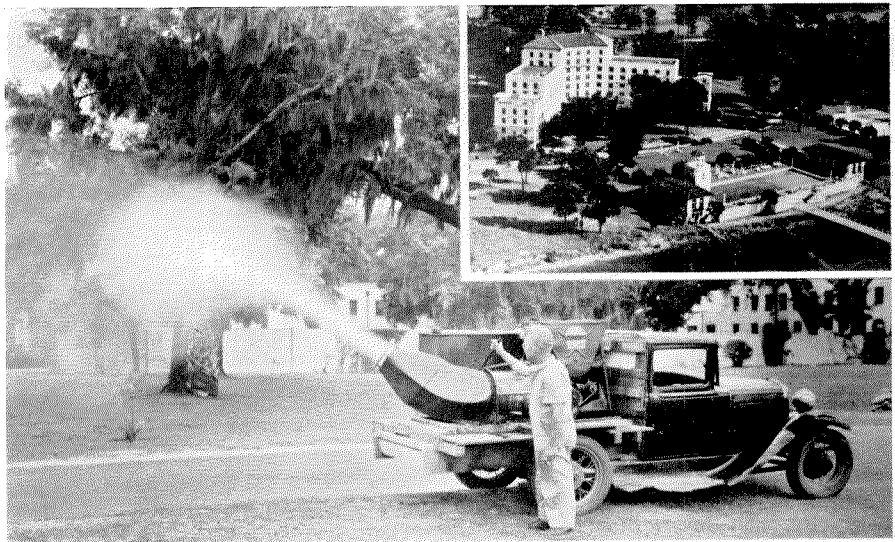


FIG. 1. (Insert) View of General Oglethorpe Hotel, Wilmington Island, Savannah, Ga.

FIG. 2. High-speed, blower type sprayer in action on grounds of General Oglethorpe Hotel.