defective plumbing, and dairy drains. These and the information on DDT will be of special value to persons who may have individual control problems in areas where there are no publicly supported mosquito control programs, as well as in areas where the intelligent co-operation of individuals can be of great assistance to officially constituted control agencies.

The other information on specific control measures is classified under the headings "Fresh Water Mosquito Control" and "Salt Marsh Mosquito Control." There are also sections headed "Malaria and Other Diseases Transmitted by Mosquitoes," "The Control of Malaria," "The Mosquitoes of California," "Finding Mosquito Breeding Places," "Control of Mosquitoes," "Mosquito Control Agencies," and "Insects Sometimes Mistaken for Mosquitoes." D. L. COLLINS

EXPERIMENTS TO DETERMINE POTENTIAL MOSQUITO VECTORS OF WUCHERERIA BANCROFTI IN THE CONTINENTAL UNITED STATES.—Walter L. Newton, Willard H. Wright, and Ivan Pratt. Amer. Jour. Trop. Med., May 1945.—It is apparent from the number of dissections made and the care exercised in evaluating the development of the larvae recovered that the authors have made an intensive study of this problem. In view of the limited and fragmentary information available in the literature prior to this study, the results reported upon give the first conclusive data on the potentiality of some of our more common species of mosquitoes as vectors of *Wuchereria bancrofti*.

While the likelihood of the filarjid's becoming established in this country is a subject for considerable discussion, the fact remains that a focus of infection presumably brought from Africa by slaves persisted in Charleston, South Carolina, for several years, only recently dying out. In addition, it is a well-known fact that many of our armed and civilian personnel have been and will be stationed abroad in filarious foci. Although the chances of their reintroducing the parasite in sufficient concentration in one area to establish a focus are admittedly slight, nevertheless, past experience has proven the existence of such a possibility.

The data presented by the authors support the following conclusions:

1. *Culex quinquefasciatus, C. tarsalis, Psorophora confinnis,* and *Anopheles albimanus* could become excellent vectors of *Wuchereria bancrofti* should the proper conditions for its spread prevail.
2. *Culex nigripalpus, Aedes aegypti,* and *A. triseriatus* might spread the filaria, although their low infectibility rates preclude their becoming major vectors.
3. *Aedes sollicitans, A. taeniorhynchus, A. vexans, Anopheles punctipennis,* and *A. quadrimaculatus* apparently could not serve as vectors.

Extra significance may be attached to this information when it is realized that at the present time there is no effective treatment known for the parasite and that the only recourse is, therefore, the control of the mosquito vectors.

A. D. HESS

HOUSE SPRAYING WITH D.D.T. AND WITH PYRETHRUM EXTRACT COMPARED: First Results. By R. Senior White 1945. Malaria Inst. India, Jour. 6(1):83-87, June, 1945.

Comparative tests of house spraying with DDT and pyrethrum in highly malarious villages in the Jeypore Hills region in India were conducted by the author, December 1944 to April 1945. This is a preliminary report on work which is being continued. The village Jimidiguda with about 50 houses and a spleen rate of 87.8 percent was sprayed with DDT while the village of Chatikona (spleen rate 98.0 percent) and adjacent railway colony were sprayed with pyrethrum extract. The village of Bariguda (spleen rate of 92.7 percent) was used as a check.

The *Anopheles* present were *fluviatilis, varuna, minimus, culicifacies, aconitus* and *jeyporiensis,* the first three being the local malaria vectors.

In 1942 expensive antilarval measures, carried out with indifferent results for several years in the railway colony, were entirely abandoned in favor of pyrethrum spraying 6 days a week. Pyrethrum supplies were too short to permit daily spraying of the houses in the larger program. Therefore the applications were made twice a week, first skipping two and then three days between sprayings and employing 50 percent more of the pyrethrum extract. In the earlier work ½ ounce of pyrethrum extract (strength not given) was applied per 1000 cubic feet. Results of the earlier work indicated that mosquitoes might be coming into the railroad colony from the village of Chatikona, ¼ mile away, and it was therefore thought necessary to extend the spraying operations to that village.

The 48 houses in the village of Jimidiguda were sprayed with a 5 percent solution of DDT in grade III kerosene by means of a De Vilbiss paint gun, set to give as coarse a spray as possible. About 1 quart of solution was applied per 1000 square feet. The wall surface, outdoor verandahs, roofs as far as accessible from below, but not the floors, were sprayed till wet. Two spray guns served by hand pressure sprayers covered the 48 houses in 3 days on the first round and one spray outfit took 7½ days to spray 50 houses on the second treatment, including the spraying of the string cots which, with their *Cimex,* were removed by the natives at the first treatment. The houses apparently have mudded and whitewashed walls and many have bamboo floored lofts.

Each week mosquito catches and dissections were made. These showed that the DDT residual spraying prevented infection in the important vector species for 8 weeks and materially reduced their density. Pyrethrum spraying 6 days each week reduced density and longevity

sufficiently to inhibit gland infection. Density reduction was much less than where DDT was used. Pyrethrum spraying twice a week was ineffective in reducing density and infectivity.

It was found that the cost of the DDT treatment, figuring the DDT at $1.00 per pound, was 20 to 25 times cheaper per capita per week than pyrethrum. This was during December to February, a period of heavy though not maximal transmission.—Fred C. Bishopp, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture.

DETAILS OF THE PROCEDURE ADOPTED IN MAINTAINING A LABORATORY COLONY OF FLUVIATILIS. By Badri Nath Mohan. Journal Malaria Institute of India, Vol. VI, No. 1, June, 1945, pages 75–76.

A vigorous colony of *Anopheles fluviatilis* has been maintained for more than a year and the author previously kept a colony for twenty-one months and then allowed it to die. Start was made with wild-caught females confined individually in 4 x 2 cm. tubes plugged with moist cotton covered with filter paper and inserted in a petri dish. The eggs were laid on the filter paper.

The eggs were floated in cork rings in enamel basins. Hay infusion and small quantities of litmus milk, two parts, and dehydrated blood serum, one part, or dried brewer's yeast were used as food. The water was aerated daily with a rubber syringe. Lining the basins with mud, dried in the sun reduced mortality.

The pupae were put in a bowl of clear water and kept in the colony stage. This cage was 2 x 2 x 2 feet with a bottom of sheet tin and sides and top of fiber-board except for a sleeve and a 2 x 2 inch screened hole in the top. This was kept in a larger wooden cage and high humidity maintained. Ten per cent glucose water was supplied, and a rabbit with shaved back was introduced nightly into the colony cage. Females took blood reluctantly from rabbits, guinea pigs and fowls but more freely from monkeys. They fed on rabbits more readily after their first oviposition. Bowls of water were supplied for egg laying. The females preferred earth lined vessels for oviposition.

Mating took place only in the presence of blue light. It was felt necessary to have a large number of females in the colony to insure the presence of multiparous individuals and therefore satisfactory feeding and oviposition.—Fred C. Bishopp, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, U. S. Department of Agriculture.