

mental forms of aerial craft will likely be developed, and that the lighter-than-air type will be the burden-bearing machine of the future, whereas the heavier-than-air type will be limited to comparatively low tonnage, operating at relatively high velocity. The helicopter type of machine may be considered as the limit of the aeroplane, when by constantly increasing the speed the area of the supporting surfaces is continuously reduced until it practically disappears. We may then picture a racing aeroplane propelled by great power, supported largely by the pressure against its body, and with its wings reduced to mere fins which serve to guide and steady its motion. In other words, starting with the aeroplane type, we have the dirigible balloon on the one hand as the tonnage increases, and the helicopter type on the other extreme as the speed increases. Apparently, therefore, no one of these forms will be exclusively used, but each will have its place for the particular work required.

GEORGE O. SQUIER

#### MOSQUITO EXTERMINATION WORK IN NEW JERSEY

PROFESSOR JOHN B. SMITH, in his report to the governor on the work carried on under the law of 1906, shows that up to the end of the summer of 1908 there had been drained 20,292 acres of salt marsh extending from the Hackensack River to the mouth of Toms River on Barnegat Bay. To accomplish this, required 2,723,974 feet of ditching, put in at an actual cost of \$44,058, some \$12,000 being expended for administration, surveys and other work necessary to control the actual carrying out of the contracts.

During the same period of two years municipalities throughout the state have joined in the mosquito crusade, and have expended considerable sums of money for local work in eliminating breeding areas. The work is all in the direction of permanent improvement and of destroying the breeding localities. Oiling and temporary work is done only when it

is necessary to destroy a brood of wigglers that might otherwise hatch before permanent work can be done.

The results have been very gratifying and the migrating marsh mosquitoes were almost entirely absent during most of the summer from the larger cities where drainage work had been done in 1907 or earlier. It developed in the course of the work that the eggs of these salt marsh species retain their vitality for a very long period and that for at least three years after a marsh is drained, there may be ever lessening broods of larvæ found whenever it becomes water-covered by freshet tides or heavy rains. This was interestingly shown by examinations of marsh mud, from areas drained for different periods, and counting the eggs and egg shells on the samples. It is, therefore, a rather slow process to completely clean up such areas, because a few specimens developing under favorable circumstances will provide a small stock of eggs that require three years or more to work out altogether. In the areas drained in 1904, however, practically no eggs were found except in the deepest depressions, and even in these they were very few in number and much scattered.

The season of 1908 was remarkable for the excessive rainfall in early spring, which provided breeding areas for the early brood, far beyond usual conditions, and these afterward concentrated in cisterns, water-barrels, sewer catch-basins and similar localities so that cities were much troubled by them in the entire region where these excessive spring rains prevailed.

If the legislature now in session provides sufficient means, it is expected that the drainage work can be carried to Great Bay during the season of 1909, and in the cities the local committees are already providing against a duplication of last season's experience with the house mosquito.

#### THE AMERICAN MUSEUM OF NATURAL HISTORY

THE annual meeting of the trustees of the American Museum of Natural History was held on Monday, February 8. The following officers were elected: Henry Fairfield Osborn,