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,

president; J. Pierpont Morgan, first vice-president; Cleveland H. Dodge, second vice-president. The following is an abstract of the president's annual report:

In point of growth the past year has been the most notable in the history of the institution. Partly aided by the Jesup bequest, the total expenditures were $275,419, or $25,000 more than the previous year. Of this the city contributed $159,930.62 and the museum $115,488.38. In the past eight years the museum has expended directly $932,008 on its explorations and collections. The estimated total value of the collections secured during this period by exploration, by purchase, and by gift to the museum is over $2,000,000. For every dollar which has been expended by the city more than a dollar has been added to the enlargement of the collections.

The present endowment fund, including the bequest of the late President Jesup, is $2,048,156.61. To keep pace with the very rapid growth of the city and the demands it is making for public scientific education, an endowment fund of $5,000,000 is needed. In every part of the world the advance of agriculture and commerce and the spread of fire arms is rendering more scarce the objects of natural history of all kinds, including the works of the primitive races of men. It is deemed vitally important to push the explorations of the museum in all parts of the world while it is still possible to secure these fast vanishing works of nature and of primitive man. During the year 1908 and at the present time the museum's explorations extend to the Mackenzie River and the shores of the Beaufort Sea, to Alaska, Vancouver, Alberta and Saskatchewan, the west coast of Hudson Bay and western Labrador; in the United States parties have been spread in Wyoming, Montana, Idaho, North Dakota, Nebraska, Colorado and Florida, also in Central America, and in the south to Nicaragua, the West Indies and Bahama Islands; in Asia special agents are working in Kashmir, China and Corea; among the islands of the Pacific the museum is working in the Philippines, the Solomon Islands, in Tahiti, New Zealand, the South Shetland Islands and in Kerguelan Island.

Popular education has been given a stronger impulse than ever before. The museum was open free to the public every day of the year and on 179 evenings. The gross attendance last year was 1,043,582, in large part due to the exceptional interest in the International Tuberculosis Exhibition. The attendance at public afternoon and evening lectures reached a total of 82,718. The number of children visiting the museum in lecture classes was 10,425. The number of children who were especially guided through the Tuberculosis Exhibition and who listened to lectures on simple means of prevention of this disease was 41,627. These children came from all the high schools of Greater New York and from many distant towns and cities. In the schools of the city 575,801 children were reached by the system of circulating museums.

During the coming year the principal new exhibitions which will be developed are especially the Children's Museum, the Museum for the Blind, the Philippine Exhibition and the Congo Exhibition presented by King Leopold of Belgium. This last is the most complete collection outside of that which is to be seen in the Congo Museum near Brussels. Growing out of the Tuberculosis Exhibition immediate steps will be taken to make a special exhibition of the life and habits of the smaller organisms in relation to health and disease.

During the past year the scientific staff of the museum has been strengthened by the addition of Professor Bashford Dean, a traveler and ichthyologist of international reputation, who has been placed in charge of the fishes and reptiles. Professor Henry E. Crampton, also of Columbia University, has been appointed head curator of the department of invertebrate zoology to succeed Professor William Morton Wheeler, who has resigned to accept a professorship in Harvard University. Dr. Frank E. Lutz has been called from the Carnegie Institution of Experimental Evolution to take special charge of the exhibition of microorganisms in relation to public health. Dr. Alexander Petrunkevitch has been appointed honorary curator of arachnida, and Aarson L. Treadwell, of Vassar College, has been appointed honorary curator of annulates.