

DAMMING THE MISSISSIPPI

BY W. P. GREEN

Excelled only by the monster dam across the historic Nile River, the greatest engineering feat in the history of the Middle West is under way on the Mississippi at Keokuk, Iowa, the point from which Col. Roosevelt started his river journey to the far West several years ago. A huge dam is being built across the Mississippi at the foot of the rapids which lie to the north of Keokuk; and the stored energy of the river is to be used in generating over 200,000 electrical horse-power. The power will be distributed throughout the Middle West; the first long-distance transmission line running to St. Louis, 170 miles south of Keokuk, where forty per cent of the power to be developed is now under contract. The bed of the river at this point affords an excellent rock foundation. The dam will be built of reinforced concrete; and over 500,000 barrels of cement, and 7,000 tons of steel will be required in the construction of this gigantic work.

The dam, including abutments, will be 4,700 feet

of 43 feet. On top of the spillway will be placed 116 steel flood gates, 30 feet wide and 11 feet high, supported by concrete piers. The piers are to be built integral with the dam, being carried down to bed-rock on the upstream side. They will support an arched bridge, from which the gates will be operated by electric hoists. Through the manipulation of these gates the water above the dam will be maintained at a constant level at all seasons.

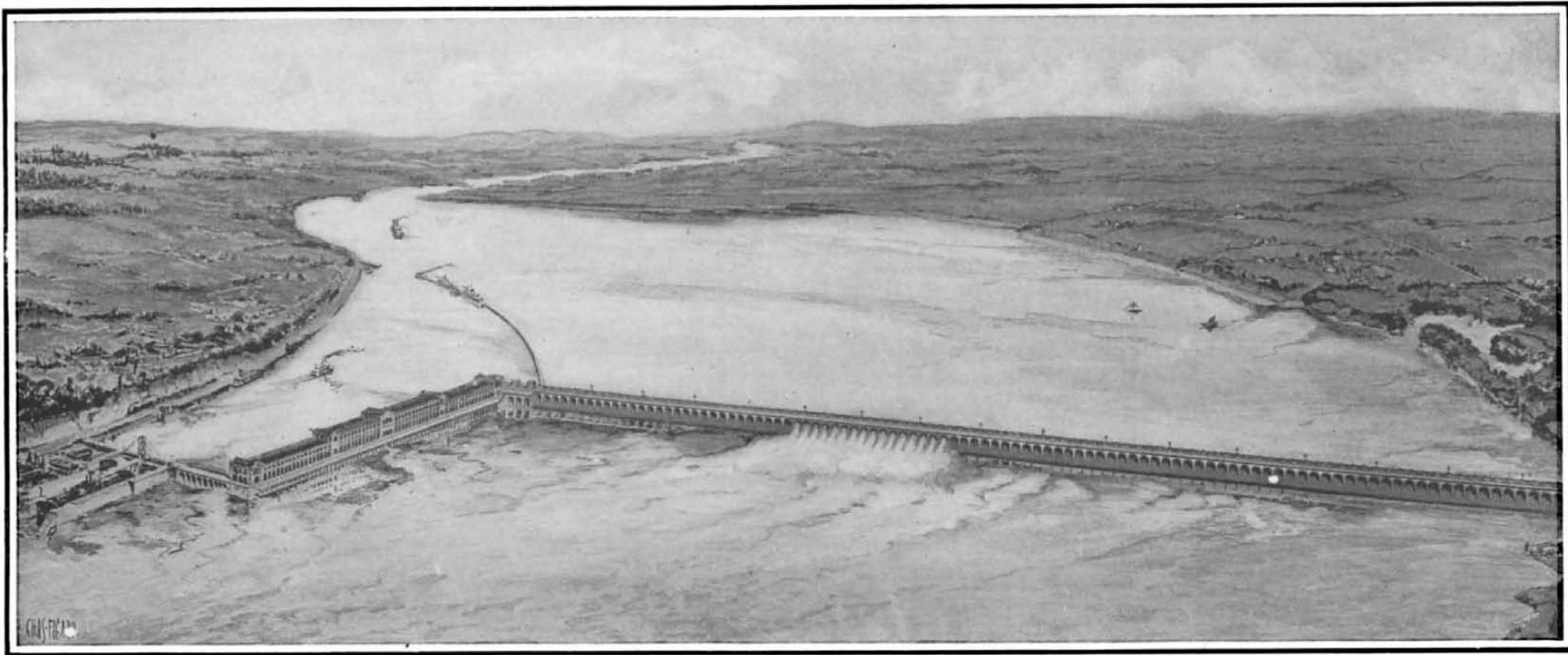
Four-fifths of the dam, the 4,400-foot section, will extend in a straight line across the river, breasting the current of the broad river. The balance of the dam will be built approximately parallel to the shores and at right angles to the main dam. This portion, 1,400 feet long, 123 feet wide, and 133 feet high, will be occupied by the power house. The substructure, built of massive concrete, will contain the water passages and waterwheel chambers. Upon this will be the superstructure, containing the electric generators, transformers, and switchboards. There will be thirty

the power house, will be the revolving parts of the generators.

To keep floating ice and logs from entering the power house, an ice fender will be built upstream from the upper end of the power house, curving in toward the shore. This will be 2,800 feet long and built of concrete masonry.

The construction of the dam will entirely destroy the government canal, built to carry shipping around the rapids. This canal now consists of three locks. In its place a single large lock will be built. There will thus be substituted for the canal a lake of deep water over a mile wide at the dam, and 40 miles long. The government has given permission to build the dam. Landowners on both sides of the river will be given a fair price for all land overflowed as the result of the creation of the reservoir.

The construction of this gigantic river project is under the direction of Hugh L. Cooper of New York city. The work of excavation is well under way on



This huge structure, over a mile in length, is being built across the Mississippi at Keokuk, Iowa. The dam, which is broadly similar to the Assouan dam across the River Nile, is provided with 110 flood gates to control the height of the floods. A lake 40 miles long will be formed and ultimately 200,000 electric horse-power will be generated in the power house shown at the left of the dam.

THE HUGE DAM WHICH IS BEING BUILT ACROSS THE MISSISSIPPI.

long, or seven-eighths of a mile. The spillway section will be 4,400 feet in length. The dam will rise 37 feet above the river bed, and the base has a width

power-generating units, each consisting of a vertical steel shaft, carrying on the lower part two turbines, or water wheels. On the upper part, on the floor of

the Illinois side of the river, the project will be pushed as fast as the material is delivered at the site.

The Oceanographic Museum of Monaco.

The Oceanographic Museum of Monaco was formally opened on March 29th, 1910, by its founder, Prince Albert I. of Monaco, in the presence of representatives of various foreign governments. The celebration included a pyrotechnic exhibition and an allegorical pageant in the beautiful bay of Monaco, a gala performance at the opera and other festivities. The new museum, which is also a laboratory, is connected with the Oceanographic Institute of Paris, and both institutions, with an endowment of four million francs (\$800,000) have been presented by Prince Albert to the French government in recognition of the hospitality which Paris and France accord to all workers in the field of thought. Prince Albert is president of the administrative council of the Institute, which includes among its members ex-President Loubet and the physicists Cailletet and Becquerel. The direction of the scientific work is confided to an international committee, for it was Prince Albert's design to found an institute and a laboratory in which investigators of all nationalities could work together for the advancement of the new science of oceanography. The lecture courses of the Institute were inaugurated in 1903, at the Conservatoire des Arts et Métiers. The lectures have since been given in the old building of the Academy of Medicine, and at the Sorbonne. The new building of the Oceanographic Institute will soon be completed, and the lectures will be given there after October next.

The Oceanographic Museum of Monaco, which has already received the popular name of the Palace of the Sea, is built on the flank of a steep cliff at the edge of the sea. On the water side the building is 256 feet high, while the height of the main façade, on the land side, is 148 feet, the difference being due to the

slope of the cliff. The length of the building, parallel to the water front, is 330 feet. The cost of construction exceeded \$1,500,000. There are only four stories, and the rooms are very high, large, and well-lighted. The two lower stories, which are partly underground, contain the aquariums and laboratories, while the upper stories are devoted to the exhibition of sounding and other apparatus, and of the rich and varied collections of deep-sea fauna and flora which represent the result of a quarter century of exploration. Prince Albert has also placed a small steamer, the "Eider," at the disposal of the Museum.

Almost every year since 1885, the Prince of Monaco has made a scientific cruise in the Mediterranean, Atlantic or Arctic Ocean. The experience acquired with the "Hirondelle," a sailing yacht of 200 tons, and afterward with the "Princesse Alice I.," an auxiliary three-masted schooner, 170 feet in length, was put to good use in the construction and equipment of the "Princesse Alice II.," with which the later cruises have been conducted. This vessel has a steel hull, a length of 240 feet, a breadth of 34 feet, a displacement of 1,400 tons, and a maximum speed of 13 knots. It contains the most improved apparatus for taking soundings and temperatures and collecting specimens of fauna, flora, sand, mud, etc., at very great depths. A great part of this apparatus was invented and constructed by the Prince and his assistants.

The cases of the Museum contain representatives of all known deep-sea fauna. Many of these specimens are interesting even to the non-scientific observer because of their strange forms, beautiful colors, and peculiar organs of sight and touch.

These oceanographic explorations and collections also possess great practical value, in addition to their scientific interest. Most edible fishes feed upon the

plankton or mass of small animal organisms which are wafted hither and thither by even feeble ocean currents.

The explorations have proved that the plankton moves in a manner dependent on the season and the locality. These migrations appear to be governed by complex laws, the knowledge of which, as it is gradually developed, will be of great value to the fisheries, especially to the steam fisheries, as the fish follow the plankton.

In commemoration of the inauguration of the Oceanographic Museum, the Prince of Monaco has caused a plaque to be struck in gold, silver and bronze. The six gold plaques were presented to the president of the French Republic, and the sovereigns of Germany, Italy, Spain, Portugal and Monaco. One hundred plaques in silver and twenty in bronze were distributed among the other invited guests.—L'Illustration.

The Electrical World remarks that in a report submitted by the chief signal officer of the United States army to the Secretary of War, it is stated that there are now in the army service a total of 39 wireless telegraph stations, of which 13 are in the United States, 9 in Alaska, 5 in the Philippine Islands, 5 on artillery harbor tugs, and 7 in the army transport service. The signal corps has purchased a 2-kilowatt 100,000-cycle alternator for wireless telephone service. The advisability of the United States adhering to the International Radiotelegraphic Convention, 1906, is recommended for the consideration of the United States Senate. Wireless telephone equipments are now being erected at the Bureau of Standards and at the quarters of the signal corps of the army, in Pennsylvania Ave., Washington, to make experiments with the object of selecting the best devices for army service.