

65. Friedrich Bömches, Vienna, Austria.

DESIGNS AND REPORTS CONCERNING TRIESTE HARBOR.

Report.—A very important improvement of Trieste harbor has been effected since the year 1870 by the Austrian Government. The new harbor consists of three basins five hundred meters wide and eight and a half meters deep, protected by a breakwater twelve hundred meters long. The construction of the quays and breakwater with the combined systems of "pierres perdues" and artificial stones on a very unsound bottom has encountered serious difficulties, and has given an opportunity to improve these systems of foundations, while the necessity for rapidly completing an immense amount of work has led to the increasing of the efficiency of means for excavating and transportation to the greatest extent possible. The designs and reports presented on this subject are of a very instructive character, and must conduce in an important degree to the advancement of civil engineering.

66. A. V. de Borja Castro, Rio de Janeiro, Brazil.

CUSTOM-HOUSE BASIN AT RIO DE JANEIRO.

Report.—Commended for its successful solution of the problem of reconstructing an important pier (exposed to strong waves) after it had, from its inadequate foundations, become seriously displaced.

The reconstruction has been very well conducted, and the engineering difficulties have been skillfully overcome.

67. Dinaburg Arsenal, Dinaburg, Russia.

PONTOON BRIDGE AND MAPS.

Report.—The pontoons are made of boiler iron, giving great strength with lightness. The balks and chess are as usual.

Maps of defense of Sebastopol; well executed.

68. Dr. Emil Winkler, Vienna, Austria.

STUDIES CONCERNING BRIDGES AND THE THEORY OF THEIR CONSTRUCTION, AND CONCERNING THE ELASTICITY OF DIFFERENT MATERIALS.

Report.—Commended for their evidence of profound and careful study in an important field.

69. Government of the Canton St. Gallen, Switzerland.

SYSTEM OF ROADS AND HIGHWAY BRIDGES; CORRECTION OF THE RHINE.

Report.—The most interesting feature of this exhibit is that which describes the regulation of the channel of the Rhine. The upper portion is guarded by parallel dams, above ordinary high water. The lower portion is guarded by two sets of dams, one set placed at ordinary low water and the other at ordinary high water. The stream is straightened by a large cutting near Diepoldsau. These works are made under the general management of Mr. A. Wey, engineer at St. Gallen.

70. Silverio Augusto Pereira da Silva, Aveiro, Portugal.

MODEL OF BRIDGE IN WOOD AND IRON.

Report.—Commended for the great simplicity of its construction. In view of the particular condition of the country, the bridge which this model represents solves a very important economical problem.