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THE "PILOT CHART" of last month contained a small telegraph chart (reproduced in *Science* of April 5) of the Bay of North America, to illustrate the admirable facilities that exist for the establishment of a more complete system of telegraphic weather-reports and storm-warnings for the benefit of commerce, to include Mexico, Central America, the West Indies, and the Windward Islands. A hurricane chart accompanying the "Pilot Chart" for May, with the tracks of a few hurricanes selected as typical of those that occur in this region, illustrates still more strikingly the importance of this project, besides containing information of value to navigators during the coming hurricane season. The recent terrible disaster at Samoa, March 16, caused by a tropical cyclone, may well call attention to the fact that West Indian hurricanes are among the most severe that occur anywhere in the world. Every consideration of expediency, economy, and common sense, urges the importance of taking full advantage of every possible facility for getting early and reliable information regarding the formation and progress of these terrific storms, for the benefit of commerce along the Atlantic and Gulf coasts, and in the West Indies, the Caribbean Sea, and the Gulf of Mexico. The completion of the Nicaragua Canal will add tenfold importance to this subject, but its importance to American commerce is already so great that such a system should be in full operation now.

THE SEVENTH ANNUAL REPORT OF THE DIRECTOR OF THE UNITED STATES GEOLOGICAL SURVEY.

EVER since the foundation of the present United States Geological Survey, its scope and fitness to accomplish the great work intrusted to it, have grown, its work thus steadily gaining greater economic and scientific importance. It would be useless at the present day to dwell upon the value of geological work, to the appreciation of which the people of the United States have fully awakened. Even the people of the Western States, who are so entirely guided by practical considerations, acknowledge their necessity by appropriating funds for geological investigations or by maintaining geological surveys.

The lack of trustworthy maps has compelled the United States Geological Survey to include this indispensable preliminary work in its operations, and the great and important work is furthered with commendable energy. Ever since the first of the topographic sheets were printed, and since they have become accessible to the public, the demand for such maps has increased, and the lack is more sorely felt in regions where they do not exist. The publication of the map of New Jersey, the first of the States that can boast of a good map, and the imminent completion of the map of Massachusetts, will greatly help to bring home to the public the necessity of providing for the publication of the maps of the whole country. In the year 1886, considerable portions of New Jersey and Massachusetts, of the Appalachian region, of Kansas and Missouri, a portion of Texas, a small part of Arizona, and several valleys of California, were surveyed, and the mapping of the Yellowstone National Park was completed.

Regarding the scope of the geological work of the survey, the following passage of Major Powell's report will be read with interest: "The Geological Survey inherited much unfinished work of different surveys in the Western Territories, previously prosecuted under the auspices of the government. Since it seemed desirable to carry forward and complete these surveys as rapidly as possible, investigations were continued in the fields covered by them, and thus the early organization of the survey was determined in part by antecedent geologic work. At the same time, however, demands for local geologic and mineralogic investigations came from various portions of the country, including the older and long settled States; and, as soon as the legality of such action was established, the geologic operations of the survey were extended into the other States, and a number of divisions were organized, and intrusted with the investigations.

"It should be explained that by its organic law the Geological Survey is inhibited, both implicitly and directly, from making a geologic survey upon a cadastral plan; i. e., from making investigations relating to the value of properties of individuals. Accordingly, its work in economic geology is limited to the observation and mapping of the formations within which mineral resources lie; the general distribution and characteristics of coal-beds, ore bodies, and other valuable mineral deposits; and the investigation of questions relating to the origin and taxonomic relations of the formations themselves and of their contained minerals.

"Within the above limitations it has been found possible to make the scientific investigation of the survey of high economic value (1) by extending its operations into those portions of the different States in which the natural resources have not yet been fully developed, and (2) by developing and applying such systems of classification of the formations as will at the same time enable and compel the geologist to discriminate in the field, and clearly distinguish on the maps of the survey those rock-masses which are economically important. Both of these means of rendering these investigations of the survey of maximum value to the country have been adopted. Moreover, friendly relations exist between the United States Geological Survey and the geologic surveys prosecuted under the auspices of different States of the Union; and in many cases partial co-operation with these States has been effected in such manner that the State geologists leave to the federal survey the investigation of such general scientific questions as involve operations beyond the limits of their own States as well as within them, and avail themselves of the results of this investigation, and in return permit the general survey to utilize the results of their own more strictly economic studies."

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