THE ASTRONOMICAL EXHIBIT AT THE WORLD'S COLUMBIAN EXPOSITION.

By George E. Hale.

The four hundredth anniversary of the discovery of America by Columbus is to be fittingly celebrated at Chicago in 1893. In buildings which themselves sufficiently emphasize the progress of American architectural skill, the exhibits of the world will be so grouped as to render evident to the visitor the gradual development and the present condition of every art, science and industry. Only those who have recently visited the grounds of the Exposition, and watched the daily progress achieved by an army of nearly five thousand laborers, can have any adequate idea of the exalted standard of excellence which the directors have in view. Some of the buildings are practically completed, and it is already possible to faintly picture the Venice-like beauty which the waters of Lake Michigan and the winding lagoons will lend to the scene. But it is not with the evidence of material progress that we are now dealing. It is of more interest to learn that a space nearly 800 feet long and 300 feet wide has been set apart in the largest and best situated building on the grounds for the use of the department of Liberal Arts, and in this space the astronomical exhibit will naturally be found.

The scope and nature of this exhibit will largely depend on the liberality with which astronomers and instrument-makers respond to the call for a full and complete display. Advices already received from Warner & Swasey, J. A. Brashear and Alvan Clark indicate that there will be no lack of instruments of the highest class. It is hoped that there will be at least one refracting telescope of fully 20 inches aperture, and among a number of
smaller refractors it is probable that two will exceed an aperture of 12 inches. Reflectors will be shown in all sizes, while the mere fact that Brashear will exhibit is a sufficient guarantee that spectroscopes of all kinds, gratings, prisms, flat surfaces, etc., will not be lacking. Two large domes have been arranged for, and a model of the Lick Observatory is now being made at Mount Hamilton. As many apparatus makers are yet to be heard from, the outlook in this direction is most encouraging.

The great advances in astronomy and spectroscopy which have resulted from the application of photography should be fully illustrated. At the Lick Observatory a large number of transparencies on glass, eight by ten inches in size, are being prepared from negatives of the moon, Jupiter, etc., and the remarkable success of the Henry Draper Memorial will no doubt be exemplified by a large collection of photographs of the stars and stellar spectra from the Harvard College Observatory. It is to be hoped that Professor Rowland will send many specimens from the extensive series of photographs of solar and metallic spectra on which he is now engaged.

It is also proposed to include in the exhibit a collection of photographs of all telescopes in the United States of six inches aperture and upwards, together with all important spectroscopes and special instruments employed in astronomical or spectroscopic investigation. It is desirable that the photographs should be, so far as possible, of the uniform size of eight by ten inches. They may be either glass transparencies, or unmounted paper prints. The latter will be properly mounted by those who have charge of the installation.

Finally a large collection of American astronomical publications is desired. These will include complete sets of the publications of observatories and societies; periodicals; books and papers on astronomy and spectroscopy, etc.

It will be noticed that only American exhibits are here called for. The arrangements of the 52 foreign countries which have officially announced their intention of participating in the Exposition are such that the exhibits will be grouped by nations, rather than by subjects. While this natural system may possess some disadvantages as compared with a rigid classification by subjects, it will at the same time have the corresponding advantage of stimulating national pride. If, as we hope, every foreign country will give as much attention to the astronomical as to an industrial
exhibit, the United States will need to look to her laurels. An adequate representation of our part in the progress of astronomy would undoubtedly substantiate our claim to an important position among the nations engaged in the advancement of research.

THE WORLD'S CONGRESS AUXILIARY OF THE WORLD'S COLUMBIAN EXPOSITION.*

DEPARTMENT OF SCIENCE AND PHILOSOPHY. GENERAL DIVISION OF MATHEMATICS AND ASTRONOMY.

Preliminary Address of the General Committee of the World's Congress Auxiliary on Mathematics and Astronomy.

GEORGE W. HOUGH, LL. D., Chairman.

The World's Congress Auxiliary is an organization maintained by the World's Columbian Exposition, and approved by the Government of the United States, for the purpose of organizing a series of Congresses or Conventions to be held during the progress of the Exposition in 1893, and which will bring together the leading scholars of the world for the mutual interchange of ideas on topics bearing on human progress.

A Scientific Congress to present and consider investigations in its special lines of research from all parts of the world, cannot fail to exert an important influence in the progress of scientific development. The personal interchange of views in regard to methods of observation and investigation will undoubtedly be productive of mutual benefit to the members of the Congress, as well as of lasting value to science.

The General Committee on Mathematics and Astronomy presents this Preliminary Address, cordially inviting the co-operation of all persons and societies interested in this department of physical science.

As the matter assigned to this Committee covers a large field in Physical Science, it has been thought advisable to arrange the subjects to be considered under the following Chapters and Sections, in which in consideration of its recent development and

* Printed by request. The lists of members of the "Advisory Councils" have been omitted.