The most rapid plates are best for this work; they should be changed once an hour, and the exact times of starting and stopping recorded. Care should be taken to stiffen the camera by braces, so that the focus will not be changed when the instrument is pointed to different portions of the sky, especially if the lens is heavy. If the first method is employed, the position of the camera should be changed after each plate, so as to include as much as possible of the region of the map on each photograph. If pointed a little southeast of ϵ Leonis, the radiant will reach the center of the field about the middle of the exposure. A watch of the region should also be kept, and the exact time of appearance and path of each meteor as bright as the Pole Star should be recorded. The plates should be numbered on the film side with a pencil, and should be sent to the Harvard Observatory with accompanying notes and other observations. After measurement there, they will be returned if desired. The value of the results will be much increased if similar photographs can be obtained by a second camera from ten to forty miles distant, and preferably north or south of the other.

OBSERVATION OF THE TOTAL SOLAR ECLIPSE IN 1900.

President Harper, of the University of Chicago, at the 30th Convocation of the University on October 2d, spoke as follows of plans for observing the approaching solar eclipse:

A total eclipse of the sun is regarded as an event of great importance by astronomers, because of the opportunity it affords for studying the solar corona and other phenomena which are invisible at other times. The last total eclipse visible in the United States occurred on July 1, 1889, and a great number of astronomers from the various observatories visited California for the purpose of making observations. The next total eclipse will occur on May 28, 1900, the path of the shadow extending through the States of Virginia, North Carolina, South Carolina, Georgia, Alabama, Mississippi and Louisiana. Extensive preparations for observing it are being made by many institutions. General arrangements have been entrusted to an Eclipse Committee, of which the Director of the Yerkes Observatory is Secretary, appointed last year, at the Harvard Conference of Astronomers and Astrophysicists.

(1) Photographic observations of the spectrum of the sun's edge, similar to those made at the recent eclipses in India and Nova Zembla, but with more powerful apparatus.

(2) Photographs of the corona on a large scale, for the purpose of showing the detailed structure.

(3) Measurement of the heat radiation of the corona.

This last investigation has not been carried out successfully at any previous eclipse. Special instruments have been devised for the purpose, which promise to give interesting results. Professor Nichols, of Dartmouth College, who, in the summer of 1898, succeeded for the first time in detecting heat radiation from the stars, at the Yerkes Observatory, has offered to assist in making these measurements and expects to furnish part of the apparatus.

The Yerkes Observatory did not have the means to send an expedition to the last eclipse, which occurred in India in January, 1898. As the present occasion is so favorable, and as the expense involved is comparatively small, it is hoped that the friends of the observatory will make it possible to send out a party. The expenses will include a large heliostat, with accessory apparatus for determining the radiation of the corona and for photographing the corona on a large scale; transportation expenses for four astronomers, freight and express charges, teaming, lumber, brick, cement, labor, etc. (for the construction of temporary shelters for the instruments and piers). Other apparatus, including spectroscopes, telescopes, and all mirrors for the heliostat, etc., will be supplied from the Yerkes Observatory. The heliostat and other instruments to be purchased will become an important part of the permanent equipment of the observatory, to be used in its daily work on the sun.

On account of the exceptionally favorable atmospheric conditions which prevail at Lake Geneva during the day, special attention is given at the Yerkes Observatory to the study of the sun. A number of important advances in our

knowledge of the sun have recently been made here, and when the instrumental equipment now in process of construction has been completed, this observatory will be able to undertake more solar work than any other institution. It is, therefore, of special importance that a party should be sent from here to observe the eclipse of May 28, 1900 (probably to Georgia), particularly as the next total eclipse visible in the United States will not occur until 1918. As the work which has been planned for this party will require special instruments constructed for the occasion, the expense of the expedition will amount to about $3,000. It is proposed to undertake three special lines of work.

THE IMPERIAL DEPARTMENT OF AGRICULTURE IN THE WEST INDIES.

WE have already given some account of the Imperial Department of Agriculture in the West Indies, established by the British Government, with Dr. Daniel Morris as Commissioner. The *Experiment Station Record*, quoting from the first number of the *West Indian Bulletin*, the official organ of the Department, gives an account of its work. In accordance with the recommendations of the West Indian Royal Commission, appointed in December, 1896, the British Government has appropriated £4,500 for the new department for the first year, and it is estimated that in future an annual grant of £17,500 will be required to carry out the recommendations of the Commission as adopted.

The headquarters of the department are at Barbadoes. Its duties are twofold: "(1) To endeavor to restore the sugar industry to a condition in which it can be profitably carried on, and (2) to encourage the establishment of other industries in such colonies as afford suitable conditions to supplement the staple industry."

Four 'principal' or 'central' experiment stations and eight 'local' stations for the improvement of the sugar cane will be established on the island of Barbadoes. The object of the central stations will be the growing of seedlings and improvement of varieties, and the carrying on of fertilizer experiments. The more promising varieties will be given a practical trial at the local stations to test their adaptability and value in different soils and localities, and also as a demonstration to the planters in each parish. Experiments on similar lines have been arranged for at Antigua and St. Kitts, while the work previously inaugurated at Trinidad will be largely extended and the necessary chemical assistance provided. The botanic stations placed under the control of the department are those at Tobago, Grenada, St. Vincent, Barbadoes, St. Lucia, Dominica, Montserrat, Antigua, and St. Kitts-Nevis. The object of these stations is to test and distribute promising economic plants for the region, introduce new or little-known plants for experimental cultivation, and conduct experiments on the improvements of sugar cane. In addition they distribute information, and send out lecturers for institute work.

It is also proposed to establish central sugar factories equipped with the best machinery, and it is the expectation of the department to establish one or two experimental factories at an early date. The plan of the Royal Commission to establish agricultural schools in connection with the botanic stations has been carried out by opening a school at Dominica, and others will be started at St. Vincent, St. Lucia and St. Kitts-Nevis as soon as the necessary land is obtained. Furthermore, the department is prepared to offer grants to enable certain institutions to employ teachers in agricultural science, and possibly to provide a number of scholarships and in coöperation with the central educational authorities in each colony, the teachers in the elementary schools will be given a course of instruction in the principles of agriculture, to enable them to give simple instruction and conduct school gardens. It is proposed to attach an agricultural instructor to each of the botanic stations, who will travel about holding meetings and demonstrations, and imparting information on improved methods directly to the planters; and in addition instructors or experts in special lines, will be employed to spend a month or two on each island. The publications of the department will include handbooks on the cultivation of special crops, bulletins and leaflets—the latter especially being in very simple clear language. The *West Indian Bulletin*, mentioned above, will be issued by the department periodically.