

pany the bolometric observations. Also a pyranometer is employed to determine the sky radiation.

The young men find pleasant companions at the great copper mine at Chuquicamata. At present they are boarding with a Chilean family at Calama, but as both are good cooks they may wish to board themselves. The railway and the river both pass the town of Calama, so that there is no such desert isolation as might be feared. To the east are the Andes Mountains. The peaks in that neighborhood rise to 16,000 or 17,000 feet. Some are volcanic but none of these are very near.

It is hoped that the work will be continued for several years at least, and that nearly daily observations may be obtained. The application of the results to meteorology is something which may prove to have great possibilities. To exploit them a long and nearly unbroken series of solar radiation observations must be obtained.

Observations were begun on July 27, under exceptionally favorable conditions of the experimental equipment. At latest report, on October 22, complete solar constant determinations had been made on five days in July, twenty-seven days in August, eighteen days in September and nineteen days in October, a total of sixty-nine days out of eighty-eight days elapsed.

Owing to the great zeal and industry of the observers and the excellent special computing facilities at their disposal, all of the observations had been completely worked up to date. If necessary for meteorological purposes it would be possible for them to telegraph the solar constant value on the same day observed.

Notwithstanding the high percentage of cloudless days, the sky conditions have not proved quite as satisfactory as had been hoped, owing to the presence of considerable haze and the occasional formation of cirrus clouds. While these modifications of transparency are not serious enough to introduce large errors in the results (all values have fallen between 1.88 and 2.02 calories) they are serious obstacles to the investigation of variations of the sun which should be measured to one per

cent. of the solar constant or better. Efforts are now being made with good prospect of success to devise an instantaneous method of determining the sky transparency so as to avoid error from changes of transparency occurring progressively during several hours.

The average value of the solar constant as thus far obtained at Calama is 1.951 calories per square centimeter per minute. The mean of all values obtained prior to 1914 was 1.932. At present the solar activity as measured by sun-spots is still large, though declining. In view of the past measurements of the solar constant and past investigations of the meteorological phenomena of the world it is to be expected that somewhat lower values of the solar constant and somewhat more cloudless observing conditions will be found at Calama after a year or two.

THE HARVARD ENGINEERING SCHOOL

FOLLOWING the decision of the Supreme Court of Massachusetts that the agreement with the Institute of Technology is not in accord with the will of the late Gordon McKay, Harvard has reorganized its engineering school on a basis satisfactory both to the trustees of the McKay estate and to the governing boards of the university. The new plan, however, will be subject to the approval of the Court. The full text of the vote passed by the Harvard Corporation and consented to by the Board of Overseers establishing the school follows:

Voted to establish a School of Engineering upon the following basis:

WHEREAS, in reconstructing an engineering school in Harvard University it is important to lay stress upon fundamental principles; to make use of the courses in Harvard College so far as is consistent with the curriculum of the school; and to conduct the school under a faculty of its own the corporation hereby adopts the following plan of organization:

1. Name. The name of the school shall be the Harvard Engineering School.

2. Departments. The school shall provide "all grades of instruction from the lowest to the highest" and the instruction provided shall "be kept

accessible to pupils who have had no other opportunities of previous education than those which the free public schools afford."

3. Admission. Inasmuch as the entrance examinations to Harvard College now admit freely boys from good high schools, the requirements for admission to the engineering school shall be the same as for admission to Harvard College. Admission to advanced standing and special study shall be administered by the engineering faculty.

4. Fees. The fees of students in the school shall be the same as for students in Harvard College, except that supplementary fees for additional or for laboratory courses may be charged.

5. Class rooms and laboratories. The work of the school shall be carried on in the class rooms and laboratories of the university, but arrangements may be made from time to time for the use of the facilities of other institutions for any part of the work (in its advanced technical courses) when the needs, financial resources and best interests of the school so require.

Arrangements for the use of facilities of other institutions, or the interchange of instruction, shall be made for a period of only one year at a time.

When there shall be income from the funds of the McKay endowment available, in the judgment of the president and fellows, for the construction of new buildings for the engineering school, containing offices, laboratories, workrooms and classrooms, such buildings are to be constructed on Harvard University grounds and bear the name of Gordon McKay.

6. Faculty. The faculty of the school shall consist of the president of the university and of those professors, associate professors, assistant professors and instructors appointed for more than one year, the greater part of whose work of instruction is done in the school, and of a limited number of other teachers of subjects offered in the school to be appointed in the usual way. The term of appointment of a teacher from any other institution who gives instruction in the school shall be for one year only; his title shall be lecturer, instructor or assistant.

The faculty shall, under the direction of the corporation, have control of all instruction given in the school wherever the instruction may be given.

7. Degrees. A student satisfactorily fulfilling the requirements of a prescribed four-year program in any of the engineering fields shall be awarded the degree of bachelor of science in that field.

The degree of master of science, or an equivalent

degree, shall be awarded upon the successful completion of at least one additional year of study. For the doctor's degree the requirements shall be similar to those in the graduate school of arts and sciences.

8. Credit for instruction elsewhere. As in the case of every faculty the faculty of the engineering school may, in its discretion from time to time, allow credit towards the degree under its control for instruction received at another institution or by other instructors.

9. Courses in the school, or the services of its staff, may be made available to qualified students of other institutions.

10. This plan shall be submitted to the Supreme Judicial Court of Massachusetts, or a justice thereof, for approval.

The faculty of the school of engineering is as follows:

A. Lawrence Lowell, president; George F. Swain, Gordon McKay professor of civil engineering; George S. Raymer, assistant professor of mining; Arthur E. Kennelly, professor of electrical engineering; Henry L. Smyth, professor of mining and metallurgy, and director of the mining and metallurgical laboratories; Harry E. Clifford, Gordon McKay professor of electrical engineering; Lewis J. Johnson, professor of civil engineering; Albert Sauver, professor of metallurgy and metallography; George C. Whipple, Gordon McKay professor of sanitary engineering; Comfort A. Adams, Abbott and James Lawrence professor of electrical engineering; Frank A. Kennedy, associate professor of engineering drawing; Lionel S. Marks, professor of mechanical engineering; George W. Pierce, professor of physics and director of the Cruft Memorial Laboratory; Hector J. Hughes, professor of civil engineering and director of the engineering camp; Edward V. Huntington, associate professor of mathematics; Gregory P. Baxter, professor of chemistry; Lawrence J. Henderson, assistant professor of biological chemistry; Louis C. Graton, professor of economic geology; Arthur E. Norton, assistant professor of mechanical engineering; Harvey N. Davis, assistant professor of physics; Grinnell Jones, assistant professor of chemistry; Emory L. Chaffee, assistant professor of physics.

THE MEDALLISTS OF THE ROYAL SOCIETY

At the anniversary meeting of the Royal Society on November 30, medals were pre-