

as rapidly as the pressure gradient. This was more noticeable with the coarse shot than with the finer. For pressure gradients of about 0.01 cm. of water pressure per centimeter of length of material, the rate of flow through the coarsest shot was ten times the rate through the finest, while for a pressure gradient fifty times as great the rate of flow was a little less than three times as great in the coarsest as in the finest. With each size of shot the space occupied by air was about 39 per cent. of the total space occupied by the shot.

WM. S. DAY,
Sec'y of Section.

DISCUSSION AND CORRESPONDENCE.

A DISCLAIMER.

THE attention of the undersigned has been called to the fact that an organization known as 'The American College of Sciences,' situated in Philadelphia, is issuing circulars advertising a course of instruction in hypnotism as prepared in part by them. These circulars contain many statements about hypnotism and about the advantages to be derived from its study and practice which are not justified by the articles written by the undersigned, which in their judgment cannot be substantiated by any facts known to science, and which they believe to be in the highest degree misleading. Furthermore, the undersigned are of the opinion that the practice of hypnotism by the general public is attended by dangers which have no compensating advantages, and would in no case countenance any scheme which encourages its practice under such conditions. They feel it incumbent upon them, therefore, to make a public statement of the circumstances under which these articles were written.

Each of them was requested, individually, by 'The New York State Publishing Company,' of Rochester N. Y., to prepare an article for a collection of such articles. Inquiries made of this Company elicited no suggestion that the collection was to be issued by any other than the usual method of publication and sale, and the articles were contributed by the undersigned without their having any knowledge or suspicion that they would be used as constituent parts of a course of instruction in hypnotism.

Had they known that they would be so used, they would have refused to contribute the articles in question. They now disclaim all responsibility for the methods adopted by the American College of Sciences and for all statements made in its publications, excepting only those found in the several articles above referred to, and for them their individual authors are alone responsible.

While the position of the undersigned on these questions is perhaps already sufficiently well known to the academic world, they feel that this disclaimer is due to the general public.

J. MARK BALDWIN, Princeton University.

W. P. CARR, Columbian University.

E. W. SCRIPTURE, Yale University.

J. W. SLAUGHTER, University of Michigan.

ALFRED REGINALD ALLEN, Philadelphia Polyclinic Hospital.

GABRIEL CAMPBELL, Dartmouth College.

ARTHUR MACDONALD, U. S. Bureau of Education.

JAMES H. LEUBA, Bryn Mawr College.

ROBERT M. YERKES, Harvard University.

CLARK WISSLER, Columbia University.

ERNEST CARROLL MOORE, University of California.

EDWARD H. ELDRIDGE, Temple College.

WILLIAM ROMAIN NEWBOLD, University of Pennsylvania.

CURRENT NOTES ON METEOROLOGY.

A RECENT STUDY OF ECLIPSE METEOROLOGY.

'A DISCUSSION on the Observations recorded during the Solar Eclipse of January 22, 1898, at 154 Meteorological Stations in India' is the title of Vol. XI, Part II, of the Indian Meteorological Memoirs (Calcutta, 1900). This is a report by Mr. John Eliot, Meteorological Reporter to the Government of India, consisting of 66 pages of text and tables, together with 38 plates showing curves of temperature, pressure, cloudiness, humidity, etc., at different stations. In these plates the actual and probable curves of the diurnal variation of the different weather elements are given for a large number of stations, so that the effects produced by the eclipse can easily be seen. A brief summary of results gives in a very condensed form the most important points brought out in Mr. Eliot's study.

The total reduction of air temperature accompanying and due to the eclipse varied directly as the amount of the greatest obscuration of the sun, and also to a slight extent with local conditions and peculiarities of air movement. The *average* maximum reduction near the belt of totality in the interior of India was 8°. The maximum reduction of temperature appears to have occurred at Karwar (12°), and at Sahdol (10°). The time of the greatest diminution of temperature followed the time of greatest obscuration of the sun by an average interval of 23 minutes. The pressure observations indicate that there was a steady increase of pressure during the first stage of the eclipse, of little or no resulting variation during the second stage, and of increase after the termination of the eclipse at a smaller rate than during the first stage, and also at a decreasing rate. The air movement fell off very rapidly during the first stage (that of decreasing heat and light), and was feeble during the greater part of the second stage. One of the most noteworthy meteorological features of the eclipse was a short sudden gust which occurred about twenty minutes after the commencement of the eclipse at a majority of stations in and near the belt of totality. There was a large and rapid increase of the vapor pressure and also of the relative humidity, followed by an equally large and rapid decrease, the whole constituting an oscillatory variation of large amplitude and very short period.

NATIONAL GEOGRAPHIC MAGAZINE.

THE *National Geographic Magazine* for November contains three articles of meteorological interest. The first is an account of 'The Manila Observatory,' by Father José Algué, S. J. This observatory has done excellent work, especially in connection with the typhoons of the Far East. Frequent reference has been made to the publications of the Manila Observatory in these Notes. The second paper is by Mr. F. H. Newell, of the U. S. Geological Survey, and deals with *The Limited Water Supply of the Arid Region*. The land west of the 100th meridian was, as Mr. Newell points out, at first thought to be worthless for agricultural purposes. Then the pendulum swung far in the

other direction, and the general feeling was that there was abundant water for irrigation and that all the land could be utilized. Finally we have reached the present stage, when the limits of the water supply are coming to be fairly well seen, 'and the statement that only five or ten per cent. of the land can be reclaimed excites comparatively little interest.' The third paper of meteorological importance is one by Gen. A. W. Greeley, entitled 'Hurricanes on the Coast of Texas,' in which an account is given of the hurricane of September 15-16, 1875, 'which caused a relatively greater loss of life and property to the town of Indianola, Texas, than was inflicted on Galveston by the recent hurricane.'

THE CAPE HORN PASSAGE.

THE November *Pilot Chart of the North Pacific Ocean* presents a brief but interesting discussion of the passage for sailing vessels around Cape Horn to the westward. This discussion is based on the reports received from 22 vessels which rounded Cape Horn from east to west during 1899, and brings out in a very striking manner the direct control exercised over the sailing routes around Cape Horn by even the temporary winds of a cyclonic depression. It appears that the most favorable weather condition for the passage is the presence, during the period necessary for rounding Cape Horn and for crossing latitude 50°S. in the Pacific, of a center of low pressure in the immediate vicinity of the Cape, and not too far to the southward. This distribution of pressure gives N.E., E. and S.E. winds in succession in the case of a west-bound vessel which keeps this center constantly on the starboard side, *i. e.*; which passes the center to the southward. One of the fastest passages made around Cape Horn in 1899, that of the British bark *Inveramsay*, was made under these conditions.

UNDERGROUND TEMPERATURES DURING A HOT WAVE IN SOUTH AUSTRALIA.

IN his report on the *Rainfall in South Australia and the Northern Territory during 1897*, Sir Charles Todd, Government astronomer of South Australia, calls attention to an interesting case of slow penetration into the ground of the high temperatures of a hot wave. During

February, 1897, there occurred a long spell of hot weather, lasting from the 7th to the 18th with maximum temperatures between 82.6° on the 7th and 107.3° on the 10th, or over 100° on five days and over 90° on ten consecutive days. On the morning of February 8th the temperature at the Adelaide Observatory at three feet below the surface was 71.5°; at five feet, 68.6°; and at eight feet, 67.5°. On the morning of the 18th the readings were 73.6°; 69.3° and 68.4° respectively, showing a gradual increase during the intervening period, the increase being 2.1° in the ten days at three feet, 0.7° at five feet and 0.9° at eight feet. These observations show clearly 'that it requires a very long continuance of heat to materially affect the thermometers ten feet only below the surface.'

R. DEC. WARD.

BOTANICAL NOTES.

THE POWDERY MILDEWS.

A NOTABLE contribution to the literature of fungology has appeared in Mr. Ernest S. Salmon's 'Monograph of the Erysiphaceæ,' published as Volume XI. of the Memoirs of the Torrey Botanical Club. It constitutes a thick octavo pamphlet of nearly three hundred pages, and nine plates of one hundred and seventy-five figures. The paper opens with a couple of pages of remarks on the limits of the family, eight or nine pages on morphology and life history, a few pages devoted to the history of the study of the group, the connection between host and parasite, and distribution of the species. The family is restricted to the six genera *Sphaerotheca*, *Podosphaera*, *Uncinula*, *Microsphaera*, *Erysiphe* and *Phyllactinia*. All the known species in the world are included, and it speaks well for the conservatism of the author that although he examined the material in the most important collections in Europe and America, he has found it necessary to describe but two new species and two new varieties. Such conservatism and self-denial are most commendable and encouraging, and may well serve as a model for other monographers, who too often find new species every time they turn over their material.

So conservative has been the writer of this

monograph that under his treatment the great number of specific names in the family is reduced to but sixty species and varieties. Thus, while *Erysiphe* has had one hundred and sixty-five species and varietal names associated with it, there are here but nine; so the fifty-eight names under *Microsphaera*, are reduced to nineteen; the twenty-four under *Podosphaera* to five; the twenty-one under *Sphaerotheca* to six; the thirty-eight under *Uncinula*, to twenty; and the nine under *Phyllactinia*, to one. Of course it is not to be supposed that Mr. Salmon made all these reductions; to a large extent they had been made already by other students of the family, but it is greatly to his credit that with such an opportunity he did not give us a greatly increased list.

According to this monograph the accepted names of some of the more common of the Powdery Mildews are as follows: Cherry Mildew, *Podosphaera oxycanthæ*; Rose Mildew, *Sphaerotheca pannosa*; Gooseberry Mildew, *Sphaerotheca mors-uvæ*; Willow Mildew, *Uncinula salicis*; Grape Mildew, *Uncinula necator*; Lilac Mildew, *Microsphaera alni*; Pea Mildew, *Erysiphe polygoni*; Sunflower Mildew, *Erysiphe cichoracearum*.

PLANT BREEDING.

FROM a paper by H. J. Webber and E. A. Bessey on 'The Progress of Plant Breeding in the United States,' recently published in the Year-book of the Department of Agriculture, the scientific botanist may learn much which may well surprise him as to what has been accomplished in the work of plant breeding. That man can bring about definite results by the careful breeding of animals is more or less well known, but that plants may be bred with as definite an object in view, and as successfully, is not yet a matter of common knowledge.

It is only during the latter half of the present century that much progress has been made in plant breeding proper, the earlier efforts at the improvement of plants having been through the selection of seeds of the most desirable plants for further cultivation. Downing, Hovey, Wilder and some other far-seeing horticulturists of the earlier days continually urged the breeding ('crossing') of the better varieties of fruits