

to furnish at moderate cost a brief course in note-reading for the smaller village and country schools, in which a full graded course cannot well be followed.

— Dr. Francis Warner (physician to the London Hospital, etc.) has prepared for publication his lectures on "The Growth of Intellectual Faculty," delivered for the Teachers' Training Syndicate, in Cambridge, during the Lent term in 1888 and 1889. The author insists on the necessity of observing physical facts, their causes and effects, when considering mental and moral questions, and has worked out a system of observing pupils in school. Special attention is given to such states as "attention," nervousness, sleep, fidgetiness, disobedience, lying, headache, low development, etc. Observations made in schools are largely referred to, and the notes of many cases are given. The book, which is illustrated with diagrams, will be issued shortly by Macmillan & Co.

— A year or two ago, a series of articles was published in *The Forum*, entitled "How I Was Educated." The contributors were presidents of universities and colleges, other prominent educators, and men of letters. These autobiographical papers were collected and printed in a separate volume, and now belong to the standard educational literature of the United States. A new series of articles will appear forthwith on an analogous question; viz., "What were the influences—the persons, the circumstances, the books—that have operated most to form the character and occupation of a number of notable scholars and men of letters and science?" The contributors to this series will include eight or ten of the foremost men of letters, men of science, teachers, and statesmen, American and foreign.

— Dr. E. N. Sneath, lecturer on the history of philosophy at Yale, has been inspiring the preparation of a series of small volumes of selections from the leading philosophers from Descartes down, so arranged as to present an outline of their systems. Each volume will contain a biographical sketch of the author, a statement of the historical position of the system, and a bibliography. Those so far arranged for are "Descartes," by Professor Ladd of Yale; "Spinoza," by Professor Fullerton of the University of Pennsylvania; "Locke," by Professor Russell of Williams; "Berkeley," by Ex-President Porter of Yale; "Hume," by Dr. Sneath of Yale; and "Hegel," by Professor Royce of Harvard. Kant, Comte, and Spencer will certainly be added to the series, and others if encouragement is received. The publishers will be Henry Holt & Co.

— Mr. D. C. Thomson, author of "The Life and Works of Thomas Bewick" and "The Life of H. K. Browne, 'Phiz,'" has had in preparation for the past three years an important work on the Barbizon School of Painters. This volume will be similar in size (quarto) and character to the "Life of Bewick" and the "Life of 'Phiz,'" and will be illustrated with numerous plates and wood-engravings. The work will supply a complete biographical and critical account of the group of five celebrated French painters known as the Barbizon School, — Theodore Rousseau, Jean François Millet, Narcisse Virgilio Diaz, Charles François D'Aubigny, and Jean Baptiste Camille Corot. Such a publication necessarily demands excellent illustrations; and many representations will be given of pictures, drawings, and portraits, in various methods of reproduction, — etching, photogravure, wood-engraving, etc. It is proposed to publish the volume by subscription, which should be forwarded to Scribner & Welford, New York, without delay.

#### LETTERS TO THE EDITOR.

\*\*\* Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

#### The Psychrometer.

THERE have recently appeared two quite extended investigations on the use of the psychrometer (wet and dry bulb thermometers) in determining the moisture-contents of the air. The first is a comparison with the condensing hygrometer, made by Pro-

fessor S. A. Hill of Allahabad, India, published in the *Journal of the Asiatic Society of Bengal* (vol. vii., 1888). Recent investigations in this country have shown the entire uselessness of trying to obtain refined results with an unventilated psychrometer, and we note that a partial neglect of this precaution has led to wrong inferences in this paper. The experiments with the Regnault apparatus revealed the same difficulties, with the plate, fumes of ether, etc., that have been noted by others. The comparisons were made with artificial ventilation, as well as in a breeze and in still air, at pressures ranging from 20.6 to 29.4 inches. There were twenty-seven observations; and of these, four had an artificial ventilation. The method of ventilation is not given, but we may assume that it was sufficient to give good readings. The following are the results:—

| Pressure. | Dry Bulb. | Wet Bulb. | Dew Point. |              |
|-----------|-----------|-----------|------------|--------------|
|           |           |           | Regnault.  | Hazen Table. |
| 23.55     | 71.4      | 49.5      | 19.9       | 19.5         |
| 23.50     | 60.3      | 52.1      | 45.7       | 45.0         |
| 25.80     | 86.8      | 62.1      | 43.6       | 43.8         |
| 23.51     | 69.3      | 59.6      | 52.6       | 52.7         |

The results given in the last two columns are most extraordinary. There is almost a perfect accordance between the dew-point observed at heights up to 6,500 feet and that computed for a height of 600 feet from the ventilated psychrometer. Without more information as to the accuracy of the condensing hygrometer and the sufficiency of the ventilation, it would be dangerous to argue upon these results; but the coincidence between them and those obtained in this country by the writer up to 3,000 feet is very remarkable. Professor Hill, by combining together all the ventilated and unventilated readings, obtains an exactly opposite result, but it is now known that unventilated psychrometer readings are worthless for careful comparison.

The second paper is by Dr. Haldane and M. S. Pembrey of Oxford, England. It is to be found in the *Philosophical Magazine*, April, 1890, pp. 306-331. In this paper an attempt is made to compare the unventilated psychrometer with determinations of moisture by chemical methods. The experimenters have given the chemical method an exhaustive study, and their results in that line are excellent. The comparisons with the psychrometer, twelve in number, are unsatisfactory and lead to erroneous conclusions for the reason already given. Five out of the total were made in so damp an air that they cannot help in the comparison. The other seven are as follows:—

| Dry.      | Wet. | Vapor Pressure in Millimetres Computed. |           |           |        |              | (6) — (3) | (7) — (3) |
|-----------|------|---|-----------|-----------|--------|--------------|-----------|-----------|
|           |      | Observed Chemical.                      | Glaisher. | Regnault. | Hazen. | Gl., H. & P. |           |           |
| (1)       | (2)  | (3)                                     | (4)       | (5)       | (6)    | (7)          | (8)       | (9)       |
| 61.6      | 53.0 | 7.43                                    | 8.58      | 7.37      | 7.57   | 7.76         | .14       | .33       |
| 61.3      | 54.9 | 8.99                                    | 9.65      | 8.84      | 9.14   | 9.00         | .15       | .01       |
| 63.7      | 56.0 | 8.78                                    | 9.63      | 8.79      | 9.14   | 8.99         | .36       | .21       |
| 61.5      | 53.0 | 7.63                                    | 8.58      | 7.37      | 7.87   | 7.78         | .24       | .15       |
| 63.0      | 55.2 | 8.90                                    | 9.40      | 8.46      | 8.97   | 8.68         | .07       | -.22      |
| 64.1      | 57.0 | 10.00                                   | 10.18     | 9.45      | 9.53   | 9.52         | -.17      | -.48      |
| 64.6      | 57.4 | 10.23                                   | 10.49     | 9.60      | 10.03  | 9.67         | -.20      | -.56      |
| Mean..... |      | 8.85                                    | 9.50      | 8.55      | 8.94   | 8.77         | .09       | -.08      |

In column (4) are given vapor pressures computed by Glaisher's Tables, as published in Guyot's Tables, 1884. It is very gratify-

ing to note that these have been materially modified recently, as shown by column (7). Formerly they were exceedingly unsatisfactory. It will be seen that the most satisfactory argument lies in columns (3) and (6); but since column (6) is for a ventilated psychrometer, and the readings used were unventilated, we must conclude that the chemical method for obtaining vapor pressure, as given by this investigation, does not agree with the condensing

hygrometer. It is much to be regretted that comparisons were not instituted between the chemical method, the sling psychrometer, and the condensing hygrometer. This paper is a valuable addition to our knowledge of chemical methods, and narrows down the remaining unexplored field of research for measuring the moisture of the air.

H. A. HAZEN.

Washington, April 16.

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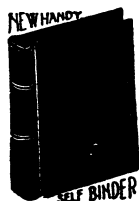
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