— Science Notes. —

THERMOMETERS.

ALTHOUGH the thermometer is an instrument in daily use, not only in the laboratory, but also in the hospital ward and in the nursery, comparatively few persons know anything about the early history of the thermometer, or what methods have been devised of measuring temperatures at which glass could melt and mercury boil. All this is described in a most interesting manner by Professor Roberts-Austen, in a lecture delivered to the Society of Arts, and recently published in its journal.

As far back as the eighth century, the want of some means by which to measure the high temperatures appears to have been felt, for the chemist Geber then wrote a treatise on furnaces, in which he regrets that fire is not a thing that can be measured. Several centuries later, Josiah Wedgwood, the celebrated potter, invented a very imperfect instrument which expanded on the contraction of damp clay at a high temperature, and in communicating to the Royal Society a description of his invention, he deplores the insufficiency of such expressions as "a red heat, a bright red heat, and a white heat."

The construction of the air thermometers was an important advance. Mercury in the ordinary thermometer shows an increase in temperature by expanding, and a decreae by contracting, but in these changes it is not peculiar; almost all kinds of matter are similarly affected. By using an air thermometer, therefore, one difficulty is overcome; the expanding substance is already a gas, and there is no liability of a change of physical state resulting from increased temperature, as in the case of mercury. But as air is invisible, an index such as a globule of mercury must be used to show the rise and fall of the air in the tube. The earliest experimenter to use such a thermometer was Robert Boyle, "the father of modern chemistry and brother of the Earl of Cork." During the last few years the great advances made in the study of electricity have resulted in many important practical applications, and among these may be counted the construction of high temperature thermometers or pyrometers. Space will not permit of reference to more than one such instrument—that invented by Professor Le Chatelier. It consists of a junction of two wires, one of platinum, and the other of an alloy of platinum and rhodium; when this junction is heated, a current of electricity is produced, and the strength of the current is a measure of the temperature. The current moves a magnetic needle, on which is fixed a small mirror reflecting a bright light; hence as the mirror changes its position with the turning of the needle, a spot of light is made to travel along a scale showing the exact number of degrees of temperature.

Professor Roberts-Austen has obtained, by the aid of photography and the use of a sensitised plate travelling by clockwork, beautiful curves, traced by the spot of light, and showing the different rates of cooling of various metals and alloys as they approach and pass their melting points. These curves are comparable to those obtained from the contractions of muscle and pulsations of arteries, in being permanent registers of evanescent phenomena.

Notes on Art.

ROYAL SOCIETY OF BRITISH ARTISTS.

IN continuing the examination of the Autumn Exhibitions, the pictures sent to the above Society, whose galleries are in Suffolk Street, claim attention.

There is always much student work in this gallery, sometimes of considerable promise, but, this year, it is hardly up to the average. As is usual in English Art, landscapes appeal to our artists more than figure subjects; this has been very noteworthy in recent years, and it must be confessed that the landscapes form the strongest part of the Exhibition.

One of the most charming and important works is "*A Cooling Stream*," by Adam E. Protor—very sweet and tender in colour. Another effective landscape is one by W. V. P. Yglesias, "*In the time of May and Buttercups*." W. Val Davis's picture, "*The Last Rays*," is admirable in the arrangement of colours, beautiful and strong in treatment. "*Evening*," by J. Olsson, is another study in rich colour that deserves notice, but here the colours are massed together almost in groups, which a little suggests a map. A clever little study is "*Ploughing*," by J. Sanderson-Wells, The warm greys of "*Mussel Gatherers, Normandy*," is a pleasant change of colour, and strong and good in its sober treatment. "*Silver Lamps at a distant Shrine—Interior of the Duomo Sienna*," by Wake Bayliss, one of the few good pictures other than landscapes, is luminous in its dark golden brown tones.

The women artists, who are well known, do not appear to be represented; nevertheless, there are some clever little studies. Two, by Miss Fanny Moody, are interesting, although not her best work. A pastel study, by Miss B. Clarke, of "*A Girl Shelling Peas*," is good, quiet colour. The most important work, by a woman artist, is, perhaps, "*Little Lamb, here I am*," a charming landscape of spring-time, with a cleverly arranged child and lamb in the foreground.

Among the pictures to look at are "*Homewards*," by R. Talbot Kelly; "*Summer*," by N. Arthur Torraine; "*A Knotty Point at the Parish Council*," by Walter J. Morgan; "*A Cornfield*," by Sidney Moore; "*The Sisters in the Forest in Spring*," by G. D. Hiscox; and a pretty water colour, "*Evening: near Witley, Surrey*," by Leopold Rivers.

This is all that need be said about a somewhat uninteresting Exhibition.

FLORENCE M. ROBERTS-AUSTEN.

A Book of the Week.

"THE REAL THING."*

In a great deal of Mr. Henry James's work, the perfection of Form is carried to such an extent that it becomes superfine and loses the charm of spontaneousness, and the style is apt to weary the reader from excess of elaboration in its composition. In one of the stories in this volume he says of a woman writer: "She never recognised the—— 'torment of form.'"

* "The Real Thing and Other Tales." By Henry James. (Macmillan & Co., 1893.)

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