

taken near mid-eclipse (Fig. 1), showing the thin crescent of the sun as photographed in the calcium radiation *K*. For visual observations the crescent was projected, by a  $3\frac{1}{4}$ -inch telescope, on to a white screen, the 4-inch image thus obtained showing exceedingly well the mountain peaks on the moon's limb. A noticeable feature was the ease with which one could produce crescent images through small apertures. The spaces between the fingers of an extended hand produced several, while thousands were seen projected on to a door by the uneven and dusty glass of a south window. The peculiar gloom which overspread everything near the maximum phase was very striking, being similar to that which precedes a dark thunderstorm.

The charts exhibited at the Meteorological Office show the thermometric effects of the solar obscuration very markedly. For the usual daily sheets, "quick-run" sheets were substituted on the various recording instruments for the eclipse period. The minimum air temperature during the run was recorded at 12h. 21m., 10.4 minutes after the maximum phase; during the eclipse the temperature ranged from 56° to 54° F., the maximum for the whole day being 59.3° at 2h. 45m. p.m. The Callendar radiation recorder showed an average rate of radiation received on a horizontal surface, during the eclipse time, of 0.030 watt per sq. cm., the maximum being 0.054 watt at 1h. 30m. p.m. and the minimum rate being 0.007 watt from 12h. 11m. to 12h. 15m., just after the maximum phase of the eclipse; the maximum rate of radiation for the day was 0.057 watt per sq. cm. at 1h. 50m. (1 cal. per minute = 0.07 watt).

The fall in temperature was very perceptible, but the actual readings are somewhat complicated, in their possible interpretation, by a breeze which sprung up about 11 a.m. and lulled at about 1h. 30m. p.m. At Balham Mr. Creeze recorded shade temperatures of 56° F. at the beginning, 52° at maximum phase, 51° at 12h. 30m. p.m., and 55.5° at 1h. 55m. p.m.

#### SARDINES.

A CASE recently decided at the London Guildhall by Alderman Sir George Woodman, in which a large part of both the evidence and the arguments turned on the question of the true meaning of the word "sardine," has excited considerable interest. On one side it was contended that sardines were the young of the pilchard (*Clupea pilchardus*) preserved in a particular way in oil and put up in tins, according to the methods employed on the west coast of France. On the other side, an attempt was made to show that the name "sardine" had in practice been extended, so that it included any small fish preserved in oil and put up in tins. Although the defendant, who was being prosecuted for selling Norwegian sprats or brisling put up in oil in tins as "sardines," won his case (without costs) on the ground that he had acted innocently, the

decision on the question of the meaning of the name "sardine" followed closely the evidence given by the majority of the scientific experts. The Alderman's decision on this point was:—

"My decision is that the term 'sardine' is of French origin. It is the French name for the pilchard, the fish scientifically known as *Clupea pilchardus*. The industry of packing the immature pilchard in tins was started in France in 1882, and the fish so packed and imported into this country were universally known as 'sardines.' The word 'sardine' has now become anglicised, and I hold that the meaning of the term is 'the immature pilchard prepared and packed in oil in tins.' This is not what the defendant sold. The 'Skipper Sardines' sold by him were the Norwegian fish known as 'brisling.' The 'brisling' is the *Clupea sprattus* of the same family, but of a different species from the *Clupea pilchardus*, and it is the same fish, allowing for differences caused by local environment, as the English sprat."

The most interesting and complete account of the name "sardine" which we have seen was not, however, given in the evidence presented to the court, in so far as that evidence was published, but occurs under the signature "Quibbon," which we believe conceals the identity of a well-known and trustworthy authority on fishery questions, who writes in the *Fish Trades Gazette* (March 30, 1912) as follows:—

"The name 'Sardine.' This name is very widely applied either to the young of the pilchard, as with us, or to the pilchard itself. Thus the species *Clupea pilchardus*, our pilchard, is called *sardina* in Italy, *sardinha* in Portugal, *sardina* in Spain (where it seems also to apply to the anchovy), *sardine* in France and in Germany, *sardin* in Norway and Sweden (also *pilchard* in Swedish), *pelsler* in Holland, and *pilchard* in Denmark; in Russia it is called *Ssardinka*. It is interesting to learn that it was the first of the Latin names to be used among the Anglo-Saxons for the herring. Eleven hundred years ago the Italian priests who endeavoured to instil a little learning into the Anglo-Saxon mind gave the name *sardinus* as the equivalent to the word *heringas*, but later on this gave way to the name *allec*. The smelt (Anglo-Saxon *smeltas*) was called *sardus*. The word is derived from the island Sardinia (Greek Σαρδῶν), and the fish was known to the Greeks as *sardine* (σαρδῖνη or σαρδῖνος). It is curious that to this day the term *sardyn* or *schardyn* is applied all along the Dutch coast to the sprat, and the usual net for catching sprats is called *sardynkuil*. A Dutch fisherman confines the term *sprott* to the smoked sprat; the fresh sprat, or the sprat fishing, is always referred to as above stated. This has been the case for a very long time, as is evident from an old work, 'Nieuwe Cronyk van Zeeland,' published in 1696. Centuries ago Dutch trade with the Mediterranean was very great, and no doubt the mariners brought back the term 'sardine' as applied in that sea, and used it in Holland for the small *clupeoids*, the sprats."

It is an easy matter to distinguish the sprat either from the young herring or from the young pilchard by the very much greater development of the spines along the ventral edge of the body in the sprat. The distinction can be made by the sense of touch alone, as is well known to many fishermen, for if the finger be passed along the belly of the fish from the tail towards the head,

the sharp spines of the sprat are distinctly felt, whereas the pilchard and the herring both feel comparatively smooth. To distinguish between young pilchards and young herrings, especially after they have been preserved in oil, is a more difficult matter, the size of the scales, which are relatively much larger in the pilchard, being the best guide.

PROF. A. LAWRENCE ROTCH.

PROF. ABBOTT LAWRENCE ROTCH, whose death we recorded with regret last week, was born on June 6, 1861. He received his education at the Massachusetts Institute of Technology, whence he graduated in the department of mechanical engineering in 1884. He became interested in meteorological investigation, and in 1885 founded a meteorological observatory at Blue Hill, Massachusetts, at a height of 635 feet above sea-level, for the purposes of observation, research, and local prediction. He showed characteristic independence in refusing at the outset to accept official help in maintaining the observatory at the expense of fettering it with official control. His main work was done in connection with this observatory, which he maintained and directed throughout. The results obtained were published from time to time in separate parts of the *Annals of the Astronomical Observatory of Harvard College*. For the first ten years the work consisted principally of the routine of an ordinary first-order observatory with reduction and analysis of the records, and special investigations of certain problems.

In 1894 the exploration of the free atmosphere by means of kites was begun at the observatory, and continued through succeeding years, steel piano wire (first used by E. D. Archibald in the early 'eighties) and a winding gear driven by a steam engine being adopted as the work developed, until a complete series of records up to a height of three miles had been obtained. In this work Rotch was a pioneer, and his methods were adopted at a later date in this country and on the Continent and by the United States Weather Bureau at the Mount Weather Observatory. In 1904 and the three following years seventy-six balloons carrying self-recording instruments were sent up under his direction at St. Louis, and of these seventy-two were recovered. Some of these reached heights exceeding ten miles, and temperatures below  $-70^{\circ}$  C. were recorded. Our knowledge of the higher parts of the free atmosphere in the United States is almost entirely due to the results obtained in this series of ascents.

But Rotch's efforts were by no means confined to his own country. He was a constant visitor to meteorological meetings in Europe, and he was ever alert and ready to help in meteorological enterprise. With M. L. Teisserenc de Bort he fitted out expeditions in three successive years to explore the atmosphere over the tropical Atlantic, and the results obtained have exceeded in interest nearly all other contributions to meteorological discovery in recent years. Our knowledge of the variation

of the height of the stratosphere with latitude rests almost entirely on the evidence obtained in these expeditions. His most recent work was an atlas of charts of the atmosphere for aeronauts and aviators, in which he included a chart showing the best aerial routes in summer for a dirigible balloon travelling across the Atlantic between Europe and America.

The importance of his work was recognised by scientific societies both in Europe and America, and the Governments of France and Germany conferred honours upon him.

He was generous in his recognition of the work of others, and gave kindly encouragement to younger men engaged in research. His death, which occurred suddenly on April 7, 1912, at his Observatory at Blue Hill, will be regretted by meteorologists of all lands.

E. G.

NOTES.

WE are informed that the provisional programme of arrangements for the forthcoming celebration of the 250th anniversary of the Royal Society are as follows:—Monday, July 15—An evening reception of delegates at the rooms of the Royal Society. Tuesday, July 16—In the morning a commemorative service in Westminster Abbey; in the afternoon the official reception of delegates at the Royal Society and presentation of addresses; in the evening a commemorative dinner at the Guildhall. Wednesday, July 17—In the morning visits to places of interest in London; in the afternoon the Duke of Northumberland gives a garden-party at Sion House; in the evening a conversazione in the rooms of the Royal Society. Thursday, July 18—In the morning visits to places of interest in London; in the afternoon H.M. the King gives a garden-party at Windsor, to which the delegates and fellows of the society will be invited. Friday, July 19—The delegates will visit Oxford and Cambridge Universities.

IN *The Times* of April 17, and in *The Morning Post* of the following day, reference is made to the drift of a sealed bottle which was thrown overboard from the steamship *Indraghira* on November 17, 1908, in lat.  $51^{\circ} 38' S.$ , long.  $96^{\circ} 15' E.$ , by a passenger during a voyage from London to Melbourne. The bottle contained a note of the ship's position with a request that the finder would notify the sender, Mr. H. P. Adams, of Carshalton, Surrey, of the facts of the discovery. The bottle was picked up early last winter, it is thought, on the eastern coast of Wellington Island, south of Chili, in lat.  $49^{\circ} 42' S.$ , long.  $74^{\circ} 25' W.$ , having drifted eastward a distance of at least 7100 nautical miles, presumably in 1100 days or less, at a minimum rate of six miles per day. This drift, though remarkable, is by no means the longest on record. The late Mr. H. C. Russell, when Government astronomer at Sydney, contributed several papers to the Royal Society of New South Wales on "Current Papers," in which he recorded the drift of numerous bottle messages, ranging from 50 to 5000 nautical miles, and several from 8000 to more than 9800 miles. The ostensible reason for launching these