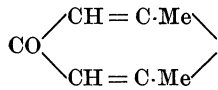
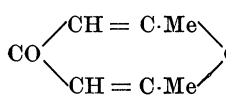
density which corresponds to a molecule containing four atoms at the fusing point of potassium iodid; red phosphorus under pressure is converted into ordinary phosphorus.

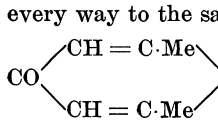
THE *Proceedings* for June 1st contain the abstract of a paper by J. N. Collie and T. Tickle, which, while dealing with an organic substance, has a direct bearing on the valence of oxygen. Dimethyl pyrone acts as a base in forming a large series of salts by the direct addition of acids without elimination of water. The chloroplatinite is also formed. From this the inference is drawn that the oxygen is the base-forming element and that its valence in the salts must be four. The formula of the base is



and of the salts



, corresponding in every way to the salts of dimethyl pyridone, as



. As there seems to be in the compound no other element which can be base-forming, it would seem that oxygen must be added to the list of base-forming elements, nitrogen, phosphorus, sulfur and iodin, and that we now have oxonium bases.

FLUORIN has been given as present in analyses of some mineral waters, as those of Mont Dore and of St. Honoré les-Bains. F. Parmentier has made a careful examination of these waters, and his results, published in the *Comptes Rendus*, show that no fluorin is present. The etched appearance of glass vessels in which these waters have stood is shown to be due to the deposition of silica, of which a considerable quantity is present in the waters, and not to any real etching or the deposition of any fluorin compound.

J. L. H.

CURRENT NOTES ON METEOROLOGY.

FOEHM WINDS.

IN the *Meteorologische Zeitschrift* for May, Billwiller gives a clear and concise account of the various kinds of winds which he believes should be classed together as *foehm winds* (*Ueber verschiedene Entstehungsarten und Erscheinungsformen des Föhms*). There are five varieties in all. The first is the best known of all, viz., the *foehm* on the northern slopes and in the northern valleys of the Alps, which occurs during the passage of an area of low pressure across central and northern Germany. It is this warm, dry wind which is so important a factor in the climate of some of the Swiss villages, Meiringen, for instance. Its rapid evaporation of the deep winter snows has gained for it the name of *shneefresser*. The north *foehm* on the southern side of the Alps is the second class, which occurs when barometric minima move across the northern Mediterranean region and thus draw down the air from the mountains, or when a barometric maximum is forming or approaching on the northern side of the Alps, thus producing a considerable gradient to the south. A simultaneous appearance of *foehm* winds may take place in both northern and southern Alpine valleys when there is a well-marked descent of the air over the mountains. This gives rise to the third class of these winds. Under the influence of the Alpine topography the slow down-settling of the air within an anticyclone may become locally hastened, and thus there results a development of air currents dynamically warmed, which constitute the fourth class of *foehm* winds. Lastly come the dry, *foehm*-like winds which have occasionally been noted as blowing out of winter anticyclones in cases where there is no effect of topography. Although the immediate cause of the occurrence of these warm and dry winds may be different in different cases, this does not affect the nature of the *foehm* itself. A distinct division cannot well be made between the various classes and the term *foehm* should, therefore, be used to describe the characteristics of the winds, rather than their immediate cause.

LIGHTNING AND THE ELECTRICITY OF THE AIR.

UNDER the title, *Lightning and the Electricity of the Air*, A. G. McAdie and A. J. Henry, of the U. S. Weather Bureau, have prepared a report which has been issued as Bulletin No. 26, of the Weather Bureau. This Bulletin consists of two

parts, the first of which, by Mr. McAdie, deals with the electrification of the atmosphere and the measurement of the potential of the air—auroras and protection from lightning. Mr. McAdie has made himself an authority on lightning in this country, and whatever he has to write about lightning always finds large numbers of attentive readers. Most of Mr. McAdie's portion of this Bulletin has previously been printed. Part II., by Mr. A. J. Henry, deals with matters of very general interest, viz., loss of life and of property by lightning; character of soil as influencing lightning strokes; kind of trees struck by lightning, and the question, is the danger of lightning stroke increasing. The Bulletin is illustrated by means of a considerable number of views of lightning flashes and of damage done by lightning, and will doubtless prove interesting and profitable reading to a great many persons.

HEAVY RAINFALL IN THE CAMEROON MOUNTAINS.

THE extraordinary rainfall at the base of Cameroon Peak (13,369 ft.) is made the subject of a brief communication by Hann, in the May number of the *Meteorologische Zeitschrift*. The mean annual rainfall at Debundja (Lat. 4°8′ N.; Long. 9°0′ E. approximately), altitude 16 ft., as determined by three years' observations, is about 370 inches. This rainfall shows a double period, viz., a maximum in June and a second maximum in September. At Bibundi, 1 km. distant from the ocean and about 10 ft. above sea level, the rainfall in the year 1897 amounted to 412 inches. These rainfalls are only exceeded by the rainfall at Cherrapunji, on the Khasi Hills, in Assam, where the annual amount is 474 inches. Hann is of the opinion that when additional stations are established on the slopes of the Cameroon Mountains, they will show a rainfall equal to that of Cherrapunji.

VERTICAL TEMPERATURE GRADIENT USED ON WEATHER MAPS.

THE daily weather map for June 16, 1899, issued at San Francisco by A. G. McAdie, Forecast Official, notes the vertical temperature gradient in the atmosphere in the vicinity of San Francisco at the time of the morning observation. We believe that this is the first instance on record in which data concerning the vertical temperature gradient have been included on a daily weather map. The following is the reference as printed at the base of the map in question: "In the vicinity of San Francisco this morning the vertical gradient of temperature is about one degree increase for 80 ft., up to an elevation of 2,500 ft. The relative humidity at sea level is nearly 100 per cent.; at Mt. Tamalpais, 23 per cent.

RECENT PUBLICATION.

Weather Forecasting: Some Facts Historical, Practical and Theoretical. WILLIS L. MOORE, Chief of U. S. Weather Bureau, U. S. Department of Agriculture, Weather Bureau, Bulletin No. 25. 8vo. Washington, D. C., 1899. Pp. 16.

THE contents of this Bulletin are sufficiently described by its full title. The matter was first printed in the *Forum* for May, 1898.

R. DE C. WARD.

SIR WILLIAM FLOWER.

IN an obituary notice of Sir William Flower, whose death we were compelled to record last week, the London *Times* comments as follows on his contributions to museum administration:

The greater part of his active life was spent in the direction of important museums, and the question of their practical organization was one in which he always took a keen interest, and in which probably his best work was done. Both by precept and example he assiduously urged the importance of museums as instruments for the advancement of knowlege, and it cannot be doubted that his efforts did much to dispel the delusion—which even now lingers on in some quarters—that any miscellaneous collection of objects, huddled together in any sort of way, is all that is wanted to constitute a useful museum. In his presidential address to the British Association at Newcastle, in 1889, he treated the subject at length, and particularly emphasized the importance of properly selecting and arranging the specimens exhibited. A museum, he pointed cut, can promote science in two ways—by affording facilities for scientific research and by providing opportunities for popu-