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-

lar instruction—and if it is to be efficient its collections must be arranged with reference to the special function regarded as its primary end. It is absurd to set before the ordinary visitor a long series of specimens only differing in the most minute details, while it is equally absurd to ask a student engaged in writing a monograph on some obscure morphological point to be satisfied with a selection of typical forms such as the former would find infinitely more instructive. These views he had an opportunity of putting into practice during the time he was head of the Natural History Museum at South Kensington. The numerous alterations he there carried out in the arrangement and nomenclature of the specimens were attended with excellent results, and the adoption of improved principles of classification, together with the relegation to store-rooms of objects which, though of value for purposes of study, were superfluous in exhibition cases, had the effect of greatly increasing the interest of the museum as well as enhancing its educational usefulness.

During the time he was in charge of the Hunterian Museum Sir William did a great deal to supply the deficiency which existed in this country of materials for studying the physical characteristics of the different races of men, and under his care the collections of the College of Surgeons increased enormously, both in extent and usefulness. For instance, in 1884 they contained 89 more or less complete skeletons and 1,380 crania (not including the Davis collection purchased in 1880), whereas 20 years before they had only 18 skeletons and 242 skulls. To him must be ascribed much of the credit of the increased opportunities thus afforded for the study of the osteological variations of man, for it was largely owing to his alertness and watchfulness that the College seized every opportunity of acquiring specimens, thus in many cases saving them from the destruction and neglect which too often is the fate of small private collections. It need scarcely be added that the objects were arranged and looked after in the most approved manner, an instance of the time and labor he spent on them being afforded by the osteological catalogue he published with carefully verified measurements of no less than 1,300 human skulls.

*SCIENTIFIC NOTES AND NEWS.*

AT its recent decennial celebration Clark University conferred the degree of LL.D. on the foreign lecturers, Professors Boltzmann, Picard, Mosso, Ramon y Cajal and Forel.

THE Albert Medal of the Society of Arts has been awarded to Sir William Crookes, F.R.S., "for his extensive and laborious researches in chemistry and in physics, researches which have, in many instances, developed into useful and practical applications in the arts and manufactures."

PROFESSOR KARL VON ZITTEL has been elected President of the Munich Academy of Sciences in succession to Professor von Pettenkofer.

SIR GEORGE STOKES has been elected a foreign member of the Berlin Academy of Sciences.

WE learn from *Nature* that a civil list pension of 60*l.* per annum has been granted to Mrs. Kanthack "in consideration of the eminent services rendered to science by her late husband, Dr. A. A. Kanthack, professor of pathology in Cambridge University."

THE French Minister of the Interior has sent Dr. Vignes to Great Britain to report upon the ophthalmological methods of that country.

GLASGOW University has conferred the degree of LL.D. on Mr. R. L. Jack, Government Geologist of Queensland.

THE Adams Prize of the University of Cambridge has been awarded to Dr. J. Larmor and Mr. G. T. Walker.

DR. F. KLEIN, professor of mathematics at Göttingen, and Dr. W. Nernst, professor of chemistry at the same university, have been elected foreign members of the Academy of Sciences at Buda-Pesth.

MR. D. L. WILDER has been appointed Assistant on the Iowa Geological Survey.

MAJOR-GENERAL SIR JOHN F. D. DONNELLY, K.C.B., retired on July 3d from the secretaryship of the British Science and Art Department, after 40 years in the public service. In consequence of Sir J. Donnelly's retirement, the Duke of Devonshire, Lord President of the Council, has made the following appointments: Sir George W. Kekewich, K.C.B., the present Secretary of the Education Department, to be