to the fundamental units in which all electromagnetic quantities are measured, *i. e.*, the units of mass, length and time.

Formerly the unit of force was referred to the unit of mass only. People talked about a pound of force. Later it was discovered that a force could also be measured in terms of the centimeter, the gram and the second. When that step was taken there was no talk about matter being abolished. Perhaps the present idea is due to the behavior of radium and uranium. When an 'atom' explodes, and exhibits qualities which entitle a few substances to be considered as cranks among substances, we have been thrown off our guard for a moment. We have had all sorts of explosives before. Some of them exploded so slowly that we did not call them explosives at all. When certain crystallized salts lose their form, due to the slow emission of the same emanation that is given off by all animals and plants, we were not greatly disturbed. Nitro-glycerin has long been going to pieces, and giving off more energy per gram per second than any radio-active body yields. But when it was found that these radio-active bodies are going to pieces, and giving off more energy per gram than any other body has been known to give before, we seem to have been induced to suspect all matter of being capable of doing so.

An architect who should learn that the bricks with which he is familiar are not the final elements in his structure would hardly be justified in losing his respect for houses. What does it matter that his bricks contain molecules, which are composed of atoms, which are composed of electrons, and perhaps something else? Does the fact that houses have been known to fall to pieces and give off energy change his estimate of those houses which do not fall? Is he justified in supposing that all houses are really falling, and that their motion will become appreciable if we wait long enough to make the motion so large that we can see it? FRANCIS E. NIPHER.

CURRENT NOTES ON METEOROLOGY.

REPORT OF THE CHIEF OF THE WEATHER BUREAU.

AMONG the most important matters referred to in the administrative portion of the report of the chief of the weather bureau for 1902–3 are the following: In place of the small chalk-plate weather map (11 x 16 ins.), now issued from twenty-three of the weather bureau stations, larger maps (22 x 16 ins.), prepared in the same way, are to be used, if the necessary additional appropriation can be secured. Professor F. H. Bigelow is continuing his studies on the general circulation of the atmosphere and the nature of cyclones and anticyclones, believing that his results 'point unmistakably to a theory which will supersede those heretofore published in meteorological literature.' One of the most important steps which have been taken in the history of the weather bureau is the plan to build up a great center of meteorological research at Mount Weather, on the crest of the Blue Ridge Mountains, about six miles from Bluemont, Va., and the work which it is proposed to do there will, if the plan can be fully carried out, lead to valuable results. Among the investigations which are announced as likely to be undertaken are the exploration of the upper air by means of kites and balloons, the study of numerous problems in solar physics, observations in electricity and magnetism, etc. A new seismograph has been procured and installed in Washington.

MONTHLY WEATHER REVIEW.

The Monthly Weather Review, for May, 1904 (dated July 22), contains the following articles of general interest: 'The Circulation in Cyclones and Anticyclones with Precepts for Forecasting by Auxiliary Charts on the 3,500-foot and the 10,000-foot Planes,' by Professor Frank H. Bigelow; 'The Sensation of Discomfort,' by W. F. Tyler; 'The Promotion of Meteorology,' in which is incorporated a letter from Dr. J. M. Pernter, of Vienna, in regard to a bill introduced into the last congress 'to promote further discovery and research in meteorology'; 'Invariability of our Winter Climate,' by W. B. Stockman. Also the following notes: 'Local Cooperation in Frost Prevention,' 'The Meteorology of Jamaica,' and 'Humming of Telegraph Wires and Poles.' The *Review* also announces the

establishment of a meteorological laboratory at the high school in Chattanooga, Tenn., a citizen, whose name is not given, having provided the means for the purchase of the necessary meteorological apparatus.

GERMAN METEOROLOGICAL SOCIETY.

THE tenth meeting of the Deutsche Meteorologische Gesellschaft was held in Berlin, on April 7–9, 1904, and an account of the proceedings, with abstracts of the papers read, is found in the July number of the *Meteorologische Zeitschrift*. The papers of most general interest were the following: The influence of forests upon climate, by J. Schubert, in which the results obtained recently at the forest experiment station in Eberswalde, Prussia, were discussed. The temperature is found to average lower in the forest than in the open, the maximum cooling effect coming in September, at the 8 A.M. observation. The relative humidity in the forest may exceed that in the open by seven per cent. O. Steffens showed a new form of snow gauge ('ombrograph') in which an oil lamp is included and the snow is melted. P. Polis discussed the distribution of precipitation in cyclones and anticyclones at Breslau and on the Schneekoppe, this being a scheme of investigation which might well be extended. W. Meinardus considered the changes in temperature of the ocean surface off the west coast of Europe, a subject to which he has already given much attention.

NOTES.

THE 1904 volume of the *Annuaire Météorologique* of the Royal Observatory of Belgium contains the usual meteorological summaries, together with the following papers of general interest: H. Arctowski: 'Aperçu des Résultats Météorologiques de l'Hivernage antarctique de la Belgica'; E. Vanderlinden: 'Le Tir contre la Grèle,' a subject which is rapidly assuming a less and less prominent place in the minds of scientific men. The latter paper contains a full bibliography.

The Yearbook of the Department of Agriculture for 1903 (Washington, 1904), contains the following contributions of meteorological interest: James Kenealy, 'Weather Bureau Stations and their Duties'; J. Warren Smith, 'Relation of Precipitation to Yield of Corn'; H. J. Cox, 'Use of Weather Bureau Records in Court.'

Weather Bureau Bulletin No. 34 (1904) is a reprint of an article on climate, written by the chief of the weather bureau for the 'Encyclopedia Americana.' The title is 'Climate: its Physical Basis and Controlling Factors.' In the bibliography one can not help noticing the omission of Hann's 'Handbuch der Klimatologie.'

Smithsonian Miscellaneous Collections, Quarterly Issue, Vol. 2, Part I., 1904, contains 'The Absorption of Water Vapor in the Infra-Red Solar Spectrum,' by F. E. Fowle, Jr.

R. DEC. WARD.

SCIENTIFIC NOTES AND NEWS.

A LARGE number of the eminent European scientific men and scholars, who came to this country to attend the International Congress of Arts and Science, at St. Louis, have been visiting eastern cities and universities. They were received at Washington by President Roosevelt and entertained by Professor Simon Newcomb, the president of the congress; at Cambridge, they were entertained by Professor Münsterberg, vice-president of the congress. Many of them have also visited Johns Hopkins, Pennsylvania, Princeton, Columbia, Yale and other institutions.

DOCTORATES of science have been conferred by the University of Leeds as follows: Lord Kelvin, Lord Rosse, chancellor of the University of Dublin, Sir Isaac Lowthian Bell, Sir James Kitson, M.P., Sir William Henry Broadbent, Sir Arthur W. Rücker, principal of London University, Dr. Thorpe, C.B., director of the government laboratories, Mr. Claudius G. Wheelhouse, LL.D., president of the council of the British Medical Association, Mr. Jonathan Hutchinson, Mr. J. Pridgin Teal, Dr. Hughlings Jackson, Professor Miall, Dr. Tempest Anderson and Professor A. W. Mayo Robson.

A COMMISSION has been appointed by the New York Board of Health to study the causes of pneumonia, with a view to checking the