Nelson, Christchurch, and Dunedin, each being supplied with a set of standard instruments. The service appears to have been placed, in the first instance, under the supervision of Dr. Knight, the Auditor-General, but in 1867 it was transferred to Dr. (now Sir James) Hector, under whose skilful management great improvements were introduced. The principal stations are supplied with mercurial Fortin barometers, dry and wet bulb and self-registering maximum and minimum thermometers, solar and terrestrial radiation thermometers, Robinson's anemometers, and rain gauges. The height of every barometer above sea-level has been ascertained, and every reading, as in the other colonies, is reduced to sea-level and 32° F.

At present there are eight stations, viz. Te Aroha, Taranaki, Russell, The Bluff, Wellington, Lincoln, Hokitiki and Dunedin, equipped as above, except Te Aroha, which has an aneroid; and seventy-nine rain stations.

To facilitate the transmission of daily weather reports, Sir James Hector has prepared a series of isobaric maps, which fairly represents all the different types of weather. These maps are numbered in consecutive order, and stereotyped copies are supplied to each station, so that all that is necessary is for the head office to telegraph to each office the number of the map to be posted up for the information of the public. In the same manner typical maps of the pressure in Australia have been prepared, with the assistance of Mr. Russell, of Sydney. The reports from a few selected stations, a brief description of the weather, and the number of the map, are daily exchanged between Wellington and Sydney (representing Australia); the New Zealand reports being transmitted by telegraph to the head office in each of the other colonies.

Spread throughout the colonies we have 357 meteorological stations, more or less completely equipped, and 2575 rain gauges.

It will be seen that, excepting the magnetic and meteorological observatory at Hobart, established in 1841, which was an Imperial institution, systematic observations under the auspices of the Colonial Governments date, speaking approximately, from about 1858, a date which closely coincides with that given by Prof. Waldo (1860) as marking a definite epoch in the development of the modern science of meteorology. The investigation of the law of storms by Buys Ballot, Dove, and others, and the researches of Ferrel, then just commenced, on the theory of atmospheric motions, cleared the way to further advances; and, later on, the utilisation of the electric telegraph, which is to the meteorologist what the telescope is to the astronomer, in extending his field of view over large areas of the earth's surface, enabled the observer to mark and watch the birthplace of storms, track their course and rate of translation. The same means informed him of the general distribution of pressure, and, knowing the laws governing the circulation of air currents round regions of high and low barometers, he soon felt himself justified in issuing warnings of coming gales and the probable state of the weather some hours in advance. He was no longer confined to his own particular locality, laboriously compiling statistics and studying local prognostics; he could look far around him, see storms a thousand or more miles distant, and tell people with a considerable amount of confidence when they might be expected and what would be their force. This is the great function of modern meteorology. But, like everything else, it took time. It required money from the State, which was not always readily forthcoming; it required, moreover, a complete and extensive organisation of skilled observers, all working on the same lines and with the same objects in view. It had also to win the confidence of a sceptical public, which still placed confidence in quack weather prophets, who could tell them what the weather would be all the year through, according to the phases of the moon. Confidence, we are told, is a plant of slow growth. So it is, and so it should be if progress is to be made on a sound, solid, lasting basis.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The University Lecturer in Geography (Mr. Yule Oldham) will during the present term give a course of lectures on the History of Geographical Discovery, in the Lecture-theatre of the Chemical Laboratory on Thursdays at noon, beginning on Thursday, January 24.

The Council of the Royal Geographical Society offer in the present academical year a Studentship of £100, to be used in the geographical investigation (physical or historical) of some district approved by the Council. Candidates must be members of the University of not more than eight years' standing from matriculation, who have attended the courses of lectures given in Cambridge by the University Lecturer in Geography. Applications should be addressed to the Vice-Chancellor not later than the last day of the full Lent term, March 15, 1895.

Prof. Ewing, F.R.S., has been appointed Chairman of the Examiners for the Mechanical Sciences Tripos.

The Gamble Prize for 1894 has been awarded to Miss Isabel Maddison, for her essay on "Singular solutions of differential equations of the first order."

THE first annual meeting of the Association of Technical Institutions was held on Friday last. In the course of an address, Mr. W. Mather, M.P., the President for the ensuing year, remarked that, so far as the pecuniary facilities conferred by the Technical Instruction Acts were concerned, local authorities had the means of annually bestowing on technical education in England and Wales (1) from grants under the Local Taxation Act, about £780,000; (2) from a penny rate levied on the total rateable value of the whole country, £664,500; (3) grants from the Department of Science and Art, about £355,000. The total amount available is thus, in round numbers, £1,800,000 per annum. To this must be added the voluntary aid given to technical schools and institutions. Among the resolutions adopted by the meeting was one for the appointment of a sub-committee to consider the best methods by which reform could be effected in the present system of examination in practical chemistry adopted by the Department of Science and Art, and to confer with other committees appointed with a similar object; and another to the effect that the result of examinations should not form the sole basis for the calculation of the grant in aid of science classes, but that there should also be a variable grant dependent on the report of the inspector on the equipment and arrangement for efficient instruction.

SOCIETIES AND ACADEMIES.

LONDON.

Mathematical Society, January 10.—Major Macmahon, R.A., F.R.S., President, in the chair. The Chairman gave a short obituary sketch of Mr. A. Cowper Ranyard, in the course of which he pointed out that that gentleman had only been a *pro tem.* secretary with the late Mr. G. C. De Morgan.—The secretaries elected at the first meeting of the Society, January 16, 1865, were Messrs. H. Cozens Hardy and H. M. Bompas. Mr. Hardy resigned at the second meeting (February 20), and Mr. W. Jardine was elected in his room.—The following communications were made:—Note on the expansion of functions, by Mr. Edward T. Dixon. The author had long thought that so fundamental a theorem as the expansion of a function in Taylor's series ought to be demonstrable from first principles in a simple maner which should be applicable to complex as well as to real quantities. The main feature in the proof he proposed was that the series was regarded not as the expansion in terms of powers of the increment of the variable, but rather as the expansion in terms of the values of the successive differential coefficients of the function for the given initial value of the variable. If two functions were equal for a given value of the variable, they would remain equal while the variable varied in any specified manner, so long as their rates of change remained equal and finite. The two sides of the equation known as Taylor's theorem were such functions; and the author explained how the limitations to the application of Taylor's theorem followed directly from his way of regarding the expansion. He also showed how the same line of argument applied to the case of complex variables, and how in that case also the limitations could easily be deduced.—Electrical distribution on two intersecting spheres, by Mr. H. M. Macdonald. In Maxwell's "Electricity and Magnetism," vol. i. §§ 165, 166, the problem of the distribution of electricity induced by an electrified point placed between them on two planes cutting at an angle which is a submultiple of two right angles, and the inverse problem of the conductor formed by two spherical surfaces cutting at such an angle (the angle referring to the dielectric) is solved by the method of