

looked upon as the means of occasionally obtaining isolated items of information from the upper regions; the world had not then awakened to the possibility of the work inaugurated by Prof. Moore in July 1895, which looks to the compilation of a daily map of simultaneous observations high above the earth's surface and over a large portion of the United States, for study in connection with the map of surface conditions. Observations of the air at a single station can have but little value compared with the international balloon work of Europe, or the extended national kite work of the U.S. Weather Bureau.

In an address at Toronto, before the British Association, Prof. Moore is reported by the *Review* to have said:

"For twenty-seven years the forecasters of the Weather Bureau have studied the inception, development, and progression of these different classes of atmospheric disturbances. From a knowledge personally gained by many years' service as an official forecaster, I do not hesitate to express the opinion that we have long since reached the highest degree of accuracy in the making of forecasts possible to be attained with surface readings. It is patent that we are extremely ignorant of the mechanics of the storm; of the operations of those vast yet subtle forces in free air which give inception to the disturbance, and which supply the energy necessary to continue the same. Long having realised this, I determined at once, on coming to the control of the United States Weather Bureau, to systematically attack the problem of upper-air exploration, with the hope ultimately of being able to construct a daily synoptic weather chart from simultaneous readings taken in free air at an altitude of not less than one mile above the earth. It appeared to me that all previous plans for investigating the upper air, by means of free and uncontrollable balloons, by observers in balloons, or by isolated kite stations or mountain observatories, were of little value in getting the information absolutely necessary to the improvement of our methods of forecasting. Simultaneous observations, at a uniform high level, from many co-operating kite stations, was the fundamental feature of the plan that I inaugurated for the prosecution of this important investigation.

"Prof. Marvin was assigned to the difficult task of devising appliances and making instruments, and I am pleased to say that we have improved on kite flying to such an extent that apparatus is now easily sent up to a height of one mile in only a moderate wind. We have made an automatic instrument that, while weighing less than two pounds, will record temperature, pressure, humidity, and wind velocity. By January next we expect to have not less than twenty stations placed between the Rocky Mountains and the Atlantic Ocean taking daily readings at an elevation of one mile or more.

"We shall then construct a chart from the high-level readings obtained at these twenty stations, and study the same in connection with the surface chart made at the same moment. As we shall thus be able to map out not only, as now, the horizontal gradients for the lower surface conditions, but in addition the simultaneous gradients for the upper level, and, what is of still more importance, shall be able to deduce from these, for any section of the atmosphere, the simultaneous vertical gradients of temperature, humidity, pressure, and wind velocity, we may confidently hope to better understand the development of storms and cold waves, and eventually improve the forecasts of their future course, extent, and rate of movement. It will be a fascinating study to note the progress of cold waves at the upper and lower levels, and to determine whether the changes in temperature do not first begin above. I am anxious to know the difference in temperature between the surface and the upper stratum in the four quadrants of the cyclone, and also of the anticyclone, especially when the storm or cold-wave conditions are intense. The vertical distribution of temperature in the several quadrants may give a clue to the future direction of movement of the disturbance."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

MISS EMILY PENROSE, principal of Bedford College, London, has been appointed principal of the Royal Holloway College, Egham.

MR. WM. H. SAGE and Dean Sage have presented to Cornell University the large residence of the late Mr. Henry W. Sage, at Ithaca, for a students' hospital, and will equip it and endow it with 100,000 dols. The residence is valued at 80,000 dols.

NO. 1468, VOL. 57]

THE following resolution has been unanimously passed by the lecturers and teachers in the medical school of Guy's Hospital: "That the medical school of Guy's Hospital earnestly request Her Majesty's Government to reintroduce into Parliament the London University Commission Bill of 1897, and to pass it into law during the ensuing Session."

AMONG the institutions created during the last half-century for the promotion of scientific research and education, the Sheffield Scientific School of Yale College, New Haven, holds an honourable place. A review of the foundation of the School, and of the work of the distinguished investigators who have been connected with it, was given in a discourse delivered by President Gilman at the semi-centennial anniversary recently held. It was in 1847 that Profs. Silliman and Norton opened a laboratory on the College grounds for the purpose of practical instruction in the applications of science to the arts and agriculture. Thus was born the Sheffield Scientific School of Yale University. At first chemistry was alone; engineering soon found a place; mathematics, physics and astronomy joined the oligarchy; in due time, mineralogy, geology, physical geography, zoology, botany and physiology found a welcome; modern languages and literature, history and economics, became strong allies. While this evolution was going on, not a word was spoken in disparagement of classical culture, nor a word of religious controversy. From the beginning onwards the institution has been the department of a University which never suffered its love of letters to blind its eyes to the value of science. The School largely owes its success to its association with the fame, the fortune, and the followers of a great *alma mater*. Substantial advantages were bestowed by the mother upon her offspring; and the present high position which the School occupies shows that the child has deserved the encouragement it has received.

A MEETING was held at the University of London on Tuesday afternoon, the Chancellor (Lord Herschell) presiding, to discuss the proposed legislation on the University of London question. The *Times* reports that there were present, besides the Vice-Chancellor (Sir Henry Roscoe), representatives of the Corporation of the City, the Technical Education Board of the London County Council, the Royal Colleges of Physicians and Surgeons, the various medical schools, University College, King's College, Bedford College, the Royal College of Science, and the City and Guilds of London Institute. The Chancellor invited expression of opinion on the London University Commission Bill which the Government propose to reintroduce early in the Session. He said that the Bill embodied the compromise between the various parties hitherto in conflict, and that it was to receive the support of the Senate, as also of both parties in Convocation. The Chancellor further explained why no proposal for any new charter was within the range of practical politics, reconstitution at the hands of a statutory commission being the only remaining course. He therefore urged the acceptance of the compromise. Many of those present spoke in favour of the scheme, and urged that a deputation should wait upon the Vice-President of Council at an early date. The only objection came from one of the smaller medical schools, which declared its preference for the creation of a second University in London. The feeling of the conference was, however, entirely in favour of the reconstruction of the existing University. A deputation to the Government will be appointed as suggested to urge the passing of the Bill.

SCIENTIFIC SERIALS.

Bulletin of the American Mathematical Society, November 1897.—The number opens with an account, by Prof. Osgood, of the proceedings at the International Congress of Mathematicians held at Zürich in August last. The transactions of the Congress, which was attended by about two hundred mathematicians, together with the papers read, or presented, are to be published in full.—Prof. J. McMahon performs a like work for the Detroit meeting of the American Association for the Advancement of Science. An analysis of the twenty-one papers presented to the Section is given. One of these communications was an account of stereoscopic views of spherical catenaries and gyroscopic curves by Prof. Greenhill, who was present at the meeting, and to whom the Section "is also indebted for instructive remarks made in connection with many of the other papers." Then follow five papers read before the American Mathematical