EQUINOXES AND STORM WINDS.

AT the May meeting of the Royal Meteorological Society (London) Mr. Rupert T. Smith read a paper on 'The Periodicity of Cyclonic Winds,' which was a discussion of his own observations made in the neighborhood of Birmingham during the years 1874–1890. The equinoxes do not appear to be very stormy periods, but the greatest frequency and force of cyclonic winds occurs some two weeks before the spring equinox and some three weeks after the autumn equinox.

R. DEC. WARD.

BIOLOGICAL SURVEY OF THE GREAT LAKES BY THE UNITED STATES FISH COMMISSION.

THE United States Fish Commission will continue during the present summer the Biological Survey of the Great Lakes, inaugurated in 1898. The writer withdraws temporarily from the active management of the enterprise, and the Survey has been placed for the summer under the direction of Professor H. S. Jennings of the University of Michigan, and Professor Henry B. Ward of the University of Nebraska. Active work begins June 15.

Professor Ward, with an assistant, will continue the investigations on the plankton and plankton methods carried on during previous summers.

The remainder of the work, under the immediate charge of Dr. Jennings, will have headquarters at Put-in-Bay, Ohio, on Lake Erie, although the different investigations will be carried on at such points on the lakes as are most favorable. The following is a list of the investigators who will be at work, together with the lines of research which will be carried on:

Professor H. S. Jennings, of the University of Michigan: the movements and reactions of the plankton organisms.

Professor F. C. Newcombe, of the University of Michigan, in general charge of the botanical work: physiological investigations into the relations of the lake plants to the water and substratum.

Professor R. H. Pond, of the Maryland Agricultural College: the distribution of plants and soils at the west end of Lake Erie.

Professor Julia Snow, of Rockford College: the lake Algæ.

Professor S. O. Mast, of Hope College: the breeding habits of the sturgeon.

Mr. Raymond Pearl, of the University of Michigan: a statistical study of the races of whitefish and wall-eyed pike.

Mr. Leon J. Cole, of the University of Michigan: a study of the biology and feeding habits of the introduced carp, with especial reference to their supposed destruction of the eggs of other fish.

Professor Chas. Fordyce: systematic work on the Cladocera.

Mr. H. W. Graybill, of the University of Nebraska: the Echinorhynchi of the lake fish.

The University of Michigan cooperates with the Survey by allowing the use of its extensive library of the fresh-water fauna and of certain apparatus. The U. S. Fish Hatchery at Put-in-Bay will be fitted up as a working laboratory, and the steamer *Shearwater*, belonging to the Put-in-Bay station, will be employed in some of the investigations undertaken.

JACOB REIGHARD.

ANN ARBOR, MICH., June, 1901.

THE JUBILEE OF THE UNIVERSITY OF GLASGOW.

ONE of the most interesting events in connection with the recent celebration at Glasgow was Lord Kelvin's oration on James Watt and Sir Joseph Hooker's address in connection with the opening of the new botanical department.

As reported in the London *Times*, Lord Kelvin said:

"The name of James Watt was famous throughout the whole world, in every part of which his great work had conferred benefits on mankind in continually increasing volume up to the present day. It was fitting that the University of Glasgow, in this celebration of its ninth jubilee, should recollect with pride the privilege it happily exercised 145 years ago of lending a helping hand and giving a workshop within its walls to a young man of no University education, struggling to begin earning a livelihood as a mathematical instrument-maker, in whom was then discovered something of the genius destined for such great things in the future. In a note by Watt appended to Professor Robison's dissertation on steam engines, he said that his attention was first directed in

the year 1759 to the subject of steam engines by the late Dr. Robison, then a student in the University of Glasgow and nearly of his own age. He at that time threw out an idea of applying the power of the steam engine to the moving of wheel carriages and to other purposes, but the scheme was not matured, and was soon abandoned. On his going abroad about the year 1761 or 1762, Watt tried some experiments on the force of steam in a Papin's digester, and formed a species of steam engine by fixing upon it a syringe one-third of an inch in diameter with a solid piston, and furnished also with a cock to admit the steam from the digester or shut if off at pleasure, as well as to open a communication from the inside of the syringe to the open air, by which the steam contained in the syringe might escape. That single-acting, high-pressure syringe engine, made and experimented on by James Watt 140 years ago in his Glasgow College workshop, now in 1901, with the addition of a surface condenser cooled by air to receive the waste steam and a pump to return the water thence to the boiler, constituted the common road motor, which, in the opinion of many good judges, was the most successful of all the different forms tried within the last few years. Watt left Glasgow in 1774 to live in the neighborhood of Dr. Erasmus Darwin, grandfather of Charles Darwin. But Greenock and the University and city of Glasgow never lost James Watt. The University conferred the honorary degree of LL.D. upon him in 1806. In 1808 he founded the Watt Prize in Glasgow College. He became Fellow of the Royal Society of Edinburgh in 1784, Fellow of the Royal Society of London in 1785, correspondent of the French Academy of Sciences in 1808, one of the eight 'Associés Etrangers' of the French Academy of Sciences in 1814. He did not know if any university in the world ever had a tradesman's workshop and saleshop within its walls, even for the making and selling of mathematical instruments prior to 1757. But whether the University of Glasgow was or was not unique in its beneficent infraction of usage in this respect, it was certainly unique in being the first British University—perhaps the first university in the world—to have an engineering school and professorship of engineering. This began under Professor Lewis Gordon about 1843. Glasgow was certainly the first university to have a chemical teaching laboratory for students started by its first professor of chemistry, Thomas Thomson, some time between 1818 and 1830. Glasgow was also certainly the first university to have a physical laboratory for the exercise and instruction of students' experimental work, which grew up with very imperfect appliances between 1846 and 1856. Pioneer though it was in those three departments, it had been outstripped within the last ten or fifteen years by other universities and colleges in the elaborate buildings and instruments now needed to work effectively for the increase of knowledge by experimental research and the practical instruction of students. But there was no lagging to-day in the resolution to improve to the utmost in all affairs of practical importance, and they almost saw attainment of the further aspirations to excel over all others in the magnificent James Watt Engineering Laboratory of the University of Glasgow to be ready for work before the expected meeting of the Engineering Congress next September. Now, through the magnificently generous kindness of Mr. Andrew Carnegie to the people among whom he has made for himself a summer home in the land of his birth, all the four Scottish universities could look forward to a largely increased power of benefiting the world by scientific research and by extending their teaching to young people chosen from every class of society as likely to be made better and happier and more useful to our country by university education."

In the course of his address Sir Joseph Hooker said:

"The audience might imagine themselves carried back to the first quarter of the last century when his father was professor of botany. He had not been educated for the medical, or, indeed, any other learned profession. Having inherited ample means and having been from childhood devoted to the study and collection of objects of natural history, he determined to devote his life and his fortune to travel and scientific pursuits. Early in 1820, reduced circumstances requiring him to turn

his botanical attainments to material account, he obtained, through the influence of his friend, Sir Joseph Banks, with George III., the chair of regius professor of botany in this university. It was a bold venture for him to undertake so responsible an office, for he had never lectured, or even attended a course of lectures, and in Glasgow, as in all other universities in the kingdom, the botanical chair was, and had always been, held by a graduate in medicine. Owing to these disqualifications his appointment was naturally unfavorably viewed by the medical faculty of the University. But he had resources that enabled him to overcome all obstacles—familiarity with his subject, devotion to its study, energy, eloquence, a commanding presence, with urbanity of manners, and, above all, the art of making the student love the science he taught. After 20 years of the professorship his father retired and undertook the directorship of the Royal Gardens, Kew. Since that period great changes had been introduced in the method of botanical teaching in all our universities, due, on the one hand, to a vastly advanced comprehension of the structure of plants and of the functions of their organs, and, on the other, to a recognition of the fact that the study of the animal and vegetable kingdoms could not be considered apart. Furthermore, chemistry, physics, and greatly improved microscopes were now necessary for the elucidation of the elementary problems of plant life. The addition of the building in which they were assembled was evidence of the resolve that botany should not fall from its well-earned position. The botanical laboratory would prove an invaluable aid to research under the ægis of its distinguished director, and in that belief he now declared it open.

THE HARVARD CHEMICAL LABORATORY.

Professor T. W. Richards writes in the last number of the *Harvard Graduate Magazine* in regard to research work, as follows:

"Original investigation, which has added so much to the intellectual life of the Laboratory, continues with unabated vigor. In the last five years about seventy papers have been published by the officers and students in Boylston Hall. These covered a wide range of subjects, about half of them concerning organic chemistry, and the other half physical and inorganic chemistry. Professor Jackson's extended researches upon the structure of aromatic substances have yielded in the hands of many students a large number of interesting new compounds and the basis for further generalization upon the mechanism of chemical action. Professor Hill's precise and detailed study of pyromucic acid has now in part given place to an extremely interesting series of syntheses of the benzol ring. In physical chemistry several comprehensive papers on chemical thermodynamics have appeared, and various phenomena were studied in the Laboratory by both instructors and students. For example, the passage of electricity through gases received attention; modern theory of dissociation was studied in its relation to the sense of taste; a new basis for thermometric standardization has been found; and the fundamental Law of Faraday has been subjected to a verification more rigorous than ever before. The study of the law of definite proportions, the one other chemical law which seems to rank with Faraday's in unfailing precision, has been steadily continued. In the last ten years the atomic weights of copper, barium, strontium, calcium, zinc, magnesium, cobalt, nickel, uranium and cæsium have all been studied with a care which seems to carry conviction with it. This work has all been handicapped by the inadequate quarters in which it had to be performed, and we now have to face the bitter alternative of being obliged either to turn away graduate students, or else so to crowd them together as to make accurate investigation almost impossible."

SCIENTIFIC NOTES AND NEWS.

Harvard University has conferred the LL D. degree on Dr. H. S. Pritchett, president of the Massachusetts Institute of Technology; on Professor J. H. Van't Hoff, professor of physical chemistry at the University of Berlin, and on Professor C. S. Sargent, director of the Arnold Arboretum. The honorary M. A. was conferred on Dr. Hugo Münsterberg, professor of psychology, and on Dr. Theobald Smith, professor of comparative pathology. In conferring these last degrees, President Eliot referred to the