

SCIENTIFIC NOTES AND NEWS.

THE WOODS HOLL MARINE BIOLOGICAL LABORATORY.

THE Eighth Annual Report of the Trustees of the Marine Biological Laboratory at Woods Holl has just been issued, and shows that the summer of 1895 was the most successful in the history of the Laboratory. At different times during the summer there were 63 investigators present, 42 of whom occupied special research rooms. There were 101 students taking introductory courses. The whole number of students who have attended the Laboratory since 1888 is 483. The attendance of investigators has been very greatly increased by the system of coöperation with the colleges and societies, which began in 1894. At present 25 colleges subscribe for investigator's rooms, besides five societies, including the American Association for the Advancement of Science and the American Society of Naturalists.

The year has been a successful one financially owing to the large number of students present who have paid for their instruction or through the colleges for the investigators' rooms or tables. A few years back it was necessary to make up a large deficit at the end of the year, while the past year's income exceeded the total expenses by nearly \$1,000. There still remains, however, a debt of \$5,985. Since this report was prepared, a meeting of the Trustees was held in Boston to revise the constitution of the Laboratory, and the following general plan was submitted: To place the entire financial interests of the Laboratory in the hands of a special finance committee. Second, to constitute from the present Board of Trustees a number of committees. Finally, to constitute from the staff at Woods Holl and from representatives of coöperating colleges a scientific board of direction, who, with the Director, will control the entire policy of the Laboratory and its general administration.

Encouraged by this successful year the Director, Professor C. O. Whitman, naturally closes with a strong appeal for an expansion of the resources of the Laboratory in the form of endowments. He proposes that tables shall be endowed at \$1,250; investigator's rooms at \$2,500; scholarships at \$200, and fellowships

at \$500. The library needs \$1,000 per year to keep it supplied with current publications. The publication fund should amount to \$2,000 annually. But the chief feature of the proposed expansion is a main building for the exclusive use of investigators, providing for library, auditorium, aquarium, laboratories, etc., which would cost about \$100,000. These steps would be necessary to found an inter-collegiate Biological Station, with an annual outlay of not less than \$50,000.

In order to support this ambitious plan, the Director presents an exceptionally full and able report, tracing the whole past history of the Laboratory. His main contention is that the Laboratory was founded for *instruction* as well as for *investigation* in Biology, and that at the outset it was proposed to establish an ideal Biological Station, organized on a basis broad enough to represent the important features of the several types of laboratories hitherto known in Europe and America. The report aims to show that the elementary instruction department (a feature which distinguishes the American station from all those in Europe) is necessary in order to train the investigators, or, to use his own language:

"The instruction cannot be made too strong, for its strength is continually being transferred to investigation; and every proper expansion of investigation must react to improve and enrich instruction." He goes on to say that the instruction has not interfered with investigation, because the investigators have increased almost as rapidly as the elementary students. There were 9 investigators in 1888 and 63 in 1895. There were 8 elementary students in 1888 and 101 in 1895. He concludes: "Comparing the last four years of growth with the first four, it will be seen that we moved on with no very great gains in the earlier period, while the later period is marked by a sudden rise in standing, 50 per cent. of membership, and a gain of over 100 per cent. on the investigator's side. In 1894 a new laboratory was constructed and the Director recommends the construction of another temporary laboratory in 1896, in order to meet the pressing needs of the present growth. Much progress has been made in the general financial support of the Laboratory, which has

hitherto fallen upon the generous Trustees from Boston and their friends, not only by the aid of the thirty coöperating colleges, but by the formation of the 'Biological Association,' the chief object of which is to aid the Laboratory in securing funds necessary to the foundation of a biological station as a National center of research in every department of biology. Local committees have also been formed, such as those in New York and Philadelphia."

During the year a large number of evening lectures were given by well-known morphologists and physicists, and the daily morning lecturers include a very large number of well-known names. Besides this, there has been regular instruction in vertebrate and invertebrate morphology and a course in embryology.

THE RÖNTGEN RAYS.

SOME twenty papers on the Röntgen rays have already been presented before the Paris Academy of Sciences. On February 10th M. C. Henry reported that coins coated with phosphorescent zinc sulphide lose their opacity to the rays. *Nature* thus summarizes the papers presented on February 17th: "In following up the analogy of certain properties of these rays with some properties of the ultra-violet rays, M. R. Swyngedauw has found that the X-rays cause a lowering of the explosive potential according to the same general laws as the electrically active ultra violet rays. Whilst the influence of the latter, however, is entirely suppressed by interposing a screen of wood, glass or blackened paper, these materials do not effect this property of the Röntgen rays. It was also noticed that these rays lowered the dynamic explosive potentials to a greater extent than the static potentials. As a result of the study of the property of the Röntgen rays of discharging an electrified body, M. A. Righi concludes that the time necessary for a given fall of potential is practically the same, whether the original charge be positive or negative. With an initial positive charge the discharge is not complete; but if negative initially, not only is the discharge complete, but the disc becomes positive. The results obtained by MM. J. J. Borgman and A. L. Gerchun, however, are precisely contrary to these, a positively charged

disc losing its charge nearly instantaneously, and becoming negative on prolonged exposure to a Crookes' tube. MM. L. Benoist and D. Hurmuzescu contribute further researches on the same subject of a quantitative character. By measuring the time required for a given reduction of angle between the leaves of an electroscope and the distance of the leaves from the Crookes' tube, they prove that the ratio of the times are as the ratio of the squares of the distances. From the coefficient of transmission (0.85) of an aluminium plate, 0.1 mm. thick, it is shown that a plate of aluminium 15 mm. thick, such as was used by Röntgen in his original experiments, must be practically opaque to the rays *unless the rays are heterogeneous*. In an extract from a letter by de Heen an ingenious experiment is described which proves conclusively that the X-rays proceed from the anode, and not the cathode. A leaden plate perforated with holes is placed between the Crookes' tube and the photographic plates, and the direction of the bundles of rays obtained shows clearly that these rays are anodic.

ASTRONOMY.

THE Munich Observatory has just issued a very elaborate investigation of astronomical refraction from meridian circle observations made for this special purpose by Dr. Julius Bauschinger. The instrument used was the new six-inch, which was set up towards the end of 1891. The present series of observations are therefore the first ones made with this instrument. The method employed was the usual one of comparing the declinations or the same star obtained at the upper and lower culmination. The paper as a whole impresses one with the extraordinary care and thoroughness with which every part of the work has been done. We can, of course, only touch very briefly upon a few points that appear of special interest.

No corrections for errors of the microscopes, errors of division of the circle, or flexure of the tube, were applied to the observations, as very careful investigation of all these matters showed that the existence of such errors was not established with certainty. This speaks very highly for the skill of the instrument

makers, Messrs. Repsold, of Hamburg. Great care was given to the reduction of the observations of the meteorological instruments, the pressure of the aqueous vapor in the atmosphere being taken into account. The corrections for variation of latitude which have been applied to the observations were deduced from the series itself, because the author did not want to let his results depend upon the work of others. Perhaps it would have been better to have employed some of the contemporaneous series of latitude variation observations for the correction of Dr. Bauschinger's results. They are not completely independent as they stand, because the constant of aberration was not determined from them. The usual Pulkowa value was used in the reductions.

Passing over a number of very interesting special investigations of various points, we shall call attention to the two most important results obtained by Dr. Bauschinger. He finds for the refraction constant at 760 mm. pressure, and 0° Centigrade, the value $60''/104$, indicating a considerable reduction of the Besselian constant. That such a reduction of the Besselian constant was needed, had already been shown to be probable by other recent investigations. The other important result is a very accurate declination catalogue of 116 principal stars for the epoch 1892. Radau's new refraction tables were employed throughout the work.

THE Jablonowski Society, of Leipzig, has published in a book of 280 pages octavo, a treatise on the Secular Variations of the Orbits of the Major Planets by Dr. Paul Harzer, Director of the Gotha Observatory. This work has received the Society's prize. H. J.

GENERAL.

THE Secretary of the Interior has requested the National Academy of Sciences to report on a forestry policy for the government with special regard to the following questions: (1) Is it desirable and practicable to preserve from fire, and to maintain permanently as forested lands, the wooded parts of the public domain, for the supply of timber? (2) How far does the influence of forest upon climate, soil and water conditions make a policy of forest conservation

desirable in those regions where most of the public domain is situated? (3) What specific legislation is required to remedy the evils now existing? A commission has been appointed by the Academy consisting of the following: Prof. Charles S. Sargent, Chairman; Prof. Alexander Agassiz, Gen. Henry L. Abbott, Prof. William H. Brewer, Mr. Arnold Hague and Mr. Gifford Pinchot.

At a meeting of the Board of Managers of the New York Botanical Garden on March 4th plans were considered for a museum building and sketches for greenhouses were exhibited. The Secretary was instructed to exhibit topographical maps of the garden site at the annual reception of the New York Academy of Sciences, on March 26th.

THE United States Senate has passed the agricultural appropriation bill carrying appropriations amounting to \$3,262,652.

As previously announced Sir Joseph Lister will preside over the Liverpool meeting of the British Association. The presidents of the sections will be as follows: Mathematics and Physics, Prof. J. J. Thomson; Chemistry, Dr. Ludwig Mond; Geology, Mr. John Edward Marr; Zoölogy, Prof. E. B. Poulton; Geography, Major Leonard Darwin; Economics, Right Hon. Leonard Courtney; Mechanical Science, Sir Charles Douglas Fox; Anthropology, Mr. Arthur Evans; Physiology and Pathology, Dr. Walter Holbrook Gaskell; Botany, Dr. D. H. Scott.

AN Anthropological Club for informal discussion was formed in New York on March 4th. Some fifteen students of anthropology met at the house of Dr. Franz Boas and discussed the recent works on children and child psychology by Sully, Baldwin and Chamberlain, the books being reported on by Prof. Giddings, Dr. Farrand and Dr. Boas, respectively. Meetings will be held monthly, but no formal organization is proposed.

ARRANGEMENTS have, however, been made for the more formal recognition of the mental and social sciences by the formation of a section of the New York Academy of Sciences devoted to anthropology, psychology and philology. Several members of the Academy were

engaged in the study of these sciences, and a number of new members have been elected and nominated with a view to the organization of this section. The Academy now meets in three sections—Astronomy and Physics, Biology, and Geology and Mineralogy—which take up the evenings of the first three Mondays of the month. The fourth Monday will be allotted to the new section. At the first meeting, which will be on April 27th, papers will be presented by Drs. Giddings, Cattell, Farrand and Boas. For the May meetings a philological program will be arranged.

THE annual exhibition and reception of the New York Academy of Sciences will be held on the evening of March 26th at the American Museum of Natural History. The two exhibitions that have preceded have been very successful both from a scientific and from a social point of view, and the program and arrangements of the present meeting promise an even more notable success. Many of the exhibits, representing the progress of science during the past year, are sent from places outside New York, and members of scientific societies in other cities will be welcomed at the reception. Invitations may be obtained from the chairman of the executive committee, Prof. H. F. Osborn, Columbia University.

PRESIDENT CLEVELAND has been invited to formally open the International Commercial Museum at Philadelphia in the autumn.

THE *British Medical Journal* states that in the course of a communication to the Paris Société de Biologie on Feb. 22d, M. Chantemesse said that last June he had succeeded in immunising several horses against the virus of typhoid fever. He had obtained the serum of such strength, that one-fifth of a drop inoculated into a guinea-pig twenty-fours before infection protected it against a dose of typhoid virus fatal to animals not previously injected with the protective serum. It was ascertained, also, that injections of the serum produced no injurious effects upon a healthy man. M. Chantemesse stated that he had since employed injections of serum in three cases of typhoid fever. The temperature showed a regular fall from the time the first injection was made, and

seven days after the commencement of the injections all three patients were quite free from fever, and had commenced to convalesce. M. Chantemesse added that the cases were not yet sufficiently numerous to permit any trustworthy conclusion to be drawn.

At a meeting of the board of managers of the National Geographic Society, on March 6th, Mr. Grip, the minister of Sweden and Norway, asked the Society's assistance in distributing among the inhabitants of arctic America sketches of the balloon to be used by Mr. Andrée, and explanations in native languages in order "to prepare the populations of those northern tracts for the possible appearance at their places of the balloon and its occupants, partly in order that they may report the balloon if they should see it at a distance, and partly to prevent them from doing any harm to its occupants when they descend unexpectedly."

MR. W. J. L. WHARTON states in *Nature* that Captain Balfour, of H. M. S. *Penguin*, has obtained three soundings of over 5,000 fathoms, the deepest being 5,155 fathoms. The positions of the soundings are :

Lat. S.	Long. W.	Depth.		Nature of bottom.
		Fms.	Feet.	
23° 39'	175.04	5022	30,132	(Wire broke.)
28° 44'	176.04	5147	30,882	Red clay.
30° 28'	176.39	5155	30,930	Red clay.

The extreme soundings are 450 miles apart, and are separated by areas of considerably less water. The deepest trustworthy sounding heretofore known is 4655 fathoms near Japan, obtained by U. S. S. *Tuscarora* in 1874.

MR. ROY W. SQUIRES goes to Venezuela as a representative of the department of botany of the University of Minnesota and under the auspices of the Orinoco Company. He will make collections in the unexplored mountain regions southeast of Barancas. The region covered will lie considerably south of that visited by previous botanists and a valuable collection may be looked for. Mr. Squires will be absent from Minnesota about six months.

WE regret to learn that Dr. Herbert Haviland Field is seriously ill at Zurich and is at present prevented from attending to his work in the

Bibliographical Bureau. A temporary substitute has been engaged but the progress of the bibliography will be seriously impaired. It is especially unfortunate that Dr. Field (having after his prolonged efforts successfully established the Bureau) should now be incapacitated. The future of the Bureau seems to depend mainly upon his efforts, and all who are interested in his work hope to hear of his rapid recovery.

ARNULF SCHERTEL describes, in the last *Berichte*, a new method of preparing Platino-cyanids. Platinum chlorid is precipitated by hydrogen sulfid at 60° to 70° and the well washed platinum sulfid dissolved in a warm solution of potassium cyanid. On evaporation the potassium platino-cyanid, $K_2Pt(CN)_4 \cdot 3H_2O$, crystallizes out, and equal parts of potassium sulfid and potassium thiocyanate remain in the mother liquor. If a solution of barium cyanid is used, the barium platino-cyanid is obtained, with commercial potassium cyanid containing large quantities of sodium cyanid, Schertel obtained the beautiful double salt $KNaPt(CN)_4 \cdot 3H_2O$, described by Martius. In view of the fluorescence of the barium and other salts of the platino-cyanids under the Röntgen rays, this simple method of preparation is of considerable interest.

IN 1888 crania of *Sorex personatus* and *Synaptomys cooperi* were taken about eight miles from Washington, in pellets ejected by a long-eared owl. This was of interest, since it was the first occurrence of *Synaptomys* farther east than Indiana, but it was of course an open question as to just how near Washington the specimen might have been captured, and, until recently, all attempts to take either of these little mammals near the capital have been fruitless. On January 25th Mr. Vernon Bailey read a paper before the Biological Society on Tamarack Swamps as Boreal Islands in which he took the ground that the abundant sphagnum of these swamps played a very practical part in reducing the temperature by evaporation, and thus rendering them habitable for boreal animals. In the discussion which followed the paper Mr. Bailey was apprised of the existence of such swamps near Washington, and immediately proceeded to test his theory by setting a number of traps in

one of them, with the result that in less than a week he obtained examples of both *Sorex personatus* and *Synaptomys cooperi*.

THE extensive mycological herbarium of Mr. J. B. Ellis, of Newfield, New Jersey, has been purchased by the Board of Managers of the New York Botanical Garden, and will be deposited in the fire-proof museum building of the Garden to be erected in Bronx Park. The purchase includes a considerable portion of Mr. Ellis' library. The collection is now being boxed for transportation and will be brought to New York within a short time and placed in one of the fire-proof storage warehouses, awaiting its final resting place at the Garden. The herbarium represents the work of nearly fifty years devotedly given by Mr. and Mrs. Ellis to the study and accumulation of Fungi from all parts of the world. It is especially rich in North American species, being, indeed, very nearly complete in that regard, and containing all or very nearly all the types described either by Mr. Ellis alone, or in coöperation with Dr. H. C. Cooke, Mr. B. M. Everhart, Mr. E. W. Martin, Prof. W. A. Kellerman, Rev. A. B. Langlois, Mr. E. D. Holway, Mr. B. L. Galloway and others. It is put up in volumes, there being some 250 volumes of published exsiccati, including all but a very few of the earliest distributed sets and more than 150 volumes of a general collection, the whole completely indexed on a card catalogue. There are also more than 100 tin cans and boxes filled with fleshy fungi. The possession of this important collection will make the new botanical institution a center of interest for all students of these plants, and, with the other herbaria already secured, will guarantee its scientific prestige.

CORNELL University has formally acquired the famous quadruple-expansion steam engine, built for a steam pressure of five hundred pounds, in the Sibley College shops, by Messrs. Hall and Treat. This engine was designed in accordance with the principles taught its builders, in Sibley College, and for a very exceptionally high steam pressure; the purpose being to ascertain whether the promised advantages of such intense pressures could be realized. The University gave the use of shops and tools

and such material as could be supplied without serious cost, and the makers furnished time and labor, and, at their own cost, put in the boiler, an extraordinary construction built for specially high pressures and actually tested to 1300 pounds per square inch. The engine and boiler will hereafter constitute an important portion of the Sibley College equipment, and is expected to do wonderful work. It is already known to be capable of excelling the world's record in economy, on saturated steam; although that record is at present held by a triple-expansion engine of thirty times the size of the Sibley College quadruple expansion engine. A series of trials has been conducted by the builders and the results will be published later as a thesis, by the builders, both of whom are graduate students, candidates for advanced degrees. Meantime, it is known that the engine has developed twenty horse-power, its rated work, on a consumption of less than ten pounds of steam, less than 11,000 *B. T. U.* per horse-power per hour. The College will supplement this work by still more elaborate trials, and in the expectation of still further reducing the figure. Mr. Hall, the senior of the designers and builders, has been, for some years past, the stroke oar of the Cornell 'Varsity' crew.

THE annual general meeting of the Institution of Mechanical Engineers was held at London on January 30. The report of the council stated that at the end of last year the number of names in all classes on the roll of the institution was 2,270, as compared with 2,222 at the end of the previous year. The council had bought a site at Storey's gate, Westminster, with the view of providing a permanent home for the institution. Contracts are being prepared for a building, and it was hoped that next year the house would be completed. Amongst other technical matters which had been dealt with by the council during the year, the report mentioned a memorial to the President of the Local Government Board for the repeal of existing statutes so far as they prevented mechanical locomotion on common roads, apart from traction engines. Should the appeal prove successful the council were sanguine enough to anticipate with confidence the speedy development of a branch of mechanical engineering, which

might even call forth an amount of enterprise exceeding anything that had yet arisen in connection with the remarkably rapid growth of the cycle manufacture.

ATTENTION may be called to the fact that the Academy of Natural Sciences of Philadelphia holds in trust the sum of \$2,500, given by Mrs. Emma W. Hayden for a Hayden Memorial Geological Fund, in commemoration of her husband, the late Prof. Ferdinand V. Hayden, M. D., LL. D. According to the terms of the trust, a bronze medal and the balance of the interest arising from the fund are to be awarded annually for the best publication, exploration, discovery or research in the sciences of geology and paleontology, or in such particular branches thereof as may be designated. The award and all matters connected therewith are to be determined by a committee to be selected in an appropriate manner by the Academy. The recognition is not confined to American naturalists.

UNIVERSITY AND EDUCATIONAL NEWS.

THE suit of the United States against the executrix of the late Senator Stanford, for over \$15,000,000, has been decided by the Supreme Court of the United States in favor of Mrs. Stanford. The future endowment of Stanford University depended on this decision.

THE will of the late Hart A. Massey, of Toronto, leaves about \$650,000 to educational and charitable institutions, including the following bequests: Victoria College, Toronto, \$200,000; Wesley College, Winnipeg, Man., \$100,000; Mount Allison College, Slackville, N. B., \$100,000; Wesleyan Theological College, Montreal, \$50,000; American University, Washington, D. C., \$50,000.

THE finance committee of the Senate of the State of Virginia has presented a bill appropriating \$50,000 annually, instead of \$40,000 as heretofore, to the University of Virginia.

THERE has been organized at Indianapolis a University of Indianapolis consisting of Butler College, the Medical College of Indiana, the Indiana Dental College and the Indiana Law School. These institutions have at present about 1000 students.