

20 blind for every 10,000, and Holland lowest with only 4.5, the order is as follows: Portugal, Russia, Finland, Spain, Norway, Hungary, England, Germany (without Prussia), France, Prussia, Sweden, Belgium, Austria, Switzerland, Italy, Denmark and Holland.

A SWISS National Exposition, promoted by the Swiss Confederation and the different cantons and cities, will be held at Geneva from May 1st to October 15th of the present year.

At the 252d regular meeting, held Saturday, December 28th, the Biological Society of Washington elected the following officers for 1896: President, Surgeon General Geo. M. Sternberg; Vice-Presidents, Richard Rathburn, C. D. Walcott, L. O. Howard, B. E. Fernow; Recording Secretary, M. B. Waite; Corresponding Secretary, F. A. Lucas; Treasurer, F. H. Knowlton; Members of the Council, F. W. True, C. W. Stiles, W. H. Ashmead, F. V. Coville, C. L. Pollard.

THE New York *Evening Post* states that one of the greatest of the world's bridges is to be built at Detroit, to connect that city with Windsor. It is to be over two miles in length and to be five feet higher than the Brooklyn bridge. The plans for the structure have been prepared, and legislation looking to its construction has been asked in Washington and Ottawa. A corporation has been or will be organized under Michigan law to coöperate with a similar Canadian corporation in constructing the bridge, and the Vanderbilts will guarantee the bonds of both. The estimated cost is between four and six millions.

THE *Journal of Geology* announces that it will publish, beginning with the first number of Vol. IV., a series of four articles under the head of 'Studies for Students,' by Prof. Van Hise, on (1) Movements of Rocks under Deformation; (2) Analysis of Folds; (3) Cleavage and Fissility; (4) Joints and Faults.

THE *American Machinist* states that a bill has been introduced in the United States Senate by Senator Quay asking for an appropriation of \$25,000 for the Franklin Institute and Purdue University, for the purpose of determining the quantity and effect of hammer blow, 'centrifugal

lift and tangential throw' of locomotive wheels in use on American railroads; also the effects produced thereby.

THE *Appalachian Mountain Club* announces that it will publish in the early spring a 'Guide to Walks in the Country about Boston,' covering practically the ground embraced in the Club map of the country about Boston. The book will have many maps and be illustrated, and it is desired to have as many of these illustrations as possible taken by the amateur photographers of the Club.

UNIVERSITY AND EDUCATIONAL NEWS.

THE *Evening Post* states that at a meeting of the committee on buildings of the American University, architects have been chosen to prepare plans for the hall of the history building. A subcommittee was also chosen to take charge of the construction of the structure, which will cost about \$150,000. Bishop Hurst announced an additional gift to the University, that of a business block in Findlay, Ohio, valued at \$10,000, from John D. Flint, of Fall River, Mass.

MRS. T. K. W. SHIMER, owner and principal of the Mount Carroll Female Seminary of Mount Carroll, Ill., has offered to the University of Chicago the seminary buildings and twenty-five acres of ground, with an endowment of from \$150,000 to \$200,000, to be a girls' training school in connection with the University.

MR. SIDNEY A. REEVE, for several years employed with the engineering firm of Westinghouse, Church, Kerr & Co., and recently editorial writer on the *Progressive Age*, a journal devoted to gas interests, has been elected adjunct professor of steam and hydraulic engineering in the Worcester Polytechnic Institute. Prof. Reeve will begin his services in the Institute about January 1st, 1896.

MR. LECKY, the historian, has been elected member of Parliament for the University of Dublin by a majority of 750 votes.

DR. N. KUSNETZOFF has been elected associate professor of botany and director of the botanical gardens in the University of Dorpat.

A NEW educational review has appeared at Leipzig, *Deutsche Zeitschrift für Ausländisches Unterrichtswesen*, edited by Dr. J. Wychgram.

SCIENTIFIC LITERATURE.

Justus von Liebig, His Life and Work (1803-1873). By W. A. SHENSTONE, F. I. C., Lecturer on Chemistry in Clifton College. New York, Macmillan & Co. 1895. Pp. 220 + vi.

This is one of 'The Century Science Series' edited by Sir Henry Roscoe, and it is fitting that one of the first chemists to receive attention should be Liebig. In his preface the author says: "The name of Liebig is doubtless familiar to most of us, but I fear very few have any clear idea what he did, why chemists admire and esteem him, or, indeed, are aware that they do admire and esteem him. As the result of many inquiries made among cultivated people, I have found the prevailing impression concerning Liebig to be that he was a man who gained a large fortune by making 'extract of meat.' Now and then one meets someone who 'seems to have heard' of his name in connection with agriculture. Scarcely anyone now seems to know that he was one of the greatest of that class in whose work Mr. Balfour finds 'the causes which more than any others conduce to the movements of great civilized societies.' I have therefore made it my object in writing this little book not so much to dwell upon Liebig's private life as to tell what he was, what he did, and why all chemists and all those who are versed in the history of science admire and esteem him so greatly."

There can scarcely be a doubt that chemistry owes more to Liebig for its advancement during the present century than to any other one man. He was born in 1803 at Darmstadt, where his father dealt in colors, which he also manufactured. The boy was a failure at school. He had no ear memory and could not, therefore, make progress in linguistic studies. On the other hand, he had the powers of an experimenter, and was attracted by everything connected with chemical phenomena. He spent some time in an apothecary shop, but he took little interest in the commercial side of his occupation, and, in the course of a few months,

he was sent back to his father. It was then decided that he should follow his bent and study chemistry. He went to the Universities of Bonn and Erlangen, but did not find what he wanted. In 1822 he took the degree of Doctor of Philosophy at Erlangen, and then he was provided with the means for continuing his studies abroad. He went to Paris and was soon admitted to the laboratory of Gay-Lussac, one of the leading chemists of that time. Two years later he was appointed Extraordinary Professor of Chemistry at Giessen. In 1826 he became full professor. In 1852 he was called to Munich, where he died April 18, 1873.

"Liebig was essentially a pioneer in science. In the course of his life he took the lead in no less than four great departures. The first was in organic chemistry, the second and third in the applications of chemistry to agriculture and to physiology, the fourth was the outcome of his labors as a teacher."

How he labored in these four fields is well told in Mr. Shenstone's little book, and every one interested in the intellectual développement of mankind, be he chemist or not, will find here much that is stimulating and suggestive. The book is divided into nine chapters with the following titles: Introduction; Liebig and Wöhler; Chemical Discoveries; Liebig and Dumas; Fermentation; Chemistry and Agriculture; Physiological Chemistry; Education and Other Work; Character and Later Years.

Anleitung zur mikrochemischen Analyse der wichtigsten organischen Verbindungen. VON H. BEHRENS. Prof. an der Polytechnischen Schule in Delft. Erstes Heft (Anthracen-gruppe, Phenole, Chinone, Ketone, Aldehyde) Mit 49 Figuren im Text. Hamburg und Leipzig. Verlag von Leopold Voss. 1895. Pp. 64 + viii.

The author of this book is well known in connection with work on microchemical analysis in general. He has now endeavored to show the chemist who deals with organic compounds how he may avail himself of the microscope for the purpose of recognizing various substances. The methods described have been thoroughly tested in the author's laboratory and the results have been most satisfactory.