It is stated that S. A. Andée's plan for reaching the North Pole by balloon under the auspices of the Royal Swedish Academy of Science will be assisted by a subscription of 30,000 kroners by King Oscar.

SCIENTIFIC JOURNALS.

THE AMERICAN CHEMICAL JOURNAL FOR MAY.

The principal articles in this number are those containing reports of the investigations carried on by Remsen and others, on the chlorides of orthosulphobenzoic acid. Early in the investigation it was found that when the chloride was treated with aniline two products were obtained, which were most easily explained on the hypothesis that the chloride is a mixture of two isomeric chlorides corresponding to those of phthalic acid. This was afterwards shown to be the fact. Two chlorides were isolated and studied, and the results led to the conclusion that the so-called higher-melting chloride (melting point 76°) is the symmetrical one, having the formula

$$C_6H_4{<}^{CO\,Cl}_{SO_2Cl}$$

and the other, the lower-melting chloride (melting point 21.5°–22.5°), the unsymmetrical one, with the probable structure

$$C_6H_4{<}^{CCl_2}_{SO_2}{>}O$$

Both chlorides give ordinary orthosulphobenzoic acid when treated with water, but act differently when treated with ammonia, the symmetrical one forming benzoic sulphinide thus:

$$C_6H_4{<}^{CO\,Cl}_{SO_2Cl} + 4NH_3 = C_6H_4{<}^{CO}_{SO_2}{>}N.\,NH_4 + 2\,NH_4Cl$$

while the unsymmetrical one forms the ammonium salt of orthocyanbenzenesulphonic acid,

$$C_6H_4{<}^{CCl_2}_{SO_2}{>}O + 4\,NH_3 = C_6H_4{<}^{CN}_{SO_3NH_4} + 2\,NH_4Cl.$$

As the unsymmetrical chloride is acted upon much more readily than the symmetrical one, it is only necessary to treat the mixture, under certain conditions, with ammonia, to obtain the symmetrical one in pure condition. The action of benzene and aluminum chloride, on the mixture or on the pure symmetrical chloride, leads to the formation of two products,

$$C_6H_4{<}^{CO\,C_6H_5}_{SO_2Cl} \text{ and } C_6H_4{<}^{COC_6H_5}_{SO_2C_6H_5}.$$

The latter breaks down when treated with potassium hydroxide, yielding diphenylsulphone and benzoic acid:

$$C_6H_4{<}^{COC_6H_5}_{SO_2C_6H_5} + KOH = C_6H_5SO_2.C_6H_5 + C_6H_5\,COOK.$$

Besides these articles there are several shorter ones, one by Stone and Lotz showing the identity of the sugar called Agavose, with Sucrose, and one by Trevor on 'The Law of Mass Action.' Chase Palmer gives the results of an investigation of the chromates of thorium, and Cushman describes a method of separating copper and cadmium, which is more satisfactory than the method depending upon the precipitation of the cadmium in presence of the copper. He finds that cadmium sulphide is easily soluble in warm dilute hydrochlorie acid in the presence of an excess of alkaline chlorides, and is easily precipitated, after filtering to remove the copper sulphide, which is unacted upon. There are also two very interesting reviews, by Professor Mallet, of the Reports on Chemical Industry at the World's Fair, prepared by the German and French chemical representatives.

J. Elliott Gilpin.

THE BOTANICAL GAZETTE.

Issued May 18, 1895. 48 pp., 2 pl.

The Development of Botany in Germany during the Nineteenth Century: Eduard Strasburger.

Professor Strasburger wrote an account of the progress of botany in Germany during the present century for the sumptuous work, *Die Deutschen Universitäten*, prepared under the direction of the imperial government for the educational department of the

World's Columbian Exposition at Chicago. This work is so costly and so inaccessible that Dr. Geo. J. Pierce has translated the paper into English, and, with the approval of Professor Strasburger and the editor of the work named, it is being published in the *Gazette*. It is particularly valuable in that it forms a supplement to Sachs's History of Botany, in a measure bringing it down to date. The conclusion will appear in the June number.

The Embryo-sac of Aster Novæ-Angliæ: CHAS. J. CHAMBERLAIN.

In this study of the structure of the embryo-sac of one of the highest spermaphytes the author shows that the formation of the secondary nucleus of the sac has no relation to a sexual process; comments on the remarkable uniformity in size of the nucleoli of the egg apparatus and endosperm; finds the number of the antipodal cells varying from 2 to 13 and the number of nuclei in each from 1 to 20 or more; and, most remarkable of all, announces that he has found an undoubted egg in the antipodal region.

Present Problems in the Anatomy, Morphology and Biology of the Cactaceæ: WM. F. GANONG.

Professor Ganong continues his account of these plants, in this concluding installment indicating the problems connected with the flowers; the relation of form-conditions to climate; the internal anatomy and its relation to external conditions; the newness of the family and its geographical distribution; and briefly discusses the bearing of the solution of these problems on adaptation and natural selection.

Some Recent Cell Literature: J. E. HUMPHREY.

At the request of the editors Dr. Humphrey has prepared a review of recent cell literature and a summary of our present knowledge of the nucleus and centrospheres.

In *Briefer Articles* DR. C. R. BARNES notes the retention of vitality in the spores of *Marsilia quadrifolia*, whose sporocarps had been continuously for nearly three years in 95 per cent. alcohol; MR. G. E. DAVENPORT adds stations for his new New England species, *Aspidium simulatum*, which is likely to be in many collections under the name *A. Thelypteris* or *A. Noveboracense;* DR. J. C. ARTHUR condenses a biographical sketch of the late Dr. Joseph Schrœter; and MISS ALICE E. KEENER notes that the peculiar protection of the nectar gland in *Collinsia bicolor* by the free bearded tips of the wings of the filaments is a good diagnostic character which occurs in no other Collinsia except (less strikingly) in *C. franciscana*. The *Editorial* is on the recent transfer of the National Herbarium to the care of the Smithsonian Institution. In *Current Literature* appear reviews of 'Field, Forest and Garden Botany;' the second edition of Spalding's 'Introduction to Botany;' the 'Bushberg Catalogue and Grape Growers' Manual;' together with notices of several short papers. The number closes with four pages of *Notes and News*.

THE PSYCHOLOGICAL REVIEW.

The Psychological Review for May is devoted to experimental work. The first article is a 'Preliminary Report on Imitation' by Professor Josiah Royce. He reports the first-fruits of an attempt to submit the imitative functions to an experimental test by giving adult subjects series of rhythmical sounds, such as taps by an electric hammer, which it is their task to reproduce exactly in rhythm and sequence by second series of taps. He promises in a future communication to report on the results, which he finds sufficiently encouraging. The main body of this paper is further devoted to an acute discussion of the definition of imitation and the demarcation of the truly imitative functions. A large part of the number is taken up by a series of 'Studies from the Princeton Psychological Laboratory,' by J. Mark Baldwin, H. C. Warren and W. J. Shaw,

five papers in all, giving the output of this new laboratory for the first year. Among the results of most interest reported in these studies may be mentioned the following: The relative falling off in the accuracy of memory after intervals of 10, 20 and 40 minutes is shown by curves, the thing remembered being square magnitudes exhibited to large classes of students. A contrast effect of squares of different sizes shown simultaneously to the eye was discovered, as is reported in a detailed research. It was found that the distance between two squares of different sizes can not be accurately bisected by the eye. There is a constant error in judgment toward the smaller square, whether the two be arranged horizontally or vertically. And the error in finding the midpoint increases as the disproportion between the two squares becomes greater, but always in the same direction. This was tested by different methods, one of which was designed to rule out the effect of eye-movements. Another 'Study,' on 'Types of Reaction,' reports two cases of reagents who give shorter 'sensory' than 'motor' reactions. Professor Baldwin, the author of this paper, accounts for these cases, and earlier ones reported by Cattell and Flournoy, on the general view of mental types founded on recent cases of aphasia. 'Shorter Contributions,' by H. C. Wood, on the 'Haunted Swing Illusion,' and H. R. Marshall on 'Heat Sensations in the Teeth,' make up the rest of the articles. The usual section on 'Psychological Literature' is full and varied. Many readers will be interested by the review in this section of Nordau's book on *Degeneration* by Professor William James, who also reviews several other recent works on 'Degeneration and Genius.'

NEW BOOKS.

Canyons of the Colorado. J. W. Powell. With many illustrations. Meadville Flood and Vincent. 40. Pp. 400.

A Brief Descriptive Geography of the Empire State. C. W. Bardeen. Syracuse, N. Y., C. W. Bardeen. Pp. viii + 126. 75 cts.

Engineering Education. Proceedings of the Second Annual Meeting of the Society for the Promotion of Engineering Education, Vol. II. Edited by Geo. F. Swain, Ira O. Baker, J. B. Johnson. Columbia, Mo. 1895. Pp. vi + 292. $2.50.

Birdcraft. Mabel Osgood Wright. New York and London, Macmillan & Co. 1895. Pp. 317. $3.00

Familiar Flowers of Field and Garden. F. Schuyler Mathews. New York, D. Appleton & Co. 1895. Pp. vii+308. $1.75.

Articles and Discussions on the Labor Question. Wheelbarrow. Chicago, Open Court Publishing Co. 1895. Pp. 303. 35 cts.

Crystallography. N. Story-Maskelyne. Oxford, The Clarendon Press, New York, Macmillan & Co. Pp. xii+521. $3.50.

Official Year-Book of the Scientific and Learned Societies of Great Britain and Ireland. London, Charles Griffin & Co., limited. 1895. Pp. iv+ 254. 7s. 6d.

Complete Geography. Alex. Everett Frye. Boston and London, Ginn & Co. 1895. iv+175.

The Horticulturalists' Rule-book. L. H. Bailey. New York and London, Macmillan & Co. 1895. Pp. ix+302. 75 cts.

The Diseases of Personality. Th. Ribot. Authorized translation. Second revised edition. Chicago, The Open Court Publishing Co. 1895. Pp. viii+163. Cloth, 75 cts; paper, 25 cts.

Major James Rennell and the Rise of Modern English Geography. Clement R. Markham. New York, Macmillan & Co. 1895. Pp. vii+ 232. $1.25.