ography, an excellent index and a general map of the Antarctic and sub-Antarctic regions concludes the work.

Much of the land mass of the islands is of igneous or granitic rocks, but fossils of tertiary age, in limestone, have been found on Campbell Island and all the conditions indicate the probability that all the islands formed part of a continental area connecting them with New Zealand. Wingless species or species with reduced wings are numerous among the insects, as might be expected.

In his general review the editor leans toward the theory of a great Antarctic continent in the warmer Tertiary time—with connections or close relations with Patagonia, South Africa and Australasia—as best explaining the distribution of animal and plant life now existing and the fossil remains which have been collected in the Antarctic and sub-Antarctic regions.

Wm. H. Dall

ANNUAL INTERNATIONAL TABLES OF PHYSICAL AND CHEMICAL CONSTANTS

At the International Congress of Applied Chemistry, held in London in 1909, an international commission was appointed with power to undertake the publication of "Annual Tables" containing all constants and other numerical data which may be of interest in physics, chemistry or in the technical applications of these sciences. The plans outlined by the commission received the endorsement of the International Association of Academies and the official recognition and financial support of many of the governments and learned academies of the world. Since its inception the commission has been enlarged and made more thoroughly representative of the various branches of science. It is now composed of twenty-five chemists and physicists representing the following countries: Austria, Belgium, Great Britain, France, Germany, Holland, Italy, Russia, Scandinavia, Spain, Switzerland and the United States.

Owing to the immense volume of scientific and technical literature which is continually being produced, the difficulties in the way of ascertaining whether any given measurement has been made or not are increasing year by year. Existing systems of indexing and abstracting offer only limited help, since a large number of measurements are made in the course of researches to which they are purely subsidiary, so that their existence can not be inferred from the titles and subtitles of the papers in which they are recorded. Also, tables which appear only at long intervals, such as those of Landolt and Börnstein, can of necessity cover only a small part of the ground and are never quite up to date. The "Annual Tables" should therefore fill a serious gap which has hitherto existed in the systematic indexing of scientific and technical results.

During the year 1910 all scientific publications which might contain material of value were systematically scrutinized by a large corps of abstractors. From the data thus obtained a volume of tables and bibliography is about to be published, covering the year 1910. The volume will form a valuable addition to the physical chemical tables which already exist and will, together with the succeeding annual volumes, prove a powerful aid to the work of the investigator, both in pure and applied science, and will enable him to find with ease those data which he may require and which it would be most difficult to obtain by individual search. Many important constants published in little used journals, or in papers which are inadequately indexed, will be saved from oblivion. Each value, given in the tables, will be accompanied by the name of the author, by a reference to the original paper and by an indication of the exact conditions under which the measurements were made. The text of the tables will be printed in English, German, French and Italian.

The committee urgently requests authors of scientific papers to cooperate with them by sending to one of their number (two) reprints of all articles published. This is especially desirable in the case of papers published in the form of theses, of government

reports, or in any journal which might not come to the attention of the abstractors.

It is expected that the publication of the tables will, after three or four years, become self-supporting. In the meantime, generous subscriptions have been made by governments, academies, scientific societies and individuals throughout the world; but further subscriptions must be obtained before the continued success of the project is assured. The general secretary, Dr. Charles Marie, 98 Rue du Cherche-Midi, Paris, and the members of the International Commission serve without remuneration.

Information concerning the "Annual Tables" or the work of the international committee will be gladly furnished by the undersigned American members of the committee.

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SPECIAL ARTICLES

CHEMISTRY OF THE SILVER VOLTAMETER[1]

AMONG the questions relating to the chemistry of the silver voltameter which have been investigated more or less in detail are the following: (1) Effect upon electrolyte of the various septa employed in the different types of voltameters to separate the anode electrolyte from that of the cathode; these septa include (*a*) filter paper, (*b*) silk, and (*c*) porous pots of unglazed porcelain; (2) the effect of various kinds of impurities upon the weight of the silver deposit and the explanation of this effect; (3) the preparation and testing of pure silver nitrate free from traces of impurities which produce disturbing effects in the voltameter; (4) anode secondary reactions; (5) cathode secondary reactions; (6) preparation of the silver anode; (7) purity of the silver deposit.

[1] Read before the Philosophical Society of Washington, May 20, 1911.

Of these, the first question has been studied in greatest detail, principally because of the fact that it includes the cardinal differences between the various types in use by national standardizing laboratories. It early became evident that the different results obtained with the various types was due principally to the effect produced by these septa, and that two of them introduced errors of much greater magnitude than any ordinary variations in the conditions or in the purity of different samples of even commercially pure silver nitrate. However desirable it might have been to have devoted every energy to the preparation of pure electrolyte and to its protection from contamination during the experiments, it was nevertheless necessary first to show, *if possible,* just what the nature of the action of the septa might be, since the primary object of the work was a *study of the silver voltameter as actually used,* and especially as used by the various standardizing laboratories, with a view of determining a uniform type if possible. The results of the investigation of the effect of filter paper seem to show that ordinary filter paper is superficially covered with oxycellulose, which can be extracted with water but which again forms spontaneously when the filter paper is allowed to remain in contact with the air. This oxidation is probably due to fermentation. This oxycellulose solution (colloidal) very readily reduces silver nitrate solution to colloidal metallic silver, which is very similar in properties to the colloidal silver of Carey Lea. Permanent colloidal solutions of silver have been prepared from concentrated aqueous extracts of filter paper. This reduction of silver nitrate is probably due to the intermediate formation of *furfuraldehyde* since the oxycellulose solution is readily decomposed into this aldehyde by the action of exceedingly dilute nitric acid of no greater concentration than that which is probably present in neutral silver nitrate solution (due to slight hydrolysis). Furfuraldehyde, especially the polymerized variety, produces all the *peculiar* effects which have been observed with filter paper, *e. g.,* imparts to the electro-