

its and dietary standards, inorganic food-stuffs and the mineral metabolism, and criteria of nutritive value and economy of foods, is of the greatest importance, and the reviewer believes that the views presented are in the main fundamentally sound, and that they will have an important influence in assisting the advanced student and investigator in arriving at correct conclusions upon these questions of nutrition.

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Zoologisches Addressbuch. Namen und Adressen der lebenden Zoologen, Anatomen, Physiologen und Zoopaläontologen sowie der künstlerischen und technischen Hilfskräfte. Herausgegeben auf Veranlassung der Deutschen Zoologischen Gesellschaft. 2 vollständig und bearbeitete Ausgabe. Berlin: R. F. Friedländer & Sohn. 1911. Pp. 1109. M. 15.

Biologists throughout the world are greatly indebted to the German Society of Zoologists and to the enterprising firm of Friedländer & Sohn in Berlin for this very substantial aid to research. The first edition of this zoological directory was issued in 1895, and a supplementary volume in 1901. The decade that has passed since the last supplement was published has brought many changes in the personnel, distribution and lines of interest of the biological contingent of the scholarly world, so that this new edition is particularly welcome at the present time. The work gives the correct address, official or educational connections and specialty of nearly 17,000 persons having professional or sufficient amateur interests in some field of biology to justify their inclusion in a list of zoologists. The names of a few of the leading booksellers, dealers in animals, and supply houses are included, but this element is far from complete. The lists also include, as before, the titles of the various natural history societies, museums, academies, etc., with official address, name and address of the secretary, and titles of serial publications with the date of the initial volume, a feature of great value to librari-

ans, bibliographers and to the exchange service of scientific organizations conducting publications.

A new feature in the present volume is the inclusion of the addresses of all the various European organizations for bird protection, and of the local clubs of entomologists, ornithologists, and other amateur organizations of naturalists. In Berlin, for example, we find the "Hertha," "Nymphæa alba" and "Triton" Vereine für Aquarien- und Terrarienkunde, each with its stated hotel or restaurant where its social gatherings are held. The abundance of such organizations in Germany and Great Britain stands in noticeable contrast to their rarity in our own country. This contrast is, in a manner, an index of the smaller interest taken in this country in the study of animals, as a result possibly of the absence of instruction in natural history in our secondary schools and universities and of the predominance of the commercial spirit.

As an original document in the history of the biological sciences this volume is of particular interest as it marks (in a unique fashion) the progress of the growth of interest throughout the world in biological matters. The edition of 1895 contained about 12,000 names as over against the 17,000 of the present one. The supplementary volume of 1901 is too incomplete for comparison.

The work is international in scope and the growth here indicated is shared by all nations, though somewhat unequally. The increase in names is approximately fifty per cent. in the past fifteen years. The greatest gains, computed on the basis of pages devoted to the countries in question in the editions of 1895 and 1911, have been made in those countries which were in the lead in the earlier years. Thus, for example, Germany makes a gain of 128 per cent., Great Britain, the United States, Austria, Switzerland, exhibit gains of 80 to 90 per cent., while Russia, Belgium, Denmark and Canada show even larger growth, 100 to 110 per cent., and Japan the unsurpassed record of 170 per cent. The Latin countries have smaller increments to their

credit: Italy, 58 per cent., Spain, 40 per cent., France but 20 per cent., Mexico, 33 per cent. and South America, 31 per cent. India, China and Africa all make creditable gains, but Australasia appears to be at a standstill.

The changed political conditions in Europe are reflected in the fact that Turkey appears in the list for the first time and in the considerable gains in the Balkan states. On the other hand, the inroads of despotism are evident in the significant entry "Suspend," after not a few noted and promising names in the official staffs of the Russian universities.

It is inevitable that omissions, errors and inequalities of standard will creep into such a work, where the editor so necessarily is dependent upon voluntary assistance. The American section seems especially to have needed critical revision, for it contains numerous antiquated entries, inequalities in representation, and some positive errors. The Rockefeller Institute is, for example, credited to Chicago! One also misses in this new edition, the very helpful subject index of specialists of the earlier editions. The size of the volume would have been somewhat increased thereby, but the increased cost would have been more than compensated for by the greater usefulness of the work to the specialist seeking the names of his fellow-workers. The citation of specialty in connection with the alphabetical index of names would be a welcome addition to the work. In spite of these minor defects, however, the work will be exceedingly useful to every biologist and naturalist who seeks information regarding the organization and personnel of the various departments of the biological sciences throughout the learned world.

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*THE PRIBILOF FUR SEAL HERD AND THE PROSPECTS FOR ITS INCREASE*¹

AFTER more than twenty years of active operation, the pelagic sealing industry has been brought to an end, as the result of a

¹Read at the forty-first annual meeting of the American Fisheries Society, October 3, 1911.

convention which has been signed by representatives of the United States, Great Britain, Russia and Japan, and ratified by the Senate of the United States.

The contracting parties have agreed to prohibit their vessels from engaging in pelagic sealing and to close their ports against all vessels connected in any way with the operations of pelagic sealing. It is not necessary in this connection to go into the details of the seventeen articles of the convention, which is to continue in force for a period of fifteen years from December 15, 1911.

The total loss of seals from the North Pacific herds through pelagic sealing since its inception may be placed at about three millions. As a large proportion of this catch consisted of females, the disastrous effect upon the breeding stock of the Pribilof and Commander Islands will be readily appreciated.

The fur-seal industry, both at sea and on land, was for many years the subject of almost continuous international controversy, and the Pribilof herd especially has been studied long and carefully by commissions selected chiefly from the ranks of British and American naturalists.

The facts respecting the fur seal's habits, migrations, food, breeding, growth, age, numbers, anatomy, enemies, etc., etc., as arrived at by the commissions appointed to study the subject in general, afloat and ashore, can not reasonably be questioned. They are based upon prolonged inquiry by representatives of the two countries most interested, and have been mutually accepted only after the keenest possible criticism from both sides.

The natural history of the fur seal is now better understood in detail than that of any other wild mammal. These investigations, commenced about twenty years ago, have yielded much new information, and, with the cessation of pelagic sealing, we are now ready to apply scientific methods to the rehabilitation of the small herd remaining on the Pribilofs with full confidence as to the result.

The polygamous habit of the fur seal is the principal fact with which we have to deal in considering any scheme of management of