

in twenty-four hours, and a narrow slit is thereby directed towards the sun. A hood, funnel-shaped, protects the slit from diffused light, and allows of an error of about half an hour in the clock before sunlight is cut off from the slit. The drum carrying the sensitive paper travels, without rotation, along the axis of the cylinder, so that the record of a number of days may be obtained, one below the other. The advantages of this instrument are as follows: The chloride of silver paper makes possible a standard of intensity of sunshine which can be reproduced; the same size of paper is used at all seasons, and the instrument is serviceable for the sunshine of polar as well as of temperate latitudes.

CLIMATE OF CHILE.

A PAPER on 'The Economic Geography of Chile,' by J. Russell Smith, in the *Bulletin of the American Geographical Society*, XXXVI., 1904, 1-21, lays emphasis on the striking climatic contrasts between the northern desert provinces and the southern cool and rainy districts within the latitudes of the prevailing westerly winds. Between the deserts of the north and the forests of the south lie the agricultural regions of central Chile. Were it not for the mineral wealth, the great seaports and settlements of northern Chile would never have been developed, for the climatic conditions are distinctly hostile to human occupation. In the south, where the abundant rainfall favors the growth of trees, future deforestation will open the land more and more for settlement, but 'the economic center of gravity, and the home of four fifths or more of Chilean population, is, and must continue to be, in the central or agricultural region.' These large facts of the climatic control of settlement and occupation in Chile can not fail to impress themselves upon even the most casual observer who has the opportunity, which in 1897 came to the compiler of these notes, of making a climatic cross-section along the west coast of South America by taking the voyage from the Straits of Magellan to Panama.

MOUNTAIN SICKNESS.

IN Mr. D. W. Freshfield's book, 'Round Kangchenjunga,' it appears that those persons who suffered from mountain sickness were most affected between 15,000 and 16,000 feet, and that there was no increase of symptoms up to 20,000 feet. One member of the party 'had a constitution on which the only effect of altitudes of 20,000 feet was to increase his appetite and consequently his weight.' Mr. Freshfield was able to walk from 13,000 to 16,000 feet without halting, and sees no obstacle, so far as the physiological effects of diminished pressure are concerned, to an ascent of loftier mountains than Kangchenjunga.

WRECKS AND CASUALTIES ON THE GREAT LAKES IN 1903.

ACCORDING to the 'Meteorological Chart of the Great Lakes, Summary for the Season of 1903,' by A. J. Henry and N. B. Conger (Weather Bureau No. 298, 1904), twenty-four vessels became total losses through stress of weather. The loss due to fog was \$277,500. The number of lives lost through stormy weather was forty-nine. R. DE C. WARD.

PROGRESS OF THE CONCILIUM BIBLIO- GRAPHICUM.

DR. HERBERT HAVILAND FIELD, director of the Concilium, sends us an advance copy of his report, the most encouraging by far which he has been able to issue.

The number of cards issued since the foundation of the Concilium is 12,942,000.

The principal features of the progress of the past year are set forth in this very interesting report.

Of especial interest to Americans is the establishment of a set of the complete reference catalogue in the public room of the American Museum of Natural History, where it will not only be accessible to students, but from which immediate orders can be filled. This arrangement has been brought about by conference between the director of the concilium and Director Bumpus of the museum.

CONCILIUM BIBLIOGRAPHICUM (ZÜRICH, SWITZERLAND). GENERAL STATEMENT FOR 1903.

The present year has been a memorable one in the annals of the concilium. For the first time since the foundation of the work, the director has been able to renew personal relations with the great body of American zoologists and librarians. In Washington, Baltimore, Philadelphia, Princeton, New York, Woods Hole and Boston, an endeavor was made to gather suggestions and impressions from all possible sources; technical methods and devices were studied, and the firm conviction was obtained that the concilium may count on the support of American men of science. Not a trace of adverse criticism came to our ears, nothing but unqualified approval. It was particularly gratifying to see the many unforeseen applications of our classificatory system in zoological institutes and in libraries, large and small. In short, in this land, where the readiness to accept all innovations that are really practical is proverbial, we met an unexpected warmth of approval. Through a communication made in the Library Congress, and through numerous visits, the opinions of the leading librarians and bibliographers were also gathered. Here again there was unanimity, or rather, to be exact, unanimity less one dissenting voice.

The most noteworthy testimonial encountered in America was the offer of the American Museum of Natural History to patronize the work. This institution purchases the most complete set of cards obtainable, including the card catalogue of new species, etc. In addition, a complete collection of the main bibliography will be deposited in its library for distribution to those desiring to receive references to any special topic. Whenever information is desired, the cards may be obtained from the museum at the same terms as from Zürich and the cards thus withdrawn will be replenished as soon as possible.

Another important step taken in 1903 has been the reunion of the card catalogue with the *Zoolog. Anzeiger*. The concilium is thus called upon to continue a bibliography which forms an unbroken sequence since the year 1700. This circumstance gives to the con-

cilium a unique position among the bibliographical enterprises of the world and makes it doubly the duty of biologists to aid the institution in its work.

The circumstances attending the transfer of the editorship of the bibliography of the *Zoolog. Anzeiger* to our hands were unfortunate in the extreme. We had no means of knowing what had been done and what remained to be done. Old illegible manuscript had to be utilized and a new organization created in the absence of the director of the concilium. The product was most unsatisfactory, and yet the time spent on the work was such as to hamper our entire activity and occasion serious financial loss. Now, however, the principal difficulties are removed and the work promises scientific success even though the arrangement be of little financial benefit to the concilium.

The report for 1903 would be incomplete without a tribute to the memory of Professor J. Victor Carus, late editor of the *Zoolog. Anzeiger*. A zoologist of the old school familiar with the science in all its ramifications, he also brought to the work profound classical learning, a rare knowledge of languages, a fine sense of order and proportions and a passion for hard work, which seemed almost incredible. Prevented by ill health from following an active career, he devoted his life to bibliography. Even in the last years, this feeble octogenarian sat whole days at his desk and prepared in his fine cramped handwriting the 10,000 titles that were sent yearly to press. No one who has never tried it can know what that means. To have done this for a lifetime seems beyond the powers of human endurance. But in spite of all this routine, it is to the added credit of Professor Carus that his mind was ever open to new ideas. Just as in his scientific career he became an ardent convert to Darwinism and took foremost place in making the works of Darwin accessible to his countrymen, so in later years he seized with avidity the new ideas in bibliography which the founding of the concilium made prominent and began the transformation of his bibliography in accordance with them.

With equal vigor, the old master of bibli-

ography felt himself, however, called upon to denounce an enterprise which, breaking with all sound bibliographical traditions, sought to evolve around the diplomatic green table a plan for a vast and disordered compilation, which through the simple fact of financial superiority was to supplant the product of all the individual labor of which Professor Carus offered in his own life the noblest example. It is not too much to say that this contemptuous neglect cast a deep shadow over the last years of his life. He lived, however, long enough to see his contention justified by events and to be freed, as he expressed it, from a dreadful nightmare.

Financially the year closed with a deficit, which, in view of the complications of the year, was quite inevitable. Fortunately, the American Association for the Advancement of Science and the Elizabeth Thompson Science Fund again came to the rescue. It has been generally taken for granted that the petition of the American Society of Naturalists and the American Association ensured favorable action on our request for adequate aid from the Carnegie Institution; but in spite of endorsement by the zoological advisory committee, no grant has been awarded. We are, therefore, again forced to make a strenuous appeal to private generosity.

The public expressions of approval of our work have been even more numerous in the past year than in those that have preceded. Besides the resolutions of the societies above mentioned and the discussion at the Library Congress, we may mention the articles published by Mr. Van den Broeck in which he declares that the work of the concilium is the ideal which other enterprises must endeavor to attain. In the ensuing correspondence, a plan for enlarging the scope of the concilium towards geology was elaborated, and could be realized if the necessary funds were forthcoming.

At the congress of the International Association of Botanists held in Leiden in April, a day was given to the discussion of a project of forming a botanical section of the concilium, and resolutions were unanimously passed advocating such action and offering as

a contribution to the section the same sum that the association had hitherto devoted to its own bibliography. This offer was accepted by the concilium, to take effect as soon as an equal sum from some other source should be obtainable. The committee of the association has generously left the entire question open for a year pending the endeavor to obtain adequate support for the concilium.

During the summer of 1903, an international congress of forestry took up the question of bibliography and appointed a committee to consider the question of founding a bibliography in connection with the concilium. This action, of which we had no knowledge in advance, shows how far our work is being appreciated. The international committee is to meet soon in Zürich.

Arrangements have been perfected for the organization of a new bibliography in connection with the *Archiv für Rassen- und Gesellschaftsbiologie*. This bibliography will be the beginning of the realization of the plans for an exhaustive treatment of anthropology.

A promising project of extending the activity of the concilium to certain applications of science has been quite unexpectedly brought to us. One of the workers in the concilium is devoting himself to it.

The close of the year has finally seen the opening of a series of negotiations of great importance for the future organization of scientific bibliography, and which all tend to bring existing bibliographies one by one into harmony with our work. Though unsought by us, this new tendency is certainly to the advantage of all parties concerned and in the interest of science.

Further evidence of the reputation which the concilium has won is to be found in the great increase in the number of publications sent to this office for notice. With scientific societies this practice has become quite general and publishers are rapidly following the example.

Besides the innovations to which allusion has been made in the preceding pages, three new publications will be undertaken in 1904.

One of these will be a list of the journals

which have been excerpted for the bibliography.

references deal with individual groups of animals found in Sumatra, as, *e. g.*, Hispidæ or

	1896-98	1899	1900	1901	1902	1903	Total.
(A) Subject Index.							
1. Paleontology	1,460	1,840	2,662	2,035	1,436	2,170	11,603
2. General biology	187	151	92	155	93	200	878
3. Microscopy, etc.	266	132	249	263	107	169	1,186
4. Zoology	18,845	14,271	13,326	16,845	11,059	11,.....	85,.....
5. Anatomy	1,940	936	1,875	2,007	1,224	1,5...	9,5...
6. Physiology	1,380	1,270	433	—	—	—	3,083
Total	24,078	18,600	18,637	21,305	13,919	15,2...	111,7...
(B) Authors' Index.	16,165	9,492	10,890	10,119	6,727	7,.....	60,.....
Total	40,243	28,092	29,527	31,424	20,646	23,.....	173,.....

Another is a card catalogue of all new names of generic or subgeneric rank which have been proposed in paleontology or in zoology since January 1, 1901. Each name will be given two entries, one under the appropriate taxonomic heading, the other in alphabetical arrangement. The price per card of the new catalogue will be double the usual tariff.

The third new publication is that relating to comparative physiology, in regard to which a special circular has been prepared.

Sooner than we expected, our quarters have become too small for storing our rapidly growing collection; but relief has been found for the overflow in a neighboring house.

The following table shows the total number of entries in a complete set of cards arranged by subjects and by authors. The years refer to the date of publication of the cards.

Distribution by Topics.—The distribution of primary cards in the chief divisions of the bibliography is shown in the following tables. Our statistics are, however, merely approximate, the earlier cards of the complete series being now quite out of print. The 'complete set' as understood by us can best be explained by an example. Subscribers to the complete set have thus far received 134 cards in the division 'Fauna of Sumatra.' This same division of the systematic set contains a single reference (Moesch: 'Nach und aus dem Pfefferlande'). This contribution appeared to us too general for us to cite it under any particular systematic group and it was classed under Sumatra in general; the remaining 133

Lemoniidæ. In the 'systematic set,' they are entered under Hispidæ, Lemoniidæ, etc.

SCIENTIFIC NOTES AND NEWS.

MR. F. A. LUCAS, curator of the Division of Comparative Anatomy of the U. S. National Museum, has been appointed curator in chief of the Museum of the Brooklyn Institute of Arts and Sciences. Mr. Lucas succeeds Mr. Alfred G. Mayer, who, as we have already announced, has been appointed curator of the Marine Laboratory of the Carnegie Institution at Tortugas, Florida.

SIR DAVID GILL, director of the Observatory of the Cape of Good Hope, has been elected honorary member of the Finnish Academy of Sciences.

THE French Geographical Society, at its general meeting on April 22, conferred gold medals on Dr. Sven Hedin and Captain Lenfant.

THE Council of the British Institution of Civil Engineers has made the following awards for papers read and discussed before the institution during the past session: A Telford gold medal to Major Sir Robert Hanbury Brown; a George Stephenson gold medal to Mr. G. H. Stephens, C.M.G.; and a Watt gold medal to Mr. Alphonse Steiger; Telford premiums to Mr. E. W. De Russett, Dr. Hugh Robert Mill, Mr. Alexander Millar, and Mr. T. E. Stanton; a Manby premium to Professor J. Campbell Brown; and a Crompton prize to Mr. L. H. Savile.