

controlled. The results, always with the condition that the proper use is made of the standard skull, are as uniform and as near the reality as can be reasonably hoped for.

The apparatus I use is not made for the market, but it should not be difficult for any one sufficiently interested to have it constructed, following the given directions.

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NEW DEPARTURES IN THE CONCILIIUM BIBLIOGRAPHICUM. II.—THE SUPPLEMENTARY BIBLIOGRAPHY.

THIS portion of the great catalogue exists primarily in manuscript form. As fast, however, as the demand for any part becomes great enough the cards are duplicated by a new lithographic process. Should the demand become still greater, typography would be resorted to. This ought certainly to be the case for the American section.

The references consist of such entries as can not for practical reasons be admitted into the general bibliography. The price of any given collection of cards is double that charged for the same number of cards taken from the main bibliography, ranging thus from half a cent to two cents a card.

1. *New Genera, Species, Subspecies, etc.*—As was shown in the first part of the present article, the Concilium adopted several years ago the uniform practice of reading, or at least perusing, the text of every publication entered in the bibliography. In this way the descriptions of all families, subfamilies, genera, subgenera, species, subspecies, etc., described in zoology passed before our eyes. It seemed under such circumstances a great pity that the information thus acquired should not be placed at the service of the zoological world. A beginning was made by referring to every new species under the appropriate genus name in connection with the printed cards. This has been made a permanent feature of the card catalogue, and no card is now issued which does not bring references to all new species described and to all new names introduced by the author. Many zoological memoirs contain descriptions of

several hundred new species; but we have never wavered in our decision to record everything, even though double and triple cards were required.

The value of these entries is very great; but we have, of course, not been able to cite every species in full, nor to state the locality from which it came. Nor were the printed cards giving references to the new species available for an adequate catalogue of new species; for, in most cases, species from many different genera being described in a single publication these were recorded on a single card. In 1900 certain preliminary experiments were made in view of testing the possibility of placing all novelties on permanent record, so that, for example, a zoologist turning to the genus *Carabus* in the year 1950 might find before him in convenient form an exhaustive catalogue of every new subgenus, species and of every new name introduced under that genus since 1901. The value of such a record seemed to us quite inestimable and one can well imagine the feverish impatience with which the outcome of our experiments were awaited, for they were to decide whether this gigantic task lay within the possibilities of our organization. The experiments showed that the labor would in truth be immense. We also had to face the stubborn fact that we were working for posterity and that the full value of the work would not be appreciated for many years. We also knew that the entire work would be a complete financial loss. In view of all these facts it was, indeed, a bold decision which we took on January 1, 1901, when we began recording each novelty on a special card. The work is now progressing well, and if the Concilium be adequately supported, will never be abandoned.

The collection of references to such a genus as *Carabus* will not be the only facility which the Concilium will offer to the student coming to it in 1950. If a person is then desirous of studying the fauna of Bolivia, my successor in office will first show him the main printed bibliography, comprising at that date some 200 to 300 entries; he will then lead the visitor to a great cabinet of 72 drawers devoted to the new species described from South Amer-

ica. At the present rate of publication, three library bureau drawers would, fifty years hence, be devoted to Bolivia. The 2,500 cards would not, however, be indiscriminately arranged. One drawer would be devoted to arthropods. The greater part of the drawer would be filled with references to the insects, readily recognizable by the appropriate symbol of the decimal classification. A rather large group of cards would follow the guide card Coleoptera. Relatively smaller packets would refer to the primary subdivisions of the Coleoptera. I do not seriously believe that a representative of the genus *Carabus* will have appeared in Bolivia; but I trust that the references to Felsche's species of *Pinotus* will still meet the eye of the visitor of 1950 and that he will respect the self-sacrifice that made the inauguration of the work possible.

Multiple entry is the feature of the catalogue of new species as of the printed bibliography. Thus, in the paleontological part, there is not merely a division for dinosaurs, there is also an exhaustive treatment of the fossil fauna of Kansas gathered together under the heading Kansas, and a reference to all discoveries of Cretaceous animals under the appropriate stratigraphic heading.

Most of the work that we are here undertaking has never been attempted before; but our experience has shown that, in such places as our activity runs parallel to other recording agencies, we find in the latter so numerous omissions that the necessity of a more perfect organization of the work is most apparent. Even in regard to genera, a cursory comparison showed omissions aggregating a hundred or more, while, in regard to species and subspecies, we are sure that many hundred are recorded in the catalogue of the Concilium which are elsewhere quite overlooked. Omissions, of course, occur in our lists, but, again, we know just where the gaps lie and can make them good as soon as we can obtain access to each publication which we had not hitherto been able to excerpt.

The two years' experience has shown us, furthermore, how impossible it is for the individual worker to avoid giving preoccupied names. As soon as we detect such errors we

inform the author and suggest a change. Often the same name is chosen by two authors within a few weeks of each other, so that the entry in our record with date is highly important. In regard to genera the case is most disturbing. How can an ornithologist describing a new genus of birds be sure that his name has not been used by some paleontologist describing a fossil sponge? No such universal knowledge of the literature can be expected of any worker. For this reason, the Concilium is anxious to issue at frequent intervals, perhaps yearly, with cumulative five-year and twenty-five-year indexes, a cheap concise list of genus names that have been proposed. This work would supplement the 'Nomenclators' of Agassiz, Marshall and Scudder and the work recently published by the Zoological Society of London.

The following entry may serve to illustrate the arrangement of the text of our record of new species:

57.98 NESODYNERUS (96.9)

obtabilis n. sp.

Perkins 1901a.

Entom. Monthly Mag. (2), Vol. 12, p. 267.

57.98 is the group number for Vespidae, (96.9) for Hawaii. A second entry is made under (96.9) as primary division.

2. *Minor Notes*.—Many local journals of natural history, e. g., *Entomologist*, *Auk*, etc., publish, often in small print, numerous notes on captures, isolated observations of habits, records of trifling color variations and so forth. Ever since the foundation of the Concilium it has been a burning problem how to deal with these notes. It is out of the question to neglect them, for they may contain changes of nomenclature which by the rule of priority might become decisive of the proper name of an animal. Thus we may find new genera of fishes actually introduced for the first time in the editorial talks on recent literature appearing in the *American Naturalist*! No form of publication can be too trivial for a conscientious bibliographer, so long as the law of absolute priority forms the basis of our nomenclature.

In regard to these minor notes, the bibliographies in pamphlet form have a vast ad-

vantage over a card bibliography. No one need hesitate long to sacrifice two lines of print even to an almost worthless publication. But when it is a case of publishing a complete bibliographical card it becomes a most serious matter. For many years the Concilium tried various subterfuges; it issued many cards that seemed scarcely worthy of notice; it then experimented with printing the references on gummed paper to be pasted on cards by the subscriber, if desired. It also tried holding back such references till the end of the year and then publishing a dozen or more entries on a single card.

None of these means was successful. Finally, in 1902, a great catalogue of manuscript entries was founded. Such entries being omitted from the printed bibliography, the total number of cards sent to subscribers will be reduced annually by a thousand or more. The new cards are similar to the ordinary bibliographical cards in every respect, save that instead of being printed they are in manuscript. They can, however, be supplied when desired. Thus a subscriber in California will not be burdened by innumerable tales of beetles found in the county of Kent, England. For the inhabitant of Kent the note may have value, for the Californian it is rather superfluous. In future the Kent entomologists can receive the reference if they care for it; but the Californian ornithologist need not. This new departure means a loss to the Concilium of several hundred dollars annually. The maintenance of the manuscript catalogue is costly and the income from the printed card catalogue is reduced by leaving out such notes. It is merely a case of what I may conscientiously declare to have been the uniform policy of the Concilium, that of never deviating a particle from its disinterested aims. Every innovation of recent years has been attended with financial loss; but never have we faltered in assuming it. We have perhaps often imperiled the very existence of the work by such scruples, but at the same time we have, I believe, won the unqualified approval of every one who has taken the pains to examine closely our work and can with justice appeal for support to those who have

the interests of science at heart. I am confident that the disaster which the abandonment of the work would entail is not a danger which is seriously threatened. The immediate needs of the institute seem to us great; but they are only so in comparison with the modest means which have thus far succeeded in keeping the enterprise alive. A debt of \$4,000 ought not to burden indefinitely the work. \$3,500 for new machinery ought not to be a hopelessly large sum to secure. A yearly grant from an American source equal to that offered by little Switzerland (\$1,500) seems least of all exaggerated. And yet this is all that is needed to inaugurate a period of prosperity and work without preoccupations of a financial character. Doubtless new possibilities and new needs would open as the years passed; but the present program could be fully carried out with the support that I have sketched.

HERBERT HAVILAND FIELD.

*REPORT OF THE ICHTHYOLOGICAL RE-  
SEARCH COMMITTEE.\**

WE understand that the committee appointed by the Board of Trade in August last year 'to inquire and report as to the best means by which the State or local authorities can assist scientific research as applied to problems affecting the fisheries of Great Britain and Ireland, and, in particular, whether the object in view would be best attained by the creation of one central body or department acting for England, Scotland, and Ireland, or by means of separate departments or agencies in each of the three countries,' have come to the conclusion that, while no sufficient reason has been adduced for suggesting any changes as to the central authority for conducting scientific fishery investigations in Scotland and Ireland, it is desirable that the functions of the Fisheries and Harbor Department of the Board of Trade, which is the central authority for England, should be considerably enlarged. They recommend, therefore, that the Board of Trade should have power not only to delegate to any satisfactory fishery authority the conduct of such fishery

\* From the *London Times*.