sessing genera common to Africa and America. The African genera are only six, whereas we have very numerous genera in North America. Three, each with a single species, are exclusive African, one being from Lake Tanganyika (a remarkable form, with ctenoid scales), one from the Cameroon-Niger region (the exposed surface of the scales said to be regularly hexagonal), and one which is really Palæarctic, being found on the northern slope of the Atlas Mountains, in hot springs. The last mentioned, *Tellia,* is like *Cyprinodon,* with the pelvic fins wholly absent. Eighteen species are placed in *Fundulus*—the genus which is persecuted every summer by the biologists at Woods Hole. Forty-two others are referred to *Aplocheilus,* which Dr. Boulenger calls *Haplochilus,* the only distinguishing feature of which appears to be the fact that the dorsal fin is placed more posteriorly. Other characters have been cited by authors, but they apparently break down in dealing with the African fauna. The weakness of *Haplochilus,* as now defined, is indicated by the fact that in 1911 Dr. Boulenger himself described the sexes of a species (*Fundulus gardneri*) as two different things, placing the male in *Fundulus* and the female in *Haplochilus.* Another species, *Haplochilus liberiensis,* certainly seems nearer to *F. gardneri* than the latter is to some other species assigned to *Fundulus.* Thus we have a more or less continuous series, which is divided into two genera principally on grounds of convenience, by a character which in most of the species can be recognized at a glance. The only objection to this arises from the possibility that the arrangement is artificial, and that our American *Haplochilus* have no immediate relationship with those of Asia and Africa. If we use the single character employed by Boulenger, our *Fundulus floripinnis* must be referred to *Haplochilus,* where in fact Cope originally placed it.

Boulenger's "Freshwater Fishes of Africa" is a book which, although strictly technical, ought to find a place in general zoological laboratories, because it serves so well to illustrate the modifications which characterize genera and species. Very rarely can we see such complete series as are represented by the illustrations, and with the relatively scanty materials at our command, we are little able to appreciate the real diversity of animal life.

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A BIBLIOGRAPHY OF FISHES TO BE PUBLISHED

The time is ripe—and has, indeed, long been ripe—for the publication of a carefully prepared bibliography of fishes, to cover the entire range of the subject: fishes fossil as well as living, and fishes from many points of view, such as anatomy, physiology, embryology, pathology, parasitology, distribution, taxonomy, everything in short excepting matters which deal with clerical details of the fisheries. Such a compilation, it is clear, means much for this branch of zoology; for the literature of the fishes is vast, widely scattered and ill digested. In fact, I believe that there is hardly an investigator to-day who has not been obliged, needlessly, to give weeks or months of his time to searching for references.

The importance of such a bibliography was brought home to me about 1890: at that time I began the work of collecting references to be used in my studies, and as years passed I was able to build up a card-catalogue giving author and subject, which proved indispensable. Later my catalogue became known to correspondents, who in turn found it of use in their studies; and they, for their part, were generous in contributing references, and thus added notably to its value. It next, through the kindness of the Smithsonian Institution, absorbed the bibliography which Professor Goode undertook to publish and which his death left unfinished. Thus the value of the work became greater year by year. About 1910 the American Museum of Natural History allowed me secretarial help in the direction of editing the catalogue for publication. And thereafter, for about a year and a half this secretarial work was carefully carried on under the supervision of my colleague, Dr. Louis Hussakof, and since 1914 by Dr. C. R. Eastman, of the American Museum.

The scope of the undertaking may be understood when one considers that nearly 50,000 references are brought together. These have been gathered from all sources, notably from all accessible bibliographies, serial publications and book catalogues. Finally, the effort was made to complete the lists of titles by bibliographies secured in so far as possible from authors themselves. To this end circulars were sent out to several hundred writers on ichthyology, many of whom responded cordially.

There still remain, however, a number of individual writers who have not contributed the titles of their publications. I have, accordingly, been led to publish the present note in the hope that any who have not already sent to Dr. Eastman or myself their bibliographies may be reminded that we are especially anxious to make the work as complete as possible. And we urge that their lists be sent in without delay, for the work is undergoing its final revision and the first volume is shortly to go to press. This is the "author's" volume which will consist of about 1,000 pages and include under the names of writers a serial list of their publications. The second, or "subject" volume, will be a classified index of the titles in volume I. Here one has access to special papers in the various branches, for example, in anatomy, distribution, embryology.

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SPECIAL ARTICLES

THE ACTION OF POTASSIUM CYANIDE WHEN INTRODUCED INTO TISSUES OF A PLANT

IN an issue of SCIENCE last autumn[1] Professor Sanford mentioned some experiments conducted in California in destroying the Australian bug, *Icerya purchasi*, by the use of potassium cyanide placed in the tissues of the tree. Since that issue, a number of articles or notes have appeared from time to time discussing the possibility of the use of potassium cyanide for the destruction of various sucking and wood-boring insects, but no experimental evidence was given as to how the cyanide acted in the tree or why it should kill the insects. During the winter and spring, a few experiments were conducted along these lines. The first work was done on geraniums. A hole was made near the base of the plant and a small piece of potassium cyanide, about half the size of a pea, was placed in the stem. A split piece of rubber tubing was placed around the stem and sealed tight with paraffin to prevent leakage. Twenty-four hours later the plant was examined for the presence of cyanide. The potassium cyanide had disappeared, but the odor of cyanide was present at the wound. Sections of the stem were cut longitudinally and crosswise and tested by the Prussian blue reaction. Thick sections were placed in a 5 per cent. solution of caustic potash for about a minute, then transferred to a solution containing 2½ per cent. of ferrous sulfate and 1 per cent. of ferric chloride, heated to 60° C. After ten minutes, they were placed in a mixture of one part hydrochloric acid to six parts water. When cyanide was present, the sections showed the Prussian blue reaction in from ten to fifteen minutes.

From Mr. Sanford's article, one would expect the reaction to show in the vascular bundles or in the water-conducting tissue of the plant. Such, however, was not the case. Cyanide showed only in the outer cortical layer and in the inner pith cells, the strongest, however, in the cortical layer. The lignified tissue gave no reaction. Positive tests could be obtained for a distance of about one foot above the wound, but only about an inch or an inch and a half below the wound.

Other treated plants were allowed to continue for several days, to study the effects on the plant. It was noticed that whenever the cyanide reached the axle of a leaf, the petiole withered and died within a half-inch of the base, the leaf hanging down from the plant. Similar results were obtained whenever the cyanide reached a succulent offshoot, the cyanide seeming to blister the tissue. Tests for cyanide could not be obtained beyond the injured portion which was at the point of attachment to the stem. The reaction at that

[1] Vol. XL., No. 1032, page 519.