

open sea, dense, saline and cold, to the Baltic. For this reason Mr. Huntsman suggests that the density of the surface water in which the eggs develop may be a decisive element.

In this connection, I may add a few additional data. In the group of Rock Cod or Rose-fish (*Sebastinæ*), the northern genera (*Sebastes*, *Sebastolobus*) have twenty-nine to thirty-one vertebrae, the tropical forms nearest related twenty-four, and the intermediate group of many species on both sides of the Pacific (*Sebastes* and its allies) were supposed to have twenty-seven.

In verifying this statement I find that four of the more primitive of these forms (*Sebastes paucispinis*, *S. goodei*, *Rosicola pinniger* and *R. miniatus*, have but twenty-five vertebrae, while all the others examined have twenty-seven as supposed, and the metamerer in the very young are also twenty-seven.

Hitherto the extinct species of this tribe have remained unknown. I have, however, lately discovered three Miocene species, which ought to throw light on the problem. At any rate they show that the variation is of long standing.

Two fossil species with thirteen dorsal species, *Rixator porteousi* and *R. inezia*, related to *Sebastes goodei*, have, like the latter species, twenty-four vertebrae, besides the last one which supports the hypural. This is evidence so far as it goes that the smaller number (with greater individual development of the bones) is very ancient. Nearly all the spiny-rayed shore fishes of the present day have twenty-five.

But another fish of this type—also Miocene (*Sebastavus vertebralis*), has thirty-two vertebrae. The relation of this species to existing forms is not close, nor is it well made out. All three of these Miocene species are found in deposits made in shallow, sheltered bays, in a temperate climate. As Mr. Huntsman observes, "A fruitful field for investigation is open in this direction." It should apparently involve both embryology and paleontology, as well as the study of adult fishes and their distribution.

DAVID STARR JORDAN

#### ABSTRACTS AND TITLES OF SCIENTIFIC ARTICLES FROM THE LIBRARIAN'S STANDPOINT

TO THE EDITOR OF SCIENCE: In his article on "Scientific Abstracting" in SCIENCE for November 30, Mr. Fulcher emphasizes the point that the time of research men should be conserved for their actual research by facilitating for them in every way the securing of the scientific information already published. No one would dispute this statement, and its truth is becoming increasingly striking as the mass of literature yearly accumulates, but it is suggested that from his list of the agencies contributing to this end as a part of what he calls "our scientific information service" Mr. Fulcher has omitted a very necessary and important agency, namely, the scientific library. A library of a scientific institution has no other purpose than to collect and make available the literature on the subjects of interest to that institution, and anything which facilitates this work is ultimately of benefit to the investigators. There is no one to whom abstracts such as those pled for by Mr. Fulcher would be of greater help than to the scientific librarian or bibliographer. As he points out, it is impossible to rely on titles alone to show the variety of information contained in an article, so that it is necessary for a librarian compiling a subject catalogue to glance through each article so that he may be sure it is entered under all the subjects of which it treats. Abstracts in the form described, with the italicized paragraph headings and subtitles would suggest at a glance possible subject headings, and in the case of articles in highly specialized subjects would frequently suggest headings which, without the abstract, only the specialist would recognize as being desirable.

Speaking of this, the present writer has thought for a long time that it would be well for persons interested in increased economy and efficiency in the recording of scientific data to give the form of titles for periodical articles careful consideration. No title can, of course, describe all the contents of an article, but many could easily be more de-

scriptive than they are and contain information essential to a cataloguer or investigator, frequently obviating the necessity of an examination of the article itself to discover what it is really about. Take, for instance, titles like the following: "A spot disease of cauliflower," "Known species of smut on a new host," "A dangerous potato disease." Each of these titles shows in a general way what the article in question is about, but no one of them gives information essential for assigning subject headings, yet in each case this might have been done, still keeping the title concise and short. The title "A spot disease of cauliflower" omits the very important information that this is a new disease assigned to a new bacterial pathogene which is described in the paper, while "A spot disease of cauliflower caused by *Bacterium maculicolum* n. sp." gives the essential information and is not objectionably long. The title "Known species of smut on a new host" might much better be written "*Cintractia leucoderma* on a new host, *Cyperus gatesii*," and "A dangerous potato disease"—"A dangerous potato disease due to *Rhizoctonia violacea*" or "A dangerous *Rhizoctonia* disease of potatoes."

It may be difficult to assign satisfactory titles for articles on abstract subjects whose terminology is not definitely fixed, but in cases such as those mentioned above it is a simple matter to compose a clear and definite title giving the specific facts dealt with in the paper. The more definite titles would save time in the library not only in cataloging and bibliographical work, but would frequently prevent the necessity of the library's procuring a journal for an investigator on the chance that an article contained therein, whose title may have been seen in a catalog or list, may be on a subject in which he is interested. A clear and definite title shows at a glance whether the article should be read by an investigator working on a certain subject, while an ambiguous or indefinite title puts him under the necessity of looking up many articles only to find that they are not on his subject.

It would seem, therefore, well worth while for the National Research Council, or whatever agency is formulating the directions and rules for the preparation of analytic abstracts, to include with these directions for the preparation of titles for scientific articles. There are many points in addition to those which have been mentioned here, which should be considered, such as, for instance, the relation of the title of a preliminary abstract to the title of the complete paper appearing later, giving the same article in different journals different titles, the publishing of different articles on the same subject with identical titles, or, the continuation of an article with a title different from that of the first installment.

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LIBRARY, BUREAU OF PLANT INDUSTRY,  
U. S. DEPARTMENT OF AGRICULTURE

#### LONGITUDINAL ELECTROMAGNETIC FORCES

TO THE EDITOR OF SCIENCE: Last spring the writer sent a note to one of our well-known and carefully edited scientific journals for its correspondence column, announcing briefly that there are a number of good reasons for concluding that the old belief (expressed by Maxwell) that electromagnetic forces can act only perpendicularly to a conductor and never in the direction of its axis, seems to be wrong, and if so, it should be corrected.

The "advisers" of the editor on subjects pertaining to physics, recommended that the note "ought not to be published" as it was "so subversive of long-established principles." Five weeks later, the editor returned the note unpublished.

Physicists who have a more progressive spirit and may, therefore, be interested in such "heresies," and who are not hide-bound by beliefs whose chief qualification is the age of those beliefs, will find this subject more fully discussed by the writer in an article in the *Journal of the Franklin Institute* for November. This is also a carefully edited scientific journal, and one of its "advisers" on physical subjects (one of our leading physicists) recommended that "it is well worth publishing."