gregates some 20-40 ft. below, remaining in position until she gets under way and quits the spot.

A diver hanging in the shoal has a clear space some 6 ft. wide around him; beyond this the water is crammed with mackerel, the outline of the shoal corresponding roughly with that of the ship above. One sees that the fish are feeding on plankton, not by steadily pumping the water through their gill-filters, but snatching gulps from different directions, turning their eyes about and making little jumps here and there. Evidently the depth they maintain, slightly different from day to day, is that at which their food is drifting; but what is the mysterious attraction that keeps roving fish fixed beneath a stationary ship for hours together?

A paper by Bullen in the *Journal of the Marine Biological Association* for June, 1912, produces evidence (from examination of stomach contents and aquarium observations) that mackerel when feeding on plankton exercise selective powers, picking out certain forms, such as Copepods, and rejecting others, presumably by visual means. After observing the shoals on many occasions while hanging suspended in their midst, I feel sure that it is the assistance given by the black background of the ship to visual selection that links the fish to her.

Most objects floating in the open seas, jellyfish, sharks, driftwood, or derelicts, when carefully approached, are found to be accompanied by fish satellites. The attractive force is not necessarily the same in every case, but where (as in the case of the mackerel under the salvage ship) the stomach contents turn out to be selected plankton it is probably a matter of illumination.

It is likely that each member of a shoal is benefited by the background afforded by the bodies of its immediate neighbours, and, if so, a factor in the shoaling habit comes to light. Going deeper, a use suggests itself for the lateral light-producing organs of some bathypelagic fishes which are so placed that they can scarcely assist the fishes' own vision.

G. C. C. DAMANT.

H.M. Salvage Vessel *Racer*, Lough Swilly.

Co-operative Indexing of Periodical Literature.

I AM much interested in the leading article in *NATURE* of June 9 entitled "Co-operative Indexing of Periodical Literature," because the H. W. Wilson Company is doing on a commercial basis what the publications you mention are doing on what you call a "co-operative basis." This leads to an inquiry as to when the publication of an index or abstract is "co-operative." Perhaps co-operation meant originally the donation of indexing work on the part of individuals or libraries. However, it appears that of the co-operative publications mentioned none of the editorial work is donated. The "Engineering Index" is now published by one of the great engineering societies, and its deficit paid by that society. The deficit of the "Index Medicus" is met by the Carnegie Institution of Washington. The deficit of the "Index to Legal Periodicals," published by the H. W. Wilson Company, is made good out of the treasury of the Association of Law Libraries, and the deficit of the "Agricultural Index" is made good out of the treasury of the H. W. Wilson Company. In the case of all these publications subscriptions are solicited, and the income is used to pay for editorial work and expenses so far as it will go, the deficits being met as stated. Is the publication of an index less "co-operative" if the deficit is met by an individual or a corporation than if it is met by an association or a foundation? In other words, should not a corporation engaged in an educational

work be recognised as "co-operating" with men of science and scholars in the diffusion of knowledge?

Librarians say that indexes are more used in libraries than abstracts and digests. This, of course, does not imply that abstracts and digests are not useful to scientific and professional people, but since the chief support for abstracts, indexes, and digests comes from libraries, should not the advice of librarians be considered? A mere examination of the physical condition of various indexes and abstracts in libraries might be a fair indication of their comparative usefulness, and prove to be a revelation to those who are paying some of the deficits.

At one time the subject of agriculture was considered by the Committee on the International Catalogue of Scientific Literature, and it was expected that a volume covering this subject would some time be published. The publishing of our "Agricultural Index" gives opportunity to compare the value of a dictionary-catalogue published on the "cumulative plan" monthly, annually, and triennially with a classified catalogue published only (and tardily) as an annual. Would it not be interesting to make inquiries among those who use such reference tools most in order to determine what method is most efficient? If it should be found that indexing and cataloguing publications produced by private corporations actually serve a useful purpose, and perhaps relieve "co-operative" organisations of some share of the deficit, should not these publications receive, if not commendation, at least a nod of recognition?

I have wondered why men of science, when planning catalogues or classifications, do not consult those who make that work a profession. When people build houses it is generally thought best to consult an architect.

It may be worth while to note that of the four examples of indexes that you mention, three are now compiled on the alphabetic or dictionary plan. The "Engineering Index," published since 1884, changed from the classified to the dictionary form on the annuals with the year 1919. The "Index Medicus" has just recently changed from the classified to the alphabetic form. We believe the changes were made at the request of librarians who have, through their experience, found the dictionary plan the more serviceable.

It is to be hoped that in the conference proposed by *NATURE*, to which representatives of all branches of knowledge are to be invited, librarians and all those who make printed indexes will be included.

H. W. WILSON,
President.

The H. W. Wilson Company, Publishers of
Indexes and Reference Works, 958-964
University Avenue, New York City,
August 6.

A CO-OPERATIVE index is one published by, or on behalf of, a professional body with the view of securing an adequate standard of efficiency. These indexes are generally based, in part at any rate, upon voluntary labour. Mr. Wilson is in error in supposing that the main support for abstracts and digests comes from the libraries. It is derived from the subscriptions of members of the professional bodies. Librarians are not qualified to advise on the matter.

Indexing suffers chiefly from the lack of co-ordination and the insufficient supply of trained workers. It is to secure a proper co-ordination of effort that a conference has been proposed in these columns. The conference should undoubtedly include representatives of the libraries and of the commercial indexes.

THE WRITER OF THE ARTICLE.