

loss of whose cooperation the editor has to deplore are Prof. Herdman and Mr. W. A. Brown.

In these circumstances, we have to offer special congratulations to Dr. Sharp on the appearance of this volume. We may at the same time take the opportunity of mentioning our satisfaction at the decision of the council of the Zoological Society to continue, at all events for the present, the publication of this invaluable record. Without in any way disparaging the "International Catalogue of Scientific Literature," it is quite certain that, in present circumstances, the zoological portion could not be issued with that promptness which renders the "Record" before us so invaluable to working naturalists.

Since all the contributors are specialists, thoroughly acquainted with their respective subjects, there is little or nothing to criticise in the *technique* of their work, and the present volume seems remarkably free from typographical errors. As usual, some of the recorders treat their subject, both in the way of introduction and in the class of papers quoted, at much greater length than others. In some sections—the mammals, for example—it appears to be the recorder's custom to exclude papers which do not contain absolutely new matter, and also those in which there is merely more or less incidental allusion to the particular subject, or summaries of previous work. In other sections—like the one on echinoderms—precisely the opposite course is followed, papers containing even the most remote and unimportant references to the subject being catalogued. Consequently, some of the pages in the section last cited look more like a geological than a zoological record.

It is not, of course, for us to decide which course is preferable. If, however, the more comprehensive plan is necessary in one section, it is apparently required in all, and *vice versa*. The universal adoption of the fuller plan would largely increase the bulk of the annual volume, while if the system of elimination were followed throughout, its size would be proportionately reduced.

As an instance of our meaning, we may note that some writers quote the articles on their respective subjects from the volumes of the "Victoria County History," while by others they are omitted. Again, in one section (Echinoderms) we find the "Guide to the Dublin Museum" entered, which is surely unnecessary. In the same record also occurs Prof. Sollas's paper on the method of investigating the structure of fossil animals by means of sections, a paper which should have appeared only in "General Subjects," where it is conspicuous by its absence.

How absolutely essential to zoological workers—if they are to avoid using preoccupied names—is the prompt appearance of the "Record" may be inferred from the long list of new generic and subgeneric terms at the end of the present volume, which runs to 18 pages, against 16 in its predecessor.

In conclusion, we may direct attention to the request that authors would send copies of their papers to the editor. Labour would thus be saved to the recorders, and the prompt insertion of papers would be secured.

R. L.

OUR BOOK SHELF.

Æther and Gravitation. By W. G. Hooper. Pp. xiv + 358. (London: Chapman and Hall, Ltd., 1903.) Price 12s. 6d. net.

FROM a psychological point of view this treatise of 358 pages is very interesting. The author "has endeavoured to perfect a theory which will bring ætherial physics more into harmony with modern observation and experiments." He "has taken Newton's Rules of Philosophy as his guide in the making of the new theory, as he believes that if any man knew anything of the Rules of Philosophy, that man was Sir Isaac Newton."

These rules are:—

(1) "Simplicity of conception." "If there are apparently two causes to the same phenomenon, then the simpler cause is the true and correct one."

(2) "Agreement with experience, &c."

(3) "Satisfactorily accounting for and explaining all phenomena sought to be explained."

These rules are first applied to gravitation. "The Law" (of gravitation) "is not a simple law. It is compounded primarily of three parts. 1st, a primitive impulse; 2nd, a centripetal force; 3rd, a centrifugal force. To these must be added the three laws of motion."

No known medium has been found to be absolutely frictionless. "Accepting therefore experience as a guide we are compelled to come to the conclusion that there is no such thing in the Universe as a frictionless medium. Such a hypothesis is contrary to all laws and rules of Philosophy," "and therefore as either experience or a frictionless medium has to go, we will part with the frictionless medium." "With the present conception of a frictionless æther, however, it is philosophically impossible for the æther to exert force on any body that may exist in it. Because to the extent that it is frictionless, to that extent it ceases to possess mass. If it does possess mass, then it cannot be frictionless."

The next point dealt with is matter, which is thus defined:—"Matter is that which can be perceived by the senses, or is that which can be acted upon by motion, or which can exert motion."

Incidentally we learn that vortex atoms cannot be cut in two. "It will be found that when the knife is brought near to them they seem to recoil from the knife."

Chapter iv. is entitled "Æther is Matter." In this chapter we learn something of the constitution of atoms.

"If therefore it holds good in Philosophy that the small things are the index to the greater, then the converse holds good, that what is true of the large is true of the small, and that the laws governing the great also govern the small." "So that gathering up those chief properties of the earth to which I have already referred, and applying them to an ætherial atom, or any other atom if necessary, we arrive at the conclusion that an atom must be spherical in shape, must possess rotation, and must have an orbit, must possess polarity, and also be subject to the universal Law of Gravitation." "Further, if we are to be strictly correct, in our analogy between the earth and the ætherial atom, its polar diameter must be shorter than its equatorial diameter, as that is one of the facts observable regarding the shape of our earth."

Similar lines of argument are applied in succeeding chapters to heat, light, electricity, and the universe in general. The author has read many books. He has not always succeeded in understanding them.

W. M. H