that would be requisite. Adequate preparation of a scheme may take several years, perhaps in the circumstances a fortunate delay. For a new "Challenger" expedition will be very costly, and we trust that the government and the national finances will then be in a better position to undertake what certainly should be a national enterprise.—The London *Times*.

SCIENTIFIC BOOKS

Principles of Animal Biology. By A. Franklin Shull, with the collaboration of George R. La Rue and Alexander G. Ruthven. McGraw-Hill Book Co., Inc., New York.

Most teachers of elementary zoology have for some time acknowledged that the almost exclusively morphological texts fail to give the beginner in the science a fair introduction to the field of zoology. Several recent texts and revisions of some of the older ones have endeavored to meet the demand for a more thorough treatment of the underlying principles of the subject. For one reason or another most of these attempts have failed to meet with general approval. In many instances they have remained predominantly morphological with intercalated sections on the principles. The Principles of Animal Biology by Shull, La Rue and Ruthven promises to meet the requirement for a text dealing with the fundamental biological principles far better than any other that has appeared to date.

Throughout the text there are brought together distinctly modern view points regarding the various subsciences of zoology. The book is not only well written so that the reader is fascinated by the smoothness of the narration but in addition it has all appearances of being so organized that it may be easily assimilable by the beginning student. In only a few instances does the treatment seem to be beyond the grasp of the average student. In the discussion of the physiology of cells (Chapter III.) the extent of chemical knowledge assumed to be possessed by the student is rather great. The structural formulas and the highly technical chemical terminology would not be intelligible to the average freshman, but this is not any fundamental criticism of the book for most teachers are coming to realize that a certain amount of consideration must be given the unusual student.

The book is distinctly the result of a reactionary movement away from the more stolidly morphological and taxonomic treatment of the subject of zoology. A point might be raised as to whether it is not possible that the taxonomic aspect has been curtailed to the extent of impoverishing the opportunity of citing comprehensible instances of the principles for the average student. Correlation of laboratory work and text assignments might easily obviate this possible difficulty. Content of an elementary course and the relative emphasis to be placed upon the various phases of the science are by no means matters of universal agreement among zoology teachers. Consequently a criticism like the foregoing may in the end prove to be either a valid judgment of the text of an ultimate criticism of the one offering it.

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SPECIAL ARTICLES

PRELIMINARY INVESTIGATION OF RIBES AS A CONTROLLING FACTOR IN THE SPREAD OF WHITE PINE BLISTER RUST[1]

Most authorities will now admit that the complete eradication of the white pine blister rust from the country is not possible, but they consider it both possible and feasible to control the disease to a certain extent and to protect certain definite areas of pine. It is also agreed that such protection must be exercised through the eradication of *ribes*.

Under these conditions, the control of the white pine blister rust, or rather the protection of the white pine, depends on a definite knowledge of the habits of *ribes*, especially of the wild plants, and their reactions to different treatments. Projects were there-

[1] Published with the approval of the Director as Paper No. 209, of the Journal Series of the Minnesota Agricultural Experiment Station.