to hold a winter meeting at such time and place as the Sectional Committee should decide.

FRANK RUSSELL,
Secretary.

HARVARD UNIVERSITY.

SCIENTIFIC BOOKS.

Etude sur la grêle. Défense des recoltes par le tir du canon. By V. VERMOREL. Librairie du Progrès Agricole et Viticole; Villefranche. July, 1900.

In this pamphlet of 77 pages the well-known viticultural expert and director of the station at Villefranche gives an account of the latest (up to July 1st) phase of the subject of Wetterschiessen—the protection of crops from hail by means of the vertical firing of specially constructed cannon at the threatening clouds. Chapter 1 gives a *résumé* of the various theories of hail-formation, affording striking proof of the uncertainty still existing in this regard, and especially as to the part played by atmospheric electricity in the most damaging hailstorms, viz, those of summer. There follows a brief discussion of the possible explanations of the action of the vertical projection of the annular whirl, which seems to be essential to the production of the effect, and *e. g.*, tears a paper target placed 100 meters from the gun, and according to trigonometric measurements may reach a height of over two kilometers. The claim made, and sustained by an overwhelming number of observations, is that the commotion caused by these whirls in the hail-clouds, if produced in time, will cause rain to fall in place of hail.

Chapter 2 gives abstracts of the reports made to the congress of Italian hail-protection syndicates held at Casale Monteferrato in November, 1899, which was attended by three delegates from France, the author among the number. The reports are from the provinces of Vicenza, Treviso, Verona, Padua, Udine, Pavia, Bergamo, Alexandria and Novara. From all of these regions the reports are very encouraging, in part enthusiastic. The Bergamo reporter sums up by saying that "those who have done the shooting are desirous of continuing it; those outside the defended area regret not having done it. The results obtained this (last) season could not be more encouraging, and will enable us to complete the means of defense." This appears to be substantially the consensus of opinion of those attending the congress.

Chapter 3 gives the details of the construction and handling of the cannon, which does not differ materially from the original prescriptions of Stiger, except in making the gun breech-loading.

Chapter 4 gives details of the desirable organization of the shooting stations, as now established in the Beaujolais, Rhone Valley. Isolated guns are of little value unless placed on high points. Each gun can defend 25 hectares (62 acres); rapid and continuous firing is especially important at the first approach of the cloud. A code of signals is provided to insure concerted and prompt action. The government supplies powder for the purpose at reduced rates. The expense of establishing a station is placed at 11 francs ($2.15) per hectare, or a little less than $1 per acre; current annual expense, about 65 cents per acre, estimating that 500 shots may have to be fired.

Among the striking points noted is that from 2000 stations last year, *fifteen thousand* are in operation in Italy this year. Moreover, the insurance companies heve reduced the premiums 33 per cent. for the areas provided with shooting stations.

Is it not about time that some experiments in the same line were set on foot in our thunderstorm-ridden Middle West? If, as some allege, this is merely a passing popular delusion, it is a remarkably persistent one, backed by very heavy pecuniary investments, and not definitely assailable on scientific grounds.

E. W. HILGARD.

A Brief Guide to the Commoner Butterflies of the Northern United States and Canada. By SAMUEL HUBBARD SCUDDER. New York, Henry Holt & Co. 1899. Pp. xi + 210, 22 plates of wood-cuts, 10 cuts in text.

This book is a reprint of the first edition of the work, published by the same house in 1893, and so far as the reviewer is able to ascertain, is not different in any respect from the first edition, save in the addition of the plates, which were taken for the most part from the

plates, contained in Mr. Scudder's monumental work upon the Butterflies of New England.

The book is a very convenient manual for use on the part of beginners residing in New England and the Middle States, the species treated being for the most part the butterflies commonly found in these sections of our country. The instructions for collecting, rearing, and studying butterflies are brief, but most excellent.

The interest in the study of natural science is rapidly increasing, 'nature study,' so-called, having found a prominent place in the work of our common schools. Such brief compends as these, which are strictly accurate, and adapted to the wants of the ordinary teacher and pupil, are therefore certain to receive favorable attention, and more and more to attract a widening circle of readers and purchasers. The book has already proved its worth, as have all the writings of its learned author, and the issue of this second edition should be cause for congratulation alike to author and publishers.

W. J. Holland.

SCIENTIFIC JOURNALS AND ARTICLES.

The Popular Science Monthly for August has for its frontispiece a portrait of Professor R. S. Woodward, President of the American Association for the Advancement of Science, while the first article, 'Rhythms and Geologic Time,' by G. K. Gilbert, is the address of the recent President of the Association. R. W. Wood describes 'The Photography of Sound Waves,' Havelock Ellis discusses 'The Psychology of Red,' Simon Newcomb continues his 'Chapters on the Stars,' and James Collier has the third of his papers on 'Colonies and the Mother Country.' Carl H. Eigenmann discusses the 'Causes of Degeneration in Blind Fishes,' stating that all indications point to use and disuse as the effective agents in moulding the eye. William Baxter, Jr., treats of 'The Evolution and Present Status of the Automobile,' and A. W. Greely summarizes the 'Scientific Results of the Norwegian Polar Expedition.' The Departments of Discussion and Correspondence, Scientific Literature, and The Progress of Science are well filled.

Bird Lore for August opens with the first instalment of a paper on 'The Orientation of Birds,' by Capt. Gabriel Reynaud, of the French Army, who takes the ground that there is a 'sense of direction.' William Brewster contributes 'A Study of a Lincoln's Sparrow,' and Harry S. Warren treats of 'The Birds that Pass in the Night.' There are numerous notes and book notices. The Editor discusses the proposed agreement with the Millinery Merchants' Protective Association regarding the use of American birds, and Mabel Osgood Wright treats of the same subject under the reports of Audubon Societies, taking the ground that no compromise can be made, that unless all birds can be protected none should be. It is to be feared that we are, on a smaller scale, to have a repetition of the differences existing between prohibitionists and advocates of high license on the liquor question.

Herr Barth, Leipzig, has begun the publication of a journal entitled *Zeitschrift für Tuberkulose und Heilstättwesen* edited by Professors Gerhardt Frankel and von Leiden. The first number contains a series of important articles, including contributions in French and English.

Dr. J. C. Arthur, Purdue University, has retired, owing to ill health and pressure of work, from the position of responsible editor of the *Botanical Gazette* which he has filled for the past fourteen years. The journal is now edited by Professor John M. Coulter and Professor C. R. Barnes, with other members of the botanical staff of the University of Chicago. Professor Arthur becomes an associate editor, the other American associate editors being Professor Robert A. Harper, University of Wisconsin; Professor Volney M. Spalding, University of Michigan; Professor Roland Thaxter, Harvard University, and Professor William Trelease, Missouri Botanical Garden.

DISCUSSION AND CORRESPONDENCE.

INTERNATIONAL CATALOGUE OF SCIENTIFIC LITERATURE.

To the Editor of Science: I am authorized by the Secretary to bring to your attention the fact that, after a number of discussions by scientific representatives of nearly all nations,