the results of experiments in agriculture, horticulture and arboriculture, the outcome of practical work in the fields, barns, dairy and poultry buildings, orchards and plantations, as well as scientific investigations in the chemical laboratory and the results of studies of the life history of injurious insects and noxious weeds. Variety tests have occupied much of the attention of the agriculturist and horticulturist, the evident desire being to secure the best varieties for the different regions. In this way experiments in the adaptation of certain crops and varieties are conducted upon a scale impossible to the individual, and not a few valuable crops have been secured by this means. Methods of culture and the proper use of fertilizers have been quite thoroughly investigated, to the advantage of the several constituencies. In the treeless regions of Manitoba and Northwest Territories tree-planting experiments have been conducted since the establishment of the branch farms in these Provinces, and, as a result, it is now possible to suggest lists of trees and shrubs adapted for hedge, shelter and timber growth in those regions.

Among results of particular interest and of far-reaching importance noted in the last report is the account of experiments on the effect the plowing under of clovers has on subsequent crops. These experiments have been continued for four years and the beneficial effect of such procedure is plainly shown.

In connection with the variety tests of the agriculturist, attention should be called to the very excellent work done in cross-breeding of cereals. At least two score cross-bred varieties of wheat, and quite a number of varieties of oats, barley and peas have had their origin on the Experimental Farms and some of them seem to be peculiarly adapted to the region, being of more than average productivity and quite resistant to fungus attacks.

The dairy investigations and the experiments in feeding farm animals, especially steers and pigs, have been noteworthy and have led to some very practical results. In nearly every case the feeding experiments were repeated year after year and the conclusions verified.

Among the investigations made by the chemist, the comprehensive survey made of the typical soils of the different Provinces in which their physical characteristics and chemical constituents were determined stands out prominently.

The study of the life history of injurious insects and the investigation of means for combating their attacks have occupied much of the time of the entomologist and botanist. In addition, the subject of noxious weeds, their dissemination and eradication has been investigated. With such subjects as these the efficiency of any method for the destruction of these pests depends largely upon timely warnings which have been given as the emergency arose. Spraying for the prevention of plant diseases has come in for attention and the suggestions given are timely and practical.

The poultry manager has been concerned principally with studying the relative values of different breeds of fowls and their feeding and management.

Throughout all the reports the intensely practical nature of the work is everywhere manifest, the desire apparently being to give results of investigations that may be of immediate use to the farmers and others of the Dominion.

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BOOKS RECEIVED.

Naturalism and Agnosticism. JAMES WARD. New York and London, The Macmillan Company. 1899. Vol. I., pp. xviii+302; Vol. II., pp. xiii+294. $4.00.

La géologie expérimentale. STANISLAS MEUNIER. Paris, Alcan. 1899. Pp. viii+306 and 56 figures. 6 fr.

Manual of Bacteriology. ROBERT MUIER and JAMES RITCHIE. Edinburgh and London, Young J. Pentland; New York, The Macmillan Company. 1899. Pp. xviii+564.

SCIENTIFIC JOURNALS AND ARTICLES.

THE leading article, in every sense, of the *American Naturalist* for June is that of Sylvester D. Judd on 'The Efficiency of Some Protective Adaptations in securing Insects from Birds.' The author's conclusions, based upon four years' study of the food habits of birds, are that the alleged protective coloration is not the all-important factor in securing an insect from ex-

termination, as some earlier naturalists have supposed. G. C. Whipple and Horatio N. Parker present 'A Note on the Vertical Distribution of Mallomonas.' While the reasons for the peculiar distribution are not wholly apparent, it apparently depends on light and temperature, the organism preferring to live where the light is strong, the temperature low and the water quiet. In an article on 'The Colors of Northern Monocotyledonous Flowers' John H. Lovell considers that the primitive color of the perianth was green, that physiological conditions have often played an important part in determining the coloration of the petals, while insects have contributed to the fixation of such characters when once acquired. William L. Tower records the curious 'Loss of the Ectoderm of *Hydra Viridis* in the Light of a Projection Microscope,' this loss occurring almost completely in from one to eleven minutes. The diagrams illustrating this paper have been transposed. The editor makes the welcome announcement of the forthcoming publication in the *Naturalist* of a series of synoptical tables for the determination of American invertebrates.

Bird Lore for June commences with an all-too-brief note by Frank M. Chapman on 'Gannets on Bonaventure,' accompanied by a full-page plate showing the nesting gannets on one of the ledges. Florence A. Merriam concludes her article on 'Clark's Crows and Oregon Jays on Mount Hood,' and Mary F. Day gives some excellent observations on the Chimney Swift under the caption 'Home-Life in a Chimney.' William L. Baily shows 'Three Cobb's Island Pictures,' with notes thereon. Ella Gilbert Ives writes of 'The Cardinal at the Hub,' and Thos. S. Roberts has an illustrated 'Catbird Study.' Olive Thorne Miller discusses 'The Ethics of Caging Birds,' deciding that this may be done, if properly done. Fred. H. Kennard tells of the birds of 'A May Morning,' and Mildred A. Johnson of those seen on 'A February Walk.' If one might venture a criticism on *Bird Lore* it would be to the effect that the 'young observers' seem to be getting more than their fair share of space.

Terrestrial Magnetism and Atmospheric Electricity for June. As already announced in SCIENCE, this journal is now being issued from the Johns Hopkins University press, Dr. Bauer remaining as editor-in-chief. In view of the addition of atmospheric electricity to the scope of the journal an appropriation has been made to it from the Hodgkins fund of the Smithsonian Institution. The contents of the number before us are as follows: Portrait of Charles A. Schott, Frontispiece; 'The Beginnings of Magnetic Observations,' G. Hellmann; 'Carte Magnétique de la Sicile,' L. Palazzo; 'The Magnetic Work of the United States Coast and Geodetic Survey,' L. A. Bauer; Über einige Probleme des Erdmagnetismus und die Nothwendigkeit einer Internationalen Organisation,' M. Eschenhagen; 'The Secondary Magnetic Field of the Earth,' A. W. Rücker; 'Remarks upon Professor Rücker's Paper and Wilde's Magnetarium,' L. A. Bauer; 'Biographical Sketch and Portrait of Dr. John Locke,' L. A. Bauer; 'Mean Values of Magnetic Elements at Observatories,' C. Chree; Notes, 'Biographical Sketch of Charles A. Schott.' Activity in magnetic work.

SOCIETIES AND ACADEMIES.

GEOLOGICAL SOCIETY OF WASHINGTON.

At the meeting of this Society, held on May 10, 1899, three papers were read, of which abstracts follow:

Mr. S. F. Emmons read a paper entitled '*Plutonic Plugs and Subtuberant Mountains*,' new terms introduced by Professor I. C. Russell in two articles in Volume IV. of the *Journal of Geology* (1896), to designate hitherto unobserved geological phenomena, the one being a new form of igneous intrusion distinct from laccoliths, the other a new type of mountains. The latter, to which his second article is devoted, are dome-shaped mountain uplifts with granitic cores, which he considers to have resulted from the vertical upthrust exercised by the intrusion of a larger plutonic plug (or *tuber*) beneath their center, and are called by him 'subtuberant mountains.' The idea of vertical upthrust had already been advanced by Dutton in his article on Mt. Taylor, N. M., in which he stated that all the mountain uplifts between the Great Plains and the Sierra