

white and Victoria white, also some Hungarian wheats, besides Italian varieties.

It was found that the English varieties gave very poor results; the squarehead was a very poor sample indeed, and it was unfortunate that it was used for the manuring experiments. The degeneration of English wheats during the first year is probably due to the great amount of transpiration taking place in this climate, especially during such a hot and dry summer as that of 1888. Giglioli enters into an interesting discussion of this important physiological result.

The most productive wheat was a variety known as Noé, from the South of France, originally from Bessarabia—this yielded at the rate of 3485 kilograms per hectare; next in order were two Italian varieties, Rieti and Puglia grain, yielding at the rate of about 3150 kilograms per hectare. The Puglia wheat was the finest in quality of grain, but its yield of straw was very low.

The great importance of a careful selection of varieties is pointed out, and Giglioli is of opinion that much more good will be done by improving and selecting Italian varieties than by importing new varieties; which, if from colder countries, will probably not be able to stand the climate.

Incidentally, the experiments showed the great benefit of good cultivation and of surface draining, the plots being above the level of the surrounding paths, for the produce of the unmanured plots was double that of the neighbouring land under ordinary cultivation.

From the manuring experiments it was shown that farmyard manure gave fair results, but the season was unfavourable to the action of artificial manures, being much too dry. Of nitrogenous manures, acidified urine gave the best results, but nitrate of soda and sulphate of ammonia were often worse than useless. Phosphates had some good effect, and Thomas-Gilchrist slag was useful. Potash salts had no particular effect; the chloride seemed rather better than the sulphate.

The results of the manuring experiments, considering the great care and labour bestowed on them, must be disappointing; but the soil is in too high condition for manures to show great effects, also the variety of grain sown was unsuitable to the climate, and the season was against manures, especially nitrogenous manures.

In this Report the details of the experiments are given in full, with the appearance of the plots at different dates, and the whole results tabulated in various ways in nearly a hundred tables. All the weighings at harvest were carried out under the personal superintendence of Prof. Giglioli, who evidently has spared neither time, trouble, nor health, in conducting these important researches. Already the results have yielded important information, especially on the suitability or the reverse of special varieties of wheat to the climate of Southern Italy, and with their continuance there can be no doubt that results most valuable to the Italian farmer on the cultivation and manuring of wheat will be obtained.

Whilst heartily congratulating Prof. Giglioli and the Agricultural Association of Naples on having inaugurated these experiments with the prospect of continuing them for some years, we cannot but think that their value would be greatly increased if the plots were larger; or, if this cannot be arranged with the appliances at command, if the experiments were always in duplicate, or preferably in triplicate, and this might be rendered possible by reducing the number of experiments on manures in future seasons.

E. K.

### SCIENTIFIC SERIALS.

*American Journal of Science*, February.—The magnetic field in the Jefferson Physical Laboratory, by R. W. Willson. One of the wings of this Laboratory in Harvard University has been constructed wholly without iron for the purpose of research, and the author has made a series of experiments to determine how far the end sought has been gained. He has found the magnitude of the disturbance which may arise in practice from such objects as stoves and iron pipes, and has made the interesting discovery that the brick piers of the building have a sufficient amount of free magnetism to produce quite an appreciable effect.—On Cretaceous plants from Martha's Vineyard, by David White. The author has studied a number of fossil plants collected at several localities and horizons in the Vineyard series for the purpose of solving the question as to the age of the underlying clays,

lignites, and sands, of Martha's Vineyard. He concludes that the evidence from the fossil plants bespeaks an age decidedly Cretaceous, and probably Middle Cretaceous, for the terrane in which they were deposited.—Review of Dr. R. W. Ell's second report on the geology of a portion of the Province of Quebec, with additional notes on the "Quebec group," by Charles D. Walcott. The geological systems recognized in the area reported upon include the Devonian, Silurian, Cambro-Silurian (Ordovician), Cambrian, and pre-Cambrian.—Measurement by light-waves, by Albert A. Michelson. The telescope and microscope are compared with the refractometer, some remarkable analogies in their fundamental properties are pointed out, and a few cases in which the last-named instrument appears to possess a very important advantage over the others illustrated. Previous experiments have shown that the utmost attainable limit of accuracy of a setting of the cross-hair of a microscope on a fine ruled line was about two-millionths of an inch, whereas direct measurements of the length of a wave of green light emitted by incandescent mercury vapour, show that the average error in a setting was only about one ten-millionth of an inch. The method is also extended to angular and spectrometer measurements.—On lansfordite, nesquehonite, a new mineral, and pseudomorphs of nesquehonite after lansfordite, by F. A. Genth and S. L. Penfield. The authors have examined the crystallization of lansfordite ( $3\text{MgCO}_3, \text{Mg}(\text{OH})_2, 21\text{H}_2\text{O}$ ), and another new mineral having the composition  $\text{MgCO}_3 \cdot 3\text{H}_2\text{O}$ , which has been named nesquehonite. A crystallized artificial salt of the same composition is also described.—Weber's law of thermal radiation, by William Ferrel. An examination of Weber's new law, and a test of his formula by means of experimental results, in which the absolute rate of losing heat is determined from the observed rate of cooling of heated bodies of known thermal capacity, and the relative rate from the galvanometer needle of the thermopile.—Tracks of organic origin in rocks of the Animikie Group, by A. R. C. Selwyn. Traces of fossils, or what are supposed to be such, have been discovered in the Animikie rocks of Lake Superior. The fact is interesting and important, for, if the black Animikie shales represent the Lower Cambrian of the Atlantic border, the Paradoxides and Olenellus fauna will probably be found in them sooner or later.

IN the numbers of the *Journal of Botany* for January and February, two important monographs are commenced—by Mr. E. G. Baker, a synopsis of genera and species of Malvæ; and by Mr. G. Masee, a monograph of the genus *Podaxis*. This last genus of Fungi, Mr. Masee proposes to transfer, in consequence of the mode of formation of the spores, from the *Gastromycetes*, where it has hitherto been placed, to the *Ascomycetes*.

THE *Botanical Gazette* for October 1889 contains an interesting summary of our present knowledge of protoplasm, by Prof. Goodale, in the form of an address to the Botanical Section of the meeting of the American Association for the Advancement of Science held at Toronto.

WITH the exception of an interesting paper by Prof. Mas-salongo, descriptive of some curious instances of teratology in the floral and foliar organs, the number of the *Nuovo Giornale Botanico Italiano* for January is chiefly occupied by a report of the proceedings of the Italian Botanical Society. Among a number of short papers, is one on the fertilization of *Dracunculus vulgaris*, the most important insect agent in which is stated by Prof. Arcangeli to be *Saprinus subnitidus*; one on the fertilization of *Arum pictum*, by Prof. Martelli; and one on the development of the picnids of Fungi, by Prof. Baccarini.

### SOCIETIES AND ACADEMIES.

LONDON.

**Linnean Society**, February 6.—Mr. Carruthers, F.R.S., President, in the chair.—Referring to an exhibition at a previous meeting, Prof. Stewart communicated some interesting observations on the habits of certain seaweed-covered crabs. He also made some remarks on the "pitchers" of *Nepenthes Mastersiana*, upon which criticism was offered by Mr. Thomas Christy, Prof. Howes, and Mr. J. Murray.—Prof. G. E. Boulger exhibited a series of original water-colour drawings of animals and plants of the Falkland Islands.—Mr. W. H. Beeby exhibited some forms new to Britain of plants from Shetland.—Mr. C. B. Clarke,