

several collaborators. A large territory was covered in the first book and judging from the large map of the eastern United States, the parts of this country most densely populated by the aborigines must have been the basins of the Mississippi and Ohio rivers and the southern shores of the Great Lakes, although there are indications of many settlements on the Atlantic coast, especially in Florida. A large map showed all the locations, and smaller maps, of which there was one for each state, indicated the nature of each site by a special symbol. In the cartographic list, one found the meanings of the symbols readily; a single house drawn in outline represented a wooden lodge, while two houses represented a village; a grave was indicated by a special figure; a mound by the same figure reversed, and so on; enabling one, with a little study, to see at a glance exactly what was located at a certain point. It is not expected that the prospective work on Indian antiquities will be issued for many months. Following the precedent of the old report, the new one in completion, will show, to even a greater and more extensive end, all available information. It is proposed to classify the former Indian remains by states and counties, and to illustrate the publication with maps, photographs and drawings.

UNIVERSITY AND EDUCATIONAL NEWS

THE University of Edinburgh has received from the trustees of the estate of Mr. Robert Irvine the sum of £30,000, to establish a chair of bacteriology.

THE Cambridge council has voted the closing of the streets which cross the fifty acres of land fronting on the Charles River which the Massachusetts Institute of Technology proposes to purchase.

A NEW plan for the administration of the College of Agriculture, Cornell University, has been enacted by the university board of trustees to go into effect on January 1, 1912. The management of the college will be subject to the general supervision and control of the full board of trustees, and the immediate

supervision, instead of being in the hands of the executive committee of the board, as now, will be entrusted to a special committee of eleven persons to be known as the Agricultural College council. Director Bailey has consented to remain at the head of the college long enough to put the new plan in substantial operation.

THE Annual Farmers' Short Course at the University of Missouri will be given this year beginning January 8 and continuing throughout the week. It is planned to give six short courses on soils and farm crops, animal husbandry, farm management, dairy husbandry, horticulture and poultry husbandry. The class rooms and laboratories of the Agricultural College will be thrown open during this week to the farmers of Missouri. The entire teaching force of the college, consisting of more than forty men, will, by lecture and demonstration, give instruction in the subjects and will describe the experiments conducted by the Experiment Station. The state board of agriculture, cooperating with the college, has provided for the evening lectures. President K. L. Butterfield, of Massachusetts; Dean H. L. Russell, of Wisconsin; Jos. E. Wing, of Ohio; A. N. Abbott, of Illinois; Herbert Krum, of Kentucky; Uriel W. Lamkin, of Missouri, and many others will address the farmers. The annual Farmers' banquet, given by the College of Agriculture and consisting largely of products grown on the college farm, will be given Friday night, January 12. The beef will be from an international prize winner, the cream and butter from the Dairy Department and fruits and vegetables from the Department of Horticulture. Governor Herbert S. Hadley will be present during the week.

THE minister of education has laid before the Hungarian parliament a bill which provides for the erection of two new universities in Hungary, in the cities of Pressburg and Debreczin.

PROFESSOR E. G. MONTGOMERY, of Nebraska University, has been appointed professor of

farm crops in the College of Agriculture of Cornell University.

DR. H. BASSETT, of the University of Liverpool, has been appointed professor of chemistry at University College, Reading.

DR. W. R. BOYCE GIBSON, lecturer in philosophy at the University of Liverpool, has been appointed professor of mental and moral philosophy at the University of Melbourne.

DISCUSSION AND CORRESPONDENCE

"GENOTYPES," "BIOTYPES," "PURE LINES" AND "CLONES"

IN a recent issue of SCIENCE¹ Dr. Jennings calls attention to a double meaning which has been given to the word "genotype" by several recent writers, myself among them, and points out the desirability of limiting the word to the meaning assigned to it by its originator, Dr. Johannsen.

As one of the chief offenders, I wish to publicly repent my misuse of the term and to heartily join in the movement to limit the word "genotype" as used in the literature of genetics, to the fundamental hereditary constitution of an individual. The use of this word both for the hereditary constitution and for the group of individuals possessing an identical hereditary constitution, will lead to much confusion if continued.

The word which Dr. Jennings says is much needed "for a concrete, visible group of organisms" "all with the same hereditary characteristics," has been already supplied. In a symposium on the "Aspects of the Species Question" before the Botanical Society of America at Chicago, January 1, 1908, I pointed out² the same need and expressed a hope that some one would "come forward with an acceptable short designation" for these "elementary forms" which had been classified by de Vries as "elementary species" and "varieties." A few months later I discovered that my wish had been fulfilled before its utterance, by Dr. Johannsen, and his word "biotype"³ was immediately adopted in my

paper on "The Composition of a Field of Maize"⁴ and made a part of the title of my work on "*Bursa bursa-pastoris* and *Bursa Heegeri*: Biotypes and Hybrids."⁵ In view of these facts there was no excuse for my use of the word "genotype" in a taxonomic sense.

Dr. Jennings also calls attention to an important misuse of the expression "pure line," and here I must again admit a certain amount of guilt, as I was probably the first to include under this term groups of individuals related through the process of budding or any other method of vegetative reproduction. In 1904 I wrote:⁶

By the "pure line" Johannsen means a series of individuals related only through the process of self-fertilization. On *a priori* grounds it seems proper to apply the term to every series of individuals that do not combine elements of two or more ancestral lines through the equivalent of a sexual process. Thus, so far as hereditary qualities are concerned, there should be no reason to expect in a self-fertilizing population conditions different from those in a population related through budding or other method of vegetative reproduction, provided, of course, that the self-fertilizing population has not been so recently modified by a cross as to allow the analysis and recombination of characters derived from different ancestral lines.

For this early departure from "the narrow path" I have in part atoned in my recent paper on the "Genotypes of Maize,"⁷ by referring to the vegetatively reproduced potato and paramecium as "clonal varieties," in contradistinction to the self-fertilizing "pure

³ This word was first proposed in 1905 in "Arvelighedslærens Elementer," the Danish forerunner of "Elemente der exakten Erbliehkeitslehre," and was first used in English at the Third International Conference on Genetics in 1906. (See Report Third International Conference on Genetics, p. 98, 1906.)

⁴ Report American Breeders' Association, IV., 296-301, 1908.

⁵ Carnegie Institution of Washington Publication No. 112, 1909.

⁶ *Torrey*, V., 22, February, 1905.

⁷ *Amer. Nat.*, XLV., 234-252, April, 1911.

¹ SCIENCE, December 15, 1911.

² *Amer. Nat.*, XLII., 278, May, 1908.