

which literally means "wood-ears" or "tree ears," the name, no doubt, being suggested by the shape of the fungus. It is used when young and tender and is prepared by boiling. Mr. Gilmore's informant was a man probably more than sixty years of age, speaking only the Dakota language, a man of more than average intelligence, a judge in the Indian court of the Wakpamni district of Pine Ridge Indian Reservation. He is of the Ogallala tribe of the Teton Dakotas.

#### AN EVERYDAY BOTANICAL MANUAL

THERE is evidently no good reason in these days for ignorance concerning the names and general classification of at least the higher plants, if we may judge from the attempts that are made by writers and publishers to supply popular manuals and handbooks. Some of those published in the past have not had much more to commend them than the wish on the part of the writer to help people who were more ignorant than he concerning the plants of some more or less vaguely defined area of North America. And yet the poorest of these had some value, and no doubt helped many people who could not have been induced to buy a better book. No doubt botanists have sometimes been unduly impatient with books of this description, while the non-botanical public has managed to get some of the information about plants which it craved, and which it could not find in the more accurate scientific publications.

But these merely tolerant words need not be used in regard to Dr. C. A. Darling's "Handbook of the Wild and Cultivated Flowering Plants," which made its appearance the latter part of 1912. The preface states that the object of the book is "to furnish a convenient and easy means of determining the wild and cultivated flowering plants found in the East." In carrying out this plan the author has used dichotomous keys of a kind so easily followed that with proper care one need not "run off the track" before finding the name of his plant, in its proper place in its family, order, subclass and class. A hint is given as to the proper pronunciation of the

scientific name when found, and an English name is provided for every species. A good glossary and (single) index closes this handy little book of 264 small octavo pages.

If this little book can find its way into the hands of the persons for whom it has been prepared it will serve a most useful purpose, and this part of the public may well feel indebted to the author who in addition to his duties as an instructor in botany in Columbia University has taken upon himself the very considerable labor of writing and publishing this little book.

#### THE EVOLUTION OF PLANTS

ONE of the most helpful books for the beginner in philosophical science is Professor D. H. Campbell's "Plant Life and Evolution," in Holt's American Nature Series, which appeared some months ago. It will be remembered that a dozen or so years ago the same author brought out a book entitled "Lectures on the Evolution of Plants," in which he emphasized the structural side of his topic. The book now under consideration, while considerably less technical, is really a supplement to the earlier work. That book arranged plant structures in evolutionary sequence; this one accounts for the structures, and their changes by a discussion of the factors concerned. The earlier book was structural, this one is philosophical. The first one appealed primarily to the botanist, while this one will appeal to a much wider circle of readers, in proof of which we may cite some of the chapter headings: *e. g.*, factors in evolution; the origin of land plants; environment and adaptation; the problem of plant distribution; the human factor in plant evolution; the origin of species, etc.

CHARLES E. BESSEY

THE UNIVERSITY OF NEBRASKA

#### SPECIAL ARTICLES

##### SUPPLEMENTARY NOTE ON THE SIGNIFICANCE OF VARIETY TESTS

SINCE the appearance in SCIENCE<sup>1</sup> of a note "On the Significance of Variety Tests," Dur-

<sup>1</sup> N. S., 36: 318-320, 1912.

ham<sup>2</sup> has arranged the data of the trials of peas made at Wisley in 1911<sup>3</sup> in a convenient form for statistical analysis.

Comparison with the wheat data already discussed is interesting. In wheat, selection has been *primarily* in the same direction—largeness of yield in bushels per acre—for all varieties. In peas, it has been in diverse directions. For the character here dealt with—time required for development—the tendency has been, consciously or unconsciously, to differentiate widely the varieties. Hence in the pea data, it is idle to lump all the materials together, for any constant thus obtained would be largely spurious and insignificant.<sup>4</sup> In practical tests one must decide between a series of closely similar strains—not between those which are widely and obviously differentiated; hence, we split the material up into the four classes recognized by Durham, that is, into 81–90, 91–100, 101–110, 111–120 day peas and calculate the inter-period correlation<sup>5</sup> for each class separately for the only economically important character<sup>6</sup> for which data are avail-

<sup>2</sup>Durham, F. R., "An Analysis of the Pea Trials at Wisley, 1911," *Journ. Roy. Hort. Soc.*, 38: 67–72, 1912.

<sup>3</sup>"Pea Trial at Wisley, 1911," *Journ. Roy. Hort. Soc.*, 37: 403–424, 1911. The two original papers must be consulted for the details that are here excluded for lack of space.

<sup>4</sup>As a matter of fact these constants have been calculated for another purpose, but they need not be published here.

<sup>5</sup>To be of value in determining the relative merit of varieties the performances of a given strain in a test should be a good basis for prediction as to the results of a subsequent experiment. To what extent this is true may be determined for any two or more series of trials of a number of varieties by determining the coefficient of correlation between their performances, correction being made when symmetrical tables are involved—*i. e.*, when any determination is used both as a first and as a second member of a pair—for environmental heterogeneity from experiment to experiment. This does not apply to the pea data.

<sup>6</sup>The data for the individual growth periods give, on the basis of the total data, such irregular correlations that it is not worth while to consider them for the subclasses.

able—total days required for the formation of usable pods. Hence, designating by the subscripts 1, 2, 3, the three successive cultures of 1909<sup>7</sup> we have the following relationships:

For 91–100 day peas,  $n=30$ ,

$$r_{12}=.16 \pm .12, r_{13}=.19 \pm .12, r_{23}=.12 \pm .12$$

For 101–110 day peas,  $n=40$ ,

$$r_{12}=.43 \pm .09, r_{13}=.37 \pm .09, r_{23}=.78 \pm .04$$

For 111–120 day peas,  $n=18$ ,

$$r_{12}=.27 \pm .15, r_{13}=.50 \pm .12, r_{23}=.45 \pm .13$$

All the values are positive. Their wide fluctuation and the magnitude of the probable errors is probably largely attributable to the necessary smallness of the number of varieties in each class.

It is clear that a single test when carried out in the manner of those of the Royal Horticultural Society has little decisive value concerning the merit of a variety. This is not intended as a criticism of these tests, for they are in comparison with many others apparently of a very high order of merit. But certainly they lend their emphasis to the point<sup>8</sup> made in the preceding paper.

Is it not time for a concerted and systematic effort on the part of those interested in agricultural science to put this important problem on a sound basis, biologically and statistically?

J. ARTHUR HARRIS

COLD SPRING HARBOR, N. Y.,  
December 21, 1912

ON THE METAMORPHOSIS OF AN AMCEBA, VAHL-  
KAMPFIA SP., INTO FLAGELLATES AND  
VICE VERSA<sup>1</sup>

AN amœba of the limax group isolated, in 1909, from tap-water in Oakland, California,

<sup>7</sup>Had the cultures been made at the same season in three succeeding years, the test would have furnished data of more value to the practical grower. Data for such tests are, as far as I am aware, not available.

<sup>8</sup>This has already been emphasized on general grounds by various students of agronomy. See especially C. V. Piper and W. H. Stevenson, "Standardization of Field Experimental Methods in Agronomy," *Proc. Amer. Soc. Agron.*, 2: 70–76, 1910.

<sup>1</sup>Presented to the Cincinnati Research Society, January 9, 1913.