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ENTRIES 1141–1439

BOTANICAL EDUCATION

C. STUART GAGER, *Editor*

1141. COOK, MEL. T. **Modern application of botany.** Paper read at Dedication Exercises of Brooklyn Botanic Garden, April 16, 1917. Mem. Brooklyn Bot. Gard. 1: 123–127. July 6, 1918.—Gives brief discussion of the relation of the economic importance of botany. Reviews the relationship of early botanical work to medicine, and the gradual development of the subject. Refers to the relationship that should exist between botany and allied subjects. Discusses the future of botany in America, giving special attention to its application through plant physiology, plant breeding, and plant pathology. Special attention is called to the relationship of plant pathology to research along lines of taxonomy, morphology, and physiology. Attention is also called to the unfortunate conditions which tend to broaden the gap between botany on the one side and horticulture, agronomy, and forestry on the other. —*M. T. Cook.*

ECOLOGY AND PLANT GEOGRAPHY

H. C. COWLES, *Editor*

[Unsigned abstracts are by the editor.]

1142. ADAMSON, R. S. **On the relationship of some associations of the southern Pennines.** Jour. Ecol. 6: 97–109. *2 fig.* June, 1918.—Upon the broader tops of these hills, at elevations of 1000 to 1200 feet, are areas of moorland characterized by deep wet peat occupied by a plant association dominated by *Eriophorum vaginatum*. This association is, however, largely in stages of decay and replacement due to the cutting back of streams and the resultant drainage of the peat. Upon the drained peat *Empetrum nigrum* appears followed by *Vaccinium myrtillus*. When removal of the peat accompanies drainage a grassland association dominated by *Nardus stricta* often appears.

On the slopes and at lower altitudes with thinner peat mingled with soil are associations of *Deschampsia flexuosa*, *Nardus stricta*, *Vaccinium myrtillus*, and *Calluna vulgaris* in a more or less definite successional series ending with the *Calluna* association. The present large extent of the grassland associations, recognized as earlier or degenerate stages in the succession, is ascribed to a large extent to the effects of sheep grazing.—*Geo. D. Fuller.*

1143. COWLES, HENRY C. **Retrogressive and progressive successions in the Arkansas Sunk-Lands.** Jour. Ecol. 6: 95–96. Mar., 1918. [Abstract of paper presented at Pittsburgh meeting, Ecological Society of America.]—The sunk country of the Mississippi bottomlands

has for the most part two types of progressive successions, both hydrarch as to origin. One, of course, is the familiar flood plain succession, starting with the sand bars and having successive belts of invading vegetation, commencing with willows and followed later by the *sycamore, cottonwood, and other flood plain pioneers*. Then follows a long-enduring temporary climax (subclimax) composed of bottom land oaks, hickories, hackberry, etc. The second progressive hydrarch succession occurs in cut-offs, incident to changes in the river channel. *Here there develop the familiar cypress swamps, following the more primitive aquatic stages.* These swamps also develop into the above named flood plain temporary climax. The earthquake of 1811 caused an extensive sinking of the earth's crust over vast areas of the *Mississippi bottoms, thus instituting a sudden retrogression* in the vegetable development. Probably much of the area now covered by cypress swamps had reached the above noted temporary climax or even the regional climax at the time of the earthquake. Since that time *it is probable that the vegetational course has been essentially progressive. This region* presents a sharp contrast in the suddenness of vegetative change produced by the earthquake to the more common (and usually overlooked) retrogressive changes brought about by gradual *subsidence or elevation*.

1144. HARPER, ROLAND M. **The plant population of northern lower Michigan and its environment.** Bull. Torrey Bot. Club **45**: 23–42. 3 *fig.* Jan., 1918.—Rev. by Fuller in Bot. Gaz. **66**: 390–391. 1918. [See Bot. Absts. 1, Entry 9.]

1145. HOFMAN, J. V. **The influence of vegetation on reforestation in the Cascade Mountain Region.** Jour. Ecol. **6**: 96. Mar., 1918. [Abstract of paper presented at Pittsburgh meeting, Ecological Society of America.]—This paper covers briefly the influence of shrubs and annuals on reproduction, whether natural or artificial. The conclusions are based on data gathered in connection with natural reproduction studies, and planting and sowing experiments during the past five years. The effect of different degrees of shading by the native vegetation on various sites such as north slope, south slope, etc., is shown. The general conclusions show that shading in this region is not an important factor except at the extreme limits of either site quality or density of shade.—*J. V. Hofman.*

1146. MACCAUGHEY VAUGHAN. **Algae of the Hawaiian Archipelago.** I. Bot. Gaz. **65**: 42–57. Jan., 1918.—A paper mainly ecological in its point of view. [See Bot. Absts. 1, Entry 200.]

1147. MUNNS, EDWARD N. **Some biological and economic aspects of the chaparral.** Jour. Ecol. **6**: 96. Mar., 1918. [Abstract of paper presented at Pittsburgh meeting, Ecological Society of America.]—This paper embraces a discussion of evidence pointing to the fact that the so-called true chaparral of Southern California is temporary in its character and that tree growth existed prior to the brush and will again cover that area if given a full chance. The evidence presented in support of this view is that of the fossil deposits found at La Brea; the brush species of the north associated with the coniferous forests are also found in the south; stubs and charcoal remains of tree growth are found in dense brush areas where no one can recall such growth; trees (species of spruce and several pines) are in scattered stands in the chaparral; and plantations of coniferous trees have been successfully established. Fire has been the agency which is responsible for the decrease in tree growth and the increase in the brush areas, and if the fire rotation can be increased from its present rate to one greater than the tree rotation, trees will again come in naturally.—*Edward N. Munns.*

1148. SALISBURY, E. J. **The oak hornbeam woods of Hertfordshire. Parts III and IV.** Jour. Ecol. **6**: 14–52. *2 fig., 20 tables.* Mar., 1918.—In this region of England occur several thousand acres of oak forest characterized by an undergrowth of the hornbeam, *Carpinus Betulus*. Such forests are regarded as peculiar to light non-calcareous soil and seem to admit of division into two types, the first dominated by *Quercus Robur* formerly described by the same author (Jour. Ecol. **4**: 83–117. 1916), and the other with *Q. sessiliflora* now discussed for the first time. Quantitative data on climate, humus and water content of the soil are pre-

sented as well as the results of light measurement within the forest during both the "light phase" and "shade phase" of the season, these phases being due respectively to the absence and presence of foliage. To these factors the various associations are related and the composition of the various communities is carefully examined. The humus and water contents of the *Quercus Robur* woods are found to be greater than those of the areas dominated by *Q. sessiliflora* while an analysis of the shrub and herbaceous flora shows that forests of the former type have many calcicolous species as contrasted with the calcifugous character of the *Q. sessiliflora* forest. Among the calcicole species cited are *Barbarea vulgaris, Sisymbrium alliaria, Arenaria trinervia,* and *Pimpinella major* contrasting with such calcifuges as *Stellaria uliginosa, Galium saxatile, Calluna vulgaris, Digitalis purpurea, Pteris aquilina Blechnum Spicant* and *Nephrodium montanum.* The *Q. Robur-Corylus* woods, the *Q. Robur-Carpinus* woods and the *Q. sessiliflora* woods form a series in which the flora becomes more and more calcifuge in character.—*Geo. D. Fuller.*

1149. WEIR, JAMES R. **Notes on the altitudinal range of forest fungi.** Mycologia **10**: 4–14. Jan., 1918. [See Bot. Absts. 1, Entries 13, 449.]—Abst. in Jour. Roy. Microsc. Soc. **1918**: 222. 1918.

1150. WOODRUFFE-PEACOCK, E. ARDIAN. **A fox-covert study.** Jour. Ecol. **6**: 110–125. 1918.—An area of woodland planted 120 years ago in North Lincolnshire, England, is studied particular attention being given to the success or failure of the tree species, the character of the undergrowth and the invasion and establishment of new species. Means of dispersal are carefully considered and species of more than ordinary interest noted. Man's influence in effecting changes is shown to be dominant.—*Geo. D. Fuller.*

FOREST BOTANY AND FORESTRY

RAPHAEL ZON, *Editor*

1151. BRUSH, WARREN D. **Distinguishing characteristics of the North American sycamore woods.** Bot. Gaz. **64**: 480–96. Dec., 1917.—The characteristics of the wood of the three species of sycamore (*Platanus*) native to the United States are dealt with. These three species are the common sycamore of the east (*P. occidentalis*), California sycamore (*P. racemosa*) and Arizona sycamore (*P. Wrightii*). The wood of all three is very similar in appearance and properties and requires magnification for positive identification. The paper contains a full description of the gross and minute structure of the wood of all three species, although *P. occidentalis* is given the most complete treatment. The three woods may best be distinguished by the differences in their medullary rays that are so prominent in them. *P. occidentalis* has the widest and lowest rays,—14 cells by 50 cells on the average, a ratio 1:5. *P. racemosa* has the narrowest and tallest,—4 by 107 cells, a ratio of 1:26, while *P. Wrightii* is intermediate with rays averaging 8 by 84 cells or a ratio 1:12. Excellent microphotographs showing the three woods in cross and tangential section as well as *P. occidentalis* in radial section together with drawings of special parts fully illustrate the article. [See Bot. Absts. I, Entry 985.]—*F. S. Baker.*

1152. DANA, SAMUEL T. **Finland's public-owned forests.** Canadian Forest. Jour. **14**: 1727–29. June, 1918.—The forests of Finland are estimated to occupy over half the total area of the country and of this the State owns over 31,000,000 acres or half of the total. Only two-fifths of this is productive forest, the rest being swampy and marsh land, with some cultivated areas. Most of the State forests are in north Finland and consist of protection forests interspersed with areas of barren lands. Eight million acres of these lands in the extreme north are classed as protective forests and no financial returns are looked for. Since 1874 some 40,000 acres have been purchased at $5.13 per acre.

The stand per acre of productive forests varies from 486 cubic feet to 2000 cubic feet, averaging 715 cubic feet per acre in north Finland and 1430 in southern Finland. Eighty-five per cent of the forest products sold from the State forests in 1911 was saw timber to the value of $2,495,200. In 1912 the cut amounted to 6.43 cubic feet per acre from productive forest land. Sales are made by auction to the highest bidder. Trees are sold as single logs, the average price in 1912 was 83 cents varying between 12 cents and $1.93. Of this 76.6 per cent was Scotch pine (*Pinus sylvestris*) and 23.4 per cent Norway spruce (*Picea excelsa*).—Fire suppression has reduced the losses from fire to $12.05 per acre in 1912 when only 991 acres were burned over.—Three sawmills are operated by the State; originally to utilize undesirable timber as fuel for the State railways. Later, a considerable export business developed. By operating mills, the Government has obtained a clear insight into timber conditions in the international market and a better grasp of the lumber industry.—The income from the State forests in 1912 amounted to $2,726,853 or a net income of 12.7 cents per acre which is high for *the poor quality of material and the relative inaccessibility of these forests.* About 200 trained foresters are employed regularly, augmented by many temporary appointments. The University of Helsingsfors gives a three year course.—*E. N. Munns.*

1153. HARPER, ROLAND M. **A phytogeographical sketch of southern Maryland.** Jour. Washington Acad. Sci. 8: 581–589. 1918.—For phytogeographic purposes the author divides the part of Maryland between Chesapeake Bay and the fall line into five regions. For each region the commonest native trees of saw-log size are listed in order of importance, the species more abundant than in any of the other regions being indicated as a means of picking out the characteristic species at a glance. The estimated percentage of evergreens in each region is given, as an index of soil fertility. The geology, topography, and salient forest conditions are briefly described and some notes on significant shrubs and herbs are added.—*E. H. Frothingham.* [See Bot. Absts. 2, Entry 903.]

1154. LANGDON, LA DEMA M. **The ray system of Quercus alba.** Bot. Gaz., 65: 313-323. April, 1918.—This article is primarily a discussion of a study made to determine the effect of *different conditions on the production of broad (multiseriate)* rays and narrow (uniseriate) rays in white oak (*Quercus alba*). Neither age of the trees nor location of the wood in the tree was found to materially affect the ray systems. In suppressed growth due to shade, however, the multiseriate rays appeared only in later years, the delay being roughly proportional to the degree of suppression. It was also found that the position of multiseriate rays in one year seedlings was definitely related to the traces and that these are also responsible for the form of the young cylinder of xylem, which has a wavy outline of five lobes instead of a perfect circle. The article is prefaced by a brief discussion of the theories of the evolution of the medullary rays but the results of the present investigation are not definitely linked up with any of this work, although the influence of the leaf trace in causing the production of multiserate rays is brought out. [See Bot. Absts. 1, Entry 581.]—*F. S. Baker.*

1155. SAMPSON, ARTHUR W. **Climate and plant growth in certain vegetative associations.** U. S. Forest Service Bull. 700. October, 1918.—The investigation seeks to correlate the growth of peas, wheat, and brome grass with physical factors in three vegetative associations or forest types in the Wasatch Mountains of Utah. A detailed climatic study by instrumental methods was made in the 3 types, which are arranged altitudinally as follows: Oak-brush, 6500 to 7800 feet; Aspen-fir, 7500 to 9500 feet; Spruce-fir, 9000 to 11,000 feet. The plants were grown in sealed pots at each of the three main climatic stations.

The climatic studies bring out the following relations: Mean annual temperature and length of growing season increase gradually from the highest to the lowest type. Precipitation increases with altitude up to the aspen-fir type, but above the apsen-fir type there is a slight decrease. Evaporation is greatest in the oak brush, slightly less in the spruce-fir, and considerably less in the aspen-fir. Wind movement is the greatest factor controlling evaporation; it is greater by 100 per cent in the spruce-fir than in the lower types. Sunshine duration

and intensity are practically the same in all the types. Only in the lowest type are the effective heat units and length of growing season sufficient to mature crops like wheat and peas. The rate at which plants mature decreases directly with the decrease in effective heat units. The water requirement for the production of a unit weight of dry matter is proportional to intensity of evaporation. Total production is inversely proportional to evaporation. Stem elongation is determined largely by temperature, and seems to be little influenced by evaporation. The photosynthetic efficiency of leaves as indicated by the production of dry matter appears to vary inversely with evaporation, although temperature is recognized as an important factor.—*G. A. Pearson.*

1156. STERRETT, W. D. **Utilization of ash.** U. S. Dept. Agric. Bull. 523. 52 *p. 10 pl., 3 fig.* June 29, 1917.—Although ash supplies only 2.5 or 3 per cent of the total hardwood lumber cut, it ranks among the leading North American hardwoods because of intrinsic qualities. There are 18 native species of ash, but 98 per cent of ash lumber is from three species—white ash (*Fraxinus americana*) most important in New England, the Middle Atlantic, and the Central States; green ash (*F. lanceolata*), in the South Atlantic States, the lower Mississippi Valley, and in Iowa, Kansas, Nebraska, and South Dakota; and black ash (*F. nigra*) in the Lake States. Census returns indicate an annual lumber cut of from 200,000,000 to 300,000,000 board feet, and the equivalent of 25,000,000 or 35,000,000 board feet cut into slack barrel stock. Practically the whole output is used in the manufacture of so-called secondary products (handles, butter tubs, vehicle stock, etc.). The total consumption appears about the same for ash as for hickory or cottonwood. Ash lumber production has passed its maximum and is decreasing. Tables showing the rank of States in amount of lumber cut for a series of years reveal a constant shifting in rank and a waning importance of old growth timber as compared with second growth. In seventeen years, ending 1915, the annual cut in the Lake States fell from (approximately) 38 to 15 per cent of the total, while production in the lower Mississippi rose from 18 to 32 per cent. Of the present supply two-thirds is second growth, chiefly in woodlots, and one-third is virgin timber, chiefly in large tracts. The supply of old growth may be exhausted in ten years, but second growth is likely to take its place and prevent any immediate heavy decrease in cut. The annual growth of ash in the United States is probably less than 160,000,000 board feet. The general characteristics and structure of the wood are described, and a key is given for identification of four commercial species. A chapter on mechanical properties of the wood, contributed by J. A. Newlin, tabulates the results of many tests on wood of different species of ash, and combines these in convenient terms for comparison. The effects of specific gravity, growth-rate, position in tree, age, heart and sap, and species upon the mechanical properties are discussed. Details of the use of ash by different industries are given, together with a discussion of lumber prices, costs of production, and value of standing timber.—*E. H. Frothingham.*

GENETICS

GEORGE H. SHULL, *Editor*

[Unsigned abstracts are by the editor.]

1157. ALLARD, H. A. **Some studies in blossom color inheritance in tobacco, with special reference to N. sylvestris and N. tabacum.** Amer. Nat. 53:79–84. Jan.–Feb., 1919.—*Nicotiana tabacum* with white, carmine, and pink-blossomed varieties and *Nicotiana sylvestris* with white blossoms were studied. Pink × carmine and reciprocals showed perfect dominance of carmine in F_1 and 3 : 1 segregation in F_2. Later generations and back crosses showed that results were due to a single factor difference. Both whites were recessive to either pink or carmine, although the F_2 carmine was lighter than parent. Carmine × white (*N. tabacum*) in F_2 segregated from white to carmine. Whites bred true although some with almost imperceptible sheen of color carried carmine factor giving both pinks and carmines when crossed with pink.—*Carl Kurtzweil.*

1158. ANONYMOUS. **Disease resistance.** Gard. Chron. **64**: 218. Nov. 30, 1918.—Comment on note in American Journal of Botany, January 1918, of work in isolating strains of asparagus *resistant to rust; also that strains of tomatoes resistant to* Fusarium wilt, flax resistant to *Fusarium lini* have been developed and their economic status established.—*C. E. Myers.*

1159. ANONYMOUS. **Butter fat percentage independent of age of cow.** Jour. Heredity **9**: 249. Oct., 1918.—Studies in Delaware College herd establish fact that age of a cow does not influence butter fat test of her milk, and, therefore, in study of inheritance behavior of this characteristic age of cow need not be considered.—*R. K. Nabours.*

1160. ANONYMOUS. **Fecundity in Rhode Island red breed of domestic fowl.** Jour. Heredity **9**: 333-334. Nov., 1918.—Review, with excerpts, of paper by Goodale on fecundity in Rhode Island reds. [See Bot. Absts. 1, Entry 881.] Compares results with those of Pearl on Barred Plymouth Rocks. Goodale finds that fecundity is influenced by other characters such as broodiness and maturity, so that fecundity is not a good character to test effectiveness of selection; but with Pearl he agrees that fecundity is inherited.—*A. F. Shull.*

1161. ATKINSON, G. F. **Quadruple hybrids in the F_1 generation from Oenothera nutans and Oe. pycnocarpa, with the F_2 generations, and back crosses and intercrosses.** Genetics **2**: 213-260. *16 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 331. Mar., 1918.

1162. ATKINSON, G. F. **Twin hybrids from Oenothera Lamarckiana and Oe. franciscana when crossed with Oe. pycnocarpa.** Science **46**: 222. 1917.—Abst. in Exp. Sta. Rec. **37**: 820. Feb. 28, 1918.

1163. BACKHOUSE, G. O. **[The improvement of wheat in Argentina.]** Mon. Agric. Nac. Buenos Aires. Dir. Gen. Ensenanza e Invest. Agric. Pub. 73. *72 p. 17 fig.*—Abst. Exp. Sta. Rec. **38**: 741. June, 1918.

1164. BARKER, E. E. **Heredity studies in the morning glory (*Ipomoea purpurea*).** New York Cornell Agric. Exp. Sta. Bull. 392. *38 p., 3 pl.* 1917.—Abst. in Exp. Sta. Rec. **38**: 750. June, 1918.

1165. BAUR, ERWIN. **Mutationen von Antirrhinum majus. [Mutations of Antirrhinum majus.]** Zeitschr. indukt. Abstamm. Vererb. **19**: 177-193. 10 *fig.* June, 1918.

1166. BEIJERINCK, M. W. **The enzyme theory of heredity.** Proc. Kon. Akad. Wetensch. Amsterdam **19**: 1275. 1917.—Rev. by Tine Tammes in Zeitschr. indukt. Abstamm. Vererb. **19**: 202-203. June, 1918.

1167. BEIJERINCK, M. W. **De enzymtheorie der erfelijkheid. [The enzyme theory of heredity.]** Kon. Akad. Wetensch. Amsterdam **25**: 1231. 1917.—Rev. by Tine Tammes in Zeitschr. indukt. Abstamm. Vererb. **19**: 202-203. June, 1918.

1168. BIFFEN, R. H. **The suppression of characters on crossing.** Jour. Genetics **5**: 225-228. July, 1916.—Rev. by Tage Ellinger in Zeitschr. indukt. Abstamm. Vererb. **19**: 218. June, 1918.

1169. BISSET, PETER. **Prolification in a double-flowered form of Calendula officinalis.** Jour. Heredity **9**: 323-325, *fig. 12, 13*. Nov., 1918.—Prolification in *Calendula* is uncommon. These plants were grown in Washington, D. C. in 1918. Writer's attention first attracted by strange behavior of several flower heads. Central head was apparently normal, but later produced several buds, some from center of flower head. These developed into secondary flower heads and opened fully, and in several instances again produced buds that developed flower heads (tertiary) each time smaller than the preceding. No seed developed and the plant being annual the variation was lost.—Author notes prolification in double-flowered

English daisy and also frequently among common roses which often takes form of prolonged flower stalk arising from center of parent flower, often producing leaves and a bud which later develops into a flower. The prolification in *Calendula* is attributed to environmental conditions.—*C. E. Myers.*

1170. BLAKESLEE, A. F., AND B. T. AVERY. **Adzuki beans and jimson weeds. Favorable class material for illustrating the ratio of Mendel's law.** Jour. Heredity **8**: 125–131. *Fig. 4.* 1917.—Abst. in Exp. Sta. Rec. **37**: 831. Feb. 28, 1918.

1171. BLAKESLEE, A. F., J. A. HARRIS, D. E. WARNER, AND W. F. KIRKPATRICK. **Pigmentation and other criteria for the selection of laying hens.** Connecticut Storrs Exp. Sta. Bull. **92**: *93–194. 23 fig.* 1917. Also abst. in Exp. Sta. Rec. **39**: 74–75. July, 1918.

1172. BLAKESLEE, A. F., AND D. E. WARNER. **Correlation between egg-laying activity and yellow pigment in domestic fowl.** Amer. Nat. **49**: 360–368. 1915.—Rev. by E. Stein in Zeitschr. indukt. Abstamm. Vererb. **19**: 216–217. June, 1918.

1173. BLARINGHEM, L. **Les complexes végétaux et leurs disjonctions par la vieillesse.** Ann. inst. Pasteur **32**: 60–70. 1918.—As plant chimera, *Cytisus Adami*, grows old, branches appear with all characteristics of one or other of the two constituents, *C. Laburnum* or *C. purpureus*. Hybrids of cereals also exhibit vegetative dissociation into characters of parents,—e.g., in some barley hybrids base of ear is of type of one parent and apex of ear of other, while intermediate region, where sterility is prominent, presents mosaic of the two characters. Anatomical analysis of tissues of plant hybrids confirms Naudin's hypothesis that hybrid is a mosaic in which discordant elements are not visible unless elements of same species come together, when there will result parts discernible to the eye as belonging to one of parent species. Suitable external conditions can accelerate this vegetative dissociation, and examples of this are cited. Parasitism of rusts and smuts is regarded as similar case of a plant complex, where the two constituents grow together for a time without injury to either. These complexes also dissociate themselves into their constituents, host plant and fungus, as result of certain abnormal conditions of growth, and when one or other member of complex approaches maturation. Influence of nutrition on relation of the two constituents of this complex is discussed. [Through abst. by W. S[tiles] in Physiol. Absts. **3**: 292. July–Aug., 1918.]

1174. BLEULER, E. **Mendelismus bei Psychosen, speziell bei der Schizophrenie. [Mendelism in psychoses, especially in schizophrenia.]** Schweiz. Arch. Neurol. u. Psychiat. **1**: 1917.—Italian abst. by E. Lugaro, in Riv. Patologia nerv. ment. **15**: 60–61. Mar. 23, 1918.

1175. BORING, ALICE M., AND T. H. MORGAN. **Lutear cells and hen-feathering.** Jour. General Physiol. **1**: 127–131. Sept., 1918.—In male of ordinary fowl, lutear cells characteristic of ovary of hen, are absent. In hen-feathered Sebright male, lutear cells are present in testes. Castration of Sebright male causes him to develop full plumage of ordinary cock. Removal of ovary of hen causes her also to develop full plumage of cock. It is plausible therefore that lutear cells produce internal secretion that suppresses, in hen-feathered Sebright male and in ordinary female, development of full plumage of ordinary cock. [Abst. by W. M. B[ayliss] in Physiol. Absts. **3**: 458. Nov.–Dec., 1918.]—*C. B. Bridges.*

1176. BORING, ALICE M., AND RAYMOND PEARL. **Sex studies. XI. Hermaphrodite birds.** Jour. Exp. Zoöl. **25**: 1–47. *9 pl., 9 fig.* 1918.—Abst. in Jour. Roy. Microsc. Soc. **1918**: 292: Sept., 1918.

1177. BROWN, THOS. W. **Orange like fruit from a lemon tree.** Jour. Heredity **9**: 303–310. *Fig., 4–6.* Nov., 1918.—Brief communication accompanied by photographs.—*M. C. Coulter.*

1178. BURGER, O. F. **Variations in Colletotrichum gloeosporoides.** Phytopath. **7**: 151. 1917.—Abst. in Exp. Sta. Rec. **38**: 252. April 22, 1918.

1179. COCKERELL, T. D. A. **New forms of red sunflowers.** Gard. Chron. **64**: 186. Nov. 9, 1918.—Two new series of *Helianthus annuus* described: (1) Vinous series, including *flavobasis, trizonatus, semivinosus, reversus, pallescens, passiflora,* and *apicalis.* (2) Chestnut series, including *apicalis, basalis, dilutus* and *latibasis.* Two forms of rays are described, *convolutus* and *revolutus.* Author desires information regarding new varieties of sunflower and Jerusalem artichoke.—*E. L. Proebsting.*

1180. COLE, L. J. **Determinate and indeterminate laying cycles in birds.** Anat. Rec. **11**: 504–505. 1917.—Abst. in Exp. Sta. Rec. **37**: 869. Feb. 28, 1918.

1181. COLLINS, G. N. **Hybrids of Zea tunicata and Z. ramosa.** Proc. Nation. Acad. Sci. U. S. Amer. **3**: 345–349. 1917.—Abst. in Exp. Sta. Rec. **38**: 525. June 14, 1918.

1182. COLLINS, G. N. **New place effect in maize.** Jour. Agric. Res. **12**: 231–243. Feb., 1918.—Abst. in Exp. Sta. Rec. **38**: 738–739. June, 1918. [See Bot. Absts. 1, Entry 17.]

1183. COLLINS, G. N., AND J. H. KEMPTON. **Breeding sweet corn resistant to the corn earworm.** Jour. Agric. Res. **11**: 549–572. 1917.—Abst. in Exp. Sta. Rec. **38**: 445. April, 1918.

1184. CORRENS, C. **Zur Kenntnis einfacher mendelnder Bastarde. I. Die Unterscheidung der pilulifera-Homozygoten und der Heterozygoten des Bastardes Urtica pilulifera Dodartii. II. Mirabilis jalapa xantha und ihre Bastarde. III. Urtica urens peraurea.** [Contributions to knowledge of simple Mendelian hybrids. I. The distinguishing of pilulifera homozygotes and the heterozygotes of the hybrid Urtica pilulifera Dodartii. II. Mirabilis jalapa xantha and its hybrids.] Sitzungsber. K. Preuss. Akad. Wiss. 1918: 221–268. 1918.—Attempt is made [in second paper] to estimate pigments in different varieties of *Mirabilis jalapa.* Conclusion is drawn that the chlorophyll varieties do not appear to originate from normal green type by disappearance of characters, but that characters become latent or suppressing factors come into operation. [Through Abst. by I. J[örgensen] in Physiol. Absts. **3**: 299. July–Aug., 1918.]

1185. COULTER, MERLE C. **Self-sterility.** Bot. Gaz. **66**: 461–462. Nov., 1918.—Discussion of: East, E. M., and J. B. Park. "Studies on self-sterility. I. The behavior of self-sterile plants." Genetics **2**: 525–609. 1917. While praising work of these authors as "exemplary piece of research," questions adequacy of theory that occurrence of intra-sterile inter-fertile classes rests upon heterozygosis.

1186. COULTER, MERLE C. **Mutationists and selectionists.** Bot. Gaz. **66**: 463–464. Nov., 1918.—Brief statement of controversy between those who, like Castle, hold that selection can modify unit characters, and those who maintain that modifications result from mutations which occur independently of direction of selection. Refers particularly to papers of H. S. Jennings, "Modifying factors and multiple allelomorphs in relation to the results of selection." (Amer. Nat. **51**: 301–306. 1917.) and "Observed changes in hereditary characters in relation to evolution." (Jour. Washington Acad. Sci. **7**: 281–301. 1917.) Holds that, at present, advantage seems to be with mutationists because of definiteness of basis provided for description of genetic phenomena.

1187. COULTER, MERLE C. **Continuous variation.** Bot. Gaz. **66**: 540–541. Dec., 1918.—Brief note on: Stout, A. B. and Helene M. Boas. Statistical studies of flower number per head in *Chichorium intybus:* kinds of variability, heredity, and effects of selection. Mem. Torrey Bot. Club **17**: 334–458. *Pl. 10–13.* 1918.

1188. COULTER, MERLE. **New place effect.** Bot. Gaz. **66**: 541. Dec., 1918.—Brief discussion of: Collins, G. N. "New place effect in maize." Jour. Agric. Res. **12**: 231–243. 1918. [See Bot. Absts. 1, Entry 17.]

1189. COULTER, MERLE C. **Dominance and parasitism.** Bot. Gaz. 66: 541. Dec. 1918.—Note on: Jones, D. F. "Segregation of susceptibility to parasitism in maize." Amer. Jour. Bot. 5: 295–300. 1918. Points out that Jones's conclusion that the most heterozygous maize, because most vigorous, will be most resistant to disease, can not be accepted as universal rule because some diseases are known to thrive best in the most vigorous hosts. Suggests that difference may depend upon fact that some diseases are immediately destructive to host, others not.

1190. COULTER, MERLE C. **Inheritance of height in peas.** Bot. Gaz. 66: 543. Dec., 1918.—Refers to recent work indicating that height in peas is affected by more than one factorial difference, particularly citing: O. E. White. "Inheritance studies in Pisum. III. The inheritance of height in peas." (Mem. Torrey Bot. Club 17: 316.) [See Bot. Absts. I, Entry 250.], who concludes that there are at least 5 such factor differences, two affecting internode length and 3 internode number.

1191. COULTER, MERLE C. **Inheritance in Pisum.** Bot. Gaz. 66: 543. Dec., 1918.—Note on: O. E. White. "Inheritance studies in Pisum. IV. Interrelation of the genetic factors of Pisum." (Jour. Agric. Res. 11: 167–190. 1917.) [See Bot. Absts. I, Entry 250.], especially commending section on "Modification of the expression of Pisum factors by different environments and by each other." States that this is one of first successful attempts to make intensive study of inheritance. Refers to similar work on corn being done under direction of R. A. Emerson at Cornell.

1192. COULTER, MERLE C. **Practical breeding.** Bot. Gaz. 66: 544. Dec., 1918.—Commends work of Collins, G. N., and J. H. Kempton, "Breeding sweet corn resistant to the corn earworm." (Jour. Agric. Res. 12: 549–572. 1917.), who have selected four superficial characters which were found to be correlated with amount of damage done by earworms.

1193. COULTER, MERLE C. **The morning glory in genetics.** Bot. Gaz. 66: 544. Dec., 1918.—Note on: Barker, E. E. Hereditary studies in the morning glory (*Ipomoea purpurea*). Cornell Univ. Agric. Exp. Sta. Bull. 392. *38 p., 3 pl.* 1917.

1194. COWGILL, H. B. **Vegetable improvement.** Porto Rico Dept. Agric. Sta. Rept. 1917: 27, 28. 1917.—Abst. in Exp. Sta. Rec. 39: 39. July, 1918.

1195. COWGILL, H. B. **Report of the plant breeder.** Porto Rico Dept. Agric. Sta. Rept. 1917: 15–26, 29–36. *6 fig.* 1917.—Abst. in Exp. Sta. Rec. 39: 33. July, 1918.

1196. DAHLGREN, K. V. O. **Eine acaulis-Varietät von Primula officinalis und ihre Erblichkeitsverhältnisse.** [An acaulis variety of Primula officinalis and its inheritance.] Svensk Bot. Tidskrift 10: 536–541. 1916.—Rev. by H. Rasmuson in Zeitschr. indukt. Abstamm. Vererb. 19: 220. June, 1918.

1197. DOWNEY, JUNE E. **Standardized tests and mental inheritance.** Jour. Heredity 9: 311–314. *Fig. 7.* Nov., 1918.

1198. EAST, E. M. **The behavior of self-sterile plants.** Science 46: 221–222. 1917.—Abst. in Exp. Sta. Rec. 37: 820. Feb. 28, 1918.

1199. EAST, E. M., AND J. B. PARK. ***Studies on self-sterility. I. The behavior of self-sterile plants.*** Genetics 2: 505–609. 1917.—Abst. in Exp. Sta. Rec. 38: 823. Aug. 9, 1918. [See also following Entry, 1200.]

1200. EAST, E. M., AND J. B. PARK. ***Studies on self-sterility. II. Pollen-tube growth.*** Genetics 3: 353–366. *3 fig.* July, 1918. [See also preceding Entry, 1199.]

1201. EDGERTON, C. W. **A study of wilt resistance in the seed-bed.** Phytopath. 8: 5–14. *fig. 1–4.* 1918. [See Bot. Absts. I, Entry 94.]

1202. EUREN, H. F. **The heredity of dual-purpose cattle.** *96 p.* A. D. Euren: Norwich, England.—Abst. in Exp. Sta. Rec. 37: 866. Feb. 28, 1918.

1203. FEYTAUD, J. **Sur la reproduction parthénogenetique de l'Otiorhynque silloune (Otiorhynchus sulcatus Fahr.)** [Onparthenogenetic reproduction of Otiorhynchus sulcatus.] Compt. Rend. Paris 165: 767–769. 1917.—Abst. in Jour. Roy. Microsc. Soc. 1918: 48. Mar., 1918.

1204. FRUWIRTH, C. **Die Umzüchtung von Wintergetreide in Sommergetreide.** [The breeding of winter cereals into summer cereals.] Zeitschr. Pflanzenzüchtung 6: 1–46. Mar., 1918.—See Bot. Absts. 2, Entry 935.

1205. GATES, R. R. **Vegetative segregation in a hybrid race.** Jour. Genetics 6: 237–253. *1 pl.* 1917.—Abst. in Exp. Sta. Rec. 39: 123. Aug., 1918.

1206. GATES, R. R. **Heredity and mutation as cell phenomena.** Amer. Jour. Bot. 2: 519–528. 1915.—Rev. by M. J. Sirks in Zeitschr. indukt. Abstamm. Vererb. 19: 203–204. June, 1918.

1207. GLASER, OTTO. **Hereditary deficiencies in the sense of smell.** Science 48: 647–648. Dec. 27, 1918.—M, a Russian Jew from Kiev, lacks sense of smell. Alcohol, illuminating gas, ether, chloroform, flowers, or pepper, produce choking, sneezing, or various "feelings" only. Among M's relatives, characterized by stammering, early and complete loss of incisors, frequent hernia, a thumb nearly twice normal width, excessive sex interest, and considerable mental powers, are two normal sisters and following olfactory defectives: two brothers (one with slight sense of smell), mother, maternal grandfather, and a cousin, the daughter of a paternal aunt whose husband, from different family is "smell-blind." Trait is hereditary and possibly sex-linked. Large number of duplex females is explained by presence of many olfactory defectives in M's former place of residence.—*P. W. Whiting.*

1208. GOODALE, H. D. **Further data on the relation between the gonads and the soma of some domestic birds.** Anat. Rec. 11: 512–514. 1917.—Abst. in Exp. Sta. Rec. 37: 868–869. Feb. 28, 1918.

1209. GOODALE, H. D. **Crossing over in the sex chromosome of the male fowl.** Science 46: 213. 1917.—Abst. in Exp. Sta. Rec. 37: 868. Feb. 28, 1918.

1210. GOODALE, H. D. **The feminization of male birds.** Jour. Amer. Assoc. Instr. and Invest. Poultry Husb. 3: 68–70. 1917.—Abst. in Exp. Sta. Rec. 38: 275. April 22, 1918.

1211. GOODALE, HUBERT D. **Feminized male birds.** Genetics 3: 276–299. *2 pl.* May, 1918.—Brown Leghorn cockerels were castrated and ovarian tissue engrafted. They developed comb and wattles of feminine character; weight was like that of typical male, much larger than female; spurs were present in male; mating instincts were like those of the male. —Plumage characteristics were of two types,—either (type 1) like typical females in shape, color, barbule arrangement, but with size slightly larger, corresponding with their body size; or (type 2) variable and tending toward black as in male. Type 2 appears incompletely feminized but is considered really due to genetic differences in stock, as blackish hens also appeared.—Feminized cockerel previously described as well as four of 1916 series and two of 1915 series were type 1, while one of 1915 series and two of 1916 series were type 2. 1915 series differed from others in showing no sexual activity.—Implantation of ovarian tissue in ten male birds containing testicular material had no effect on characteristics and the ovarian tissue usually degenerated.—Three feminized Gray Call drakes showed head modified from bright green of male to dull color of female. Feathers of body were of mixed character but upward curl of male tail feathers did not appear. Neck ring of male was absent.—Author suggests that each character may be considered separately after manner of a Mendelian unit. Thus spurs appear in normal males, capons, feminized males, ovariotomized females, and in

females of certain strains of poultry. Control exerted by ovarian secretion is in this respect therefore slight.—Comb and wattle character is determined by type of gonad present. In capons and many ovariotomized hens they are juvenile; in feminized cocks they are feminine.—Body size in ovariotomized hen is small like that of normal hen. Capon is larger than male. Feminized cockerel is size of normal male. Ovary has no influence on body size since castrated females have body size of intact females, while feminized cockerels have body size of male.—Feminized males are masculine in mating instinct while capons are simply reflex. Capons possess brooding instinct, but this is sometimes present in normal cocks. Castrated hens are neutral or masculine in behavior.—Capons have very long feathers thus showing intensified male characteristic, but this may be correlated with greater body size. Feminized males have plumage shape like that of females, showing that ovary controls this character. In color castrated females are like males, while feminized males are like females; *capons are like males; ovary therefore controls color.*—Gonadial secretions are probably not simple, since their effects are diverse. Secondary sexual characters may depend upon "recessive" sex-linked factors. ["Recessive" here evidently means semipotent, for recessive sex-linked factors find expression in both sexes.]—*P. W. Whiting.*

1212. GOODMAN, C. W. **Selecting and testing seed corn.** Texas Dept. Agric. Bull. 53 *23 p., 10 fig.* 1917.—Abst. in Exp. Sta. Rec. 38: 739. June, 1918.

1213. GOWEN, JOHN W. **Studies in inheritance of certain characters of crosses between dairy and beef breeds of cattle.** Jour. Agric. Res. 15: 1–58, *6 pl.* Oct., 1918.—Preliminary paper, Mendelian study based on 48 F_1 and 8 F_2 individuals from crosses involving Ayrcshire, Guernsey, Jersey, Holstein-Friesian, and Aberdeen-Angus breeds. Individual records of each animal are given. Results suggest dominance of black body color to other colors, of pigmented muzzle to unpigmented, pigmented tongue to unpigmented, black switch to other switch colors. White in inguinal region appears to be dominant, but white on face, neck, shoulders, rump, flanks, and legs appears to be recessive to self-color. Polled is generally dominant to horned, but apparently testicular hormones influence results, for male heterozygotes are much more likely to show spurs or even horns than female heterozygotes, somewhat similar to cases in sheep. Beef conformation appears in F_1 in head and fore quarters, but rather marked dairy type is seen in body and hind quarters. High milk production appears dominant, but high butter-fat percentage appears recessive.—*J. A. Detlefsen.*

1214. GRANTHAM, A. E. **The relation of cob to other ear characters in corn.** Jour. Amer. Soc. Agron. 9: 201–217. *1 pl.* 1917.—Abst. in Exp. Sta. Rec. 38: 532. June 14, 1918.

1215. GRIER, N. M. **Sexual dimorphism and variation in Ginkgo biloba.** Torreya 17: 225. 1917.—[See Bot. Absts. 1, Entry 1327.] Abst. in Exp. Sta. Rec. 39: 123. Aug., 1918.

* 1216. HAECKER, VALENTIN. **Entwicklungsgeschichtliche Eigenschaftsanalyse (Phänogenetik). Gemeinsame Aufgaben der Entwicklungsgeschichte, Vererbungs- und Rassenlehre. [Developmental analysis of characters (phenogenetics). General problems of development, heredity and eugenics.]** *8 vo., 344 p., 181 fig.* G. Fischer: Jena, 1918.—*Contents freely translated from publisher's announcement in Zoöl. Jahrb. 41: cover p. 2. 1918:* (1) Problems of character analysis or racial analysis. (2) Developmental analysis of characters in unicellular organisms. (3) Size differences. (4) Asymmetry. (5) Hair, feathers and similar ectodermal structures. (6) General consideration of pigmentation. The ferment-chromogen hypothesis. (7) Color races of the Axolotl and mammals. (8) Color races of birds. (9) Color races of plants. (10) Albinism and albinoidism. (11) Partial albinism, variegation and distinctive markings ["Abzeichen"]. (12) Tiger-striping, dappling, tiger-flecking, luster. (13) White variegation in birds, lower vertebrates and plants. (14) Wild color pattern. (15) Views held hitherto concerning the causes of color pattern. (16) Color pattern and the growth of the skin. (17) Color pattern and skin growth in Axolotl. (18) Application of skin-growth hypothesis to special cases. (19) Color pattern of birds. (20) Abnormalities of the extremities and tail. (21) Combs, horns, antlers. (22) Form of cranium and type of

face. (23) A developmental law of heredity. (24) Developmental analysis of science, the science of the hereditary constitution, and ethnology. (25) Developmental rule of inheritance, and pluripotency.

1217. HALLQUIST, CARL. **Ein neuer Fall von Dimerie bei Brassica Napus. [A new case of dimery in Brassica napus.]** Bot. Notiser **1916**: 39–42. 1916.—Rev. by Richard Freudenberg in Zeitschr. indukt. Abstamm. Vererb. **19**: 222. June, 1918.

1218. HALLQUIST, CARL. **Brassicakreuzungen. [Brassica crosses.]** Bot. Notiser **1915**: 97–112. 1915.—Rev. by Richard Freudenberg in Zeitschr. indukt. Abstamm. Vererb. **19**: 221–222. June, 1918.

1219. HANCE, R. T. **An attempt to modify the germ plasm of Oenothera through the germinating seed.** Amer. Nat. **51**: 567–572. 1917.—Abst. in Exp. Sta. Rec. **39**: 30. July, 1918.

1220. HANCE, ROBERT T. **Variations in the number of somatic chromosomes in Oenothera scintillans de Vries.** Genetics **3**: 225–275. *7 pl., 5 fig.* May, 1918.—See Bot. Absts. 2, Entry 410.

1221. HARLAND, S. C. **On the inheritance of the number of teeth in the bracts of Gossypium.** West Indian Bull. **16**: 111–120. *4 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 532–533. June 14, 1918.

1222. HARRIS, J. A. **Biometric studies on the somatic and genetic physiology of the sugar beet.** Amer. Nat. **51**: 507–512. 1917.—Abst. in Exp. Sta. Rec. **38**: 729. June, 1918.

1223. HARRIS, J. ARTHUR. **Further illustrations of the applicability of a coefficient measuring the correlation between a variable and the deviation of a dependent variable from its probable value.** Genetics **3**: 328–352. July, 1918.

1224. HARRIS, J. A. **Further studies on the relationship between bilateral asymmetry and fertility and fecundity in the unilocular fruit.** Genetics **2**: 186–204. *3 fig.* 1917. [See Bot. Absts. 1, Entry 885.]—Abst. in Exp. Sta. Rec. **38**: 29. Jan., 1918.

1225. HARRIS, J. A. **On the applicability of Pearson's biserial *r* to the problem of asymmetry and fertility in the unilocular fruit.** Genetics **2**: 205–212. *1 fig.* 1917. [See Bot. Absts. 1, Entry 887.]—Abst. in Exp. Sta. Rec. **38**: 29. Jan., 1918.

1226. HARRIS, J. A. **Supplementary determinations of the relationship between the number of ovules per pod and fertility in Phaseolus.** Genetics **2**: 282–290. *2 fig.* 1917. [See Bot. Absts. 1, Entry 886.]—Abst. in Exp. Sta. Rec. **38**: 29. Jan., 1918.

1227. HARRIS, J. A., A. F. BLAKESLEE, AND D. E. WARNER. **The correlation between body pigmentation and egg production in the domestic fowl.** Genetics **2**: 36–77. *16 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 276. April 22, 1918.

1228. HAWKES, ONERA A. MERRITT. **Studies in inheritance in the hybrid Philosamia (Attacus) ricini (Boisdo.) ♂ × Philosamia cynthia (Drury) ♀.** Jour. Genetics **7**: 135–154. *1 pl., 2 fig.* 1918. [See Bot. Absts. 1, Entry 31.]—Abst. in Jour. Roy. Microsc. Soc. **1918**: 191, June, 1918.

1229. HAYS, FRANK A. **The influence of excessive sexual activity of male rabbits. II. On the nature of their offspring.** Jour. Exp. Zoöl. **25**: 571–613. April, 1918. [See Bot. Absts. 1, Entry 224.]—Abst. by J. Arthur Thomson in Jour. Roy Microsc. Soc. **1918**: 297–298. Sept., 1918.

1230. HILL, ARTHUR W. **The history of Primula malacoides, Franchet, under cultivation.** Jour. Genetics **7**: 193–198. *1 fig., 2 pl.* May, 1918.

1231. HILSON, G. R., AND F. R. PARNELL. **A simple method of seling cotton.** Madras Agric. Dept. Yearbook **1917**: 54, 55. 1917.—Abst. in Exp. Sta. Rec. **39**: 234. Nov. 15, 1918.

1232. HINES, C. W. **Seedling cane.** Philippine Agric. Rev. **10**: 32–42, *5 pl., 1 fig.* 1917.—Abst. in Exp. Sta. Rec. **39**: 237. Nov. 15, 1918.

1233. HONING, J. A. **Selection experiments with Deli tobacco.** Meded. Deli-Proefstat. Medan, **10**: 79–128. 1917.—Abst. in Exp. Sta. Rec. **38**: 741. June, 1918.

1234. HONING, J. A. **Variabiliteit der bastardsplitsing. (Variabilität der Bastardspaltung). [Variability of hybrid splitting.]** Verslagen gew. verg. Kon. Akad. Wet. Amsterdam, Wis- en Natuurk. Afdeeling **25**: 794–805. Nov., 1916.—Rev. by M. J. Sirks in Zeitschr. indukt. Abstamm. Vererb. **19**: 204–205. June, 1918.

1235. HUTCHESON, T. B., AND T. K. WOLFE. **The effect of hybridization on maturity and yield in corn.** Virginia Agric. Exp. Sta. Tech. Bull. **18**: 161–170. 1917.—Abst. in Exp. Sta. Rec. **39**: 31. July, 1918.

1236. IBSEN, H. L., AND E. STEIGLEDER. **Evidence for the death in utero of the homozygous yellow mouse.** Amer. Nat. **51**: 740–752. *1 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 573. June *14, 1918.*

1237. IKENO, S. **Studies on the hybrids of Capsicum annuum. II. On some variegated races.** Jour. Genetics **6**: 201–229. *1 pl., 2 fig.* 1917.—Abst. in Exp. Sta. Rec. **39**: 123. Aug. 1918.

1238. IKENO, S. **A note on some variegated races of Capsicum annuum.** Jour. Genetics **6**: 315–316. 1917. [See Bot. Absts. 1, Entry 900.]—Abst. in Exp. Sta. Rec. **39**: 123. Aug., 1918.

1239. IKENO, S. **Variegation in Plantago.** Genetics **2**: 390–416. *2 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 731. June, 1918.

1240. JACKSON, S. **"Rogues" among potatoes.** Gard. Chron. **64**: 210. Nov. 23, 1918.

1241. JACKSON, S., AND A. W. SUTTON. **"Rogues" among potatoes.** Gard. Chron. **64**: 162–163. Oct. 19, 1918.—Two letters dealing with supposed "sport" from Sharpe's Victor potato grown by first author, authenticity of which is doubted by second author. [See Bot. Absts. 1, Entry 944.] Latter urges necessity of making sure that no contamination of culture has taken place, before accepting aberrant form as bud-sport of variety with which it has grown.—*Richard Wellington.*

1242. JEFFREY, EDWARD C. **Evolution by hybridization.** Mem. Brooklyn Bot. Gard. **1**: 298–305. *1 pl.* July, 1918.—Brief résumé and discussion of importance of hybridization factor in plant evolution. Pollen sterility, under normal growth conditions, indicative not of mutability, but of hybridization. Evidence from systematic, phytogeographic and morphological studies shows crossing of species in nature an extremely common cause of species multiplication. Physiological and genetical criteria must not be given greater weight than the more reliable historical (paleobotanical) and morphological criteria in speculations regarding origin of species. Evidence from Oenotheras not suited to furnish decisive proof for de Vries's mutation theory. Multiplication of species by hybridization does not invalidate Darwin's hypothesis, but merely supplies an additional species-forming agent. Hybridization not universal cause for origin of new species, as maintained by Lotsy. Original species must have arisen in some other manner. Adaptation of floral structures to cross-fertilization important from standpoint of frequency of natural hybrids.—*O. E. White.*

1243. JENNINGS, H. S. **The numerical results of diverse systems of breeding.** Genetics **1**: 53–89. 1916.—Rev. by Tage Ellinger in Zeitschr. indukt. Abstamm. Vererb. **19**: 205. June, 1918.

1244. JOHANNSEN, W. **Tilsyneladende arvelig Selektionsvirkning. (Scheinbare erbliche Selektionswirkung. [Apparently hereditary effect of selection.]** Overs. over d. kgl. danske Videnskabernes Selskabs Forhandlinger 1915. 1915.—Rev. by Tage Ellinger in Zeitschr. indukt. Abstamm. Vererb. 19: 217–218. June, 1918.

1245. JONES, D. F. **Dominance of linked factors as a means of accounting for heterosis.** Genetics 2: 466–479. *1 fig.* 1917.—Abst. in Exp. Sta. Rec. 38: 367. Mar., 1918.

1246. JONES, J. M. **Sheep breeding and feeding.** Texas Sta. Bull. 205. *24 p., 5 fig.* 1917. —Abst. in Exp. Sta. Rec. 37: 866. Feb. 28, 1918.

1247. JONES, L. R. **Disease resistance in cabbage.** Proc. National Acad. Sci. U. S. Amer. 4: 42–46. *1918.—Abst. by F. K[idd] in Physiol. Absts. 3: 305.* July–Aug., 1918. [See Bot. Absts. 1, Entry 321.]

1248. KAPTEYN, J. C. **Skew frequency curves in biology and statistics.** Recueil Trav. bot. Néerl. 13: 105–157. 1916.—Rev. by Tine Tammes in Zeitschr. indukt. Abstamm. Vererb. 19: 205–206. June, 1918.

1249. KENT, O. B. **How to select laying hens.** New York State Coll. Agric. Cornell Univ. Ext. Bull. 21. *P. 23–33, 5 pl., 9 fig.* 1917.—Abst. in Exp. Sta. Rec. 38: 775. June, 1918.

1250. KEZER, ALVIN, AND BREEZE BOYACK. **Mendelian inheritance in wheat and barley crosses with probable error studies on class frequencies.** Colorado Agric. Exp. Sta. Bull. 249. *139 p., 9 pl., 10 fig.* Oct., 1918.—See Bot. Absts. 2, Entry 682.

1251. KIRKHAM, W. B. **Embryology of the yellow mouse.** Anat. Rec. 11: 480–481. 1917. —Abst. in Exp. Sta. Rec. 38: 573. June 14, 1918.

1252. KRANICHFELD, H. **Die Einwände Heribert Nilsson's gegen die Mutationslehre von H. de Vries. [Heribert-Nilsson's criticisms of the mutation theory of H. de Vries.]** Biol. Zentralbl. 37: 61–98. 1917.—German Abst. in Zeitschr. Pflanzenzüchtung 6: 52. Mar., 1918.

1253. KRAUSSE, A. **Polydaktylie auf Sardinien. [Polydactyly in Sardinia.]** Die Naturwiss. 4: 723. 1916.—Rev. by Hermann W. Siemens in Zeitschr. indukt Abstamm. Vererb. 19: 207–208. June, 1918.

1254. LAMON, H. M. **Value of breeding from selected stock.** Jour. Massachusetts Poultry Soc. 1: 15–16, 24, 30–32. 1917.—Abst. in Exp. Sta. Rec. 38: 775. June, 1918.

1255. LANCEFIELD, D. E. **An autosomal bristle modifier, affecting a sex-linked character.** Amer. Nat. 52: 462–464. Aug.–Sept., 1918.—A recessive modifying gene in third chromosome of *Drosophila melanogaster* affects dominance of sex-linked bristle character (forked) which is ordinarily completely recessive. Females heterozygous for forked, homozygous for this third-chromosome modifier, will exhibit forked bristle character to limited extent. The third chromosome gene produces no visible effect in flies not heterozygous for forked.—*C. B. Bridges.*

1256. LANCEFIELD, D. E. **A case of abnormal inheritance in Drosophila melanogaster.** Amer. Nat. 52: 556–558. Oct.–Nov., 1918.—Author reports aberrant inheritance of sex-linked genes of Drosophila. Progeny tests gave three aberrant cultures but further tests gave entirely normal results. Data obtained were insufficient for analysis.—*C. B. Bridges.*

1257. LEHMANN, ERNST. **Variabilität und Blütenmorphologie. [Variability and floral morphology.]** Biol. Zentralbl. 38: 1–38. Jan., 1918.

1258. LENZ, DR. FRITZ. **Eine Erklärung des Schwankens der Knabenziffer. [An explanation of the decrease in number of boys.]** Archiv. Rassen- u. Gesellschaftsbiol. **11**: 629. 1914–15.—Rev. by Hermann W. Siemans in Zeitschr. indukt. Abstamm. Vererb. **19**: 208–209. June, 1918.

1259. LEWIS, H. R. **Selection: The basis of improving the poultry flock.** New Jersey State Hints to Poultrymen **5**: 1–4. 1917.—Abst. in Exp. Sta. Rec. **37**: 871. Feb. 28, 1918.

1260. LILLIE, FRANK R. **The free-martin, a study of the action of sex hormones in the foetal life of cattle.** Jour. Exp. Zoöl. **23**: 371–452. *29 fig.* 1917.—Abst. in Jour. Roy. Microsc. Soc. **1918**: 37. Mar., 1918.

1261. LOEB, J. **Further experiments on the sex of parthenogenetic frogs.** Proc. Nation. Acad. Sci. U. S. Amer. **4**: 60–62. 1918.—Abst. by J. Arthur Thomson in Jour. Roy. Microsc. Soc. **1918**: 290. Sept., 1918. Physiol. Absts. **3**: 328. Sept. 1918. [See Bot. Absts. 1, Entry 912.]

1262. LOTSY, J. P. **Oenothera Lamarckiana considered as a nuclear chimera.** Arch. Néerland. Sci. Exact et Nat. III, **3**: 324–350. *6 pl.* 1917.—Abst. in Exp. Sta. Rec. **39**: 226. 1918.

1263. LOVE, H. H., AND A. C. FRASER. **The inheritance of the weak awn in certain Avena crosses.** Amer. Nat. **51**: 481–493. *2 fig.* 1917.—Abst. in Exp. Sta. Rec. **39**: 234–235. 1918.

1264. LOVE, H. H., AND G. P. MCROSTIE. **The inheritance of hull-lessness in oat hybrids.** Amer. Nat. **53**: 5–32. *7 fig.* Jan.–Feb., 1919.—See Bot. Absts. 2, Entry 420.

1265. MCEWEN, R. S. **The reactions to light and to gravity in Drosophila and its mutants.** Jour. Exp. Zoöl. **25**: 49–106. *3 fig.* 1918.—Abst. by J. Arthur Thomson in Jour. Roy. Microsc. Soc. **1918**: 303–304. Sept., 1918.

1266. MACINNES, L. T. **The testing of pure-bred cows in New South Wales.** Jour. He redity **9**: 307, 335. Nov., 1918.

1267. MACLEOD, J. **Quantitative description of ten British species of genus Mnium.** Jour. Linn. Soc. **44**: 1–58. *9 fig.* 1917.—Abst. in Jour. Roy. Microsc. Soc. **1918**: 69. Mar., 1918.

1268. MALINOWSKI, E. **Über die durch Kreuzung hervorgerufene Vielförmigkeit beim Weizen. [On the variability of wheat induced by crossing.]** Ext. C. R. Soc. Sci. Varsovie **9**: 733–756. 1916.—Rev. by E. Schiemann in Zeitschr. indukt. Abstamm. Vererb. **19**: 219. June, 1918.

*1269. MALINOWSKI, E. **On the inheritance of some characters in the radishes.** Ext. C. R. Soc. Sci. Varsovie **9**: 757–776. *1 pl.* 1916.—Rev. by E. Schiemann in Zeitschr. indukt. Abstamm. Vererb. **19**: 223. June, 1918.

1270. METZ, CHARLES W. **Chromosome studies on the Diptera. 2. The paired association of chromosomes in the Diptera, and its significance.** Jour. Exp. Zool. **21**: 213–280. *8 pl. 1916.* [See next following Entry, *1271.*]

1271. METZ, CHARLES W. **Chromosome studies on the Diptera. 3. Additional types of chromosome groups in the Drosophilidae.** Amer. Nat. **50**: 587–599. *1 pl.* 1916. This and next preceding Entry, 1270, rev. by Harry Federley in Zeitschr. indukt. Abstamm. Vererb. **19**: 211–213. June, 1918.

1272. MORGAN, T. H. **The theory of the gene.** Amer. Nat. **51**: 513–544. *12 fig.* 1917.—Abst. in Exp. Sta. Rec. **38**: 65. Jan., 1918.

1273. MORGAN, T. H. **Inheritance of number of feathers of the fantail pigeon.** Amer. Nat. **52**: 5–27. *14 fig.* 1918.—Abst. in Jour. Roy. Microsc. Soc. **1918**: 181. June, 1918. [See Bot. Absts. 1, Entry 39.]

1274. MURPHY, MISS L. **Fourth Irish egg-laying competition, 1915–16. Supplementary report on the noncompeting pens, with some notes on the breeding of Rhode Island Reds for egg production.** Jour. Dept. Agric. and Tech. Instr. Ireland **17**: 280–289. 1917.—Abst. in Exp. Sta. Rec. **38**: 172–173. Feb., 1918.

1275. NESS, H. **Hybrids of the live oak and overcup oak.** Jour. Heredity **9**: 263–268. *Fig. 6–8.* Oct., 1918.—Author crossed live oak (*Quercus virginiana*) with overcup oak (*Q. lyrata*). These species ripen their acorns at same time and are of same genus but differ widely in systematic characters. Cross was easily effected and resulting hybrids made growth of about 16 feet in eight years. Two lots of hybrids were secured, all of which are very uniform and vigorous. *Q. lyrata* type of tree is dominant. Leaves are very uniform but intermediate in size and somewhat in shape, with *lyrata* type slightly more pronounced. Live oak dominates in fruit except in size, which is intermediate. Bark resembles that of *lyrata*. Hybrid is superior to parents as an ornamental because of superior form, density, and luster of foliage. One F_2 plant has been obtained. Its stem is shorter-jointed than that of F_1; leaves similar to those of F_1. Author has been unable to cross *Q. nigra* with *Q. virginiana*. Natural hybrid, *Q. lyrata-virginiana*, is quite common in Mississippi, Louisiana, Alabama and Texas. Artificially produced hybrid closely resembles wild hybrids.—*C. E. Myers.*

1276. NEWMAN, H. H. **The biology of twins.** *ix + 186 p., 1 pl. 55 fig.* Chicago Univ. Press: Chicago, 1917.—Abst. in Exp. Sta. Rec. **38**: 574. June 14, 1918.

1277. NIEWLAND, J. A. **Teratological notes.** Amer. Midl. Nat. **5**: 231. 1918.

1278. ONSLOW, H. **A contribution to our knowledge of the chemistry of coat colour in animals and of dominant and recessive whiteness.** *Proc. Roy. Soc. London* **89**: *36–58.* 1915. —Rev. by Tine Tammes in Zeitschr. indukt. Abstamm. Vererb. **19**: 211. June, 1918.

1279. OSBORN, H. F. **Biocharacters as separable units of organic structure.** Amer. Nat. **51**: *449–456.* 1917.—Abst. in Exp. Sta. Rec. **38**: *823.* Aug. 9, 1918.

1280. PEARSON, K., AND A. W. YOUNG. **On the product-moments of various orders of the normal correlation surface of two variables.** Biometrika **12**: 86–92. Nov., 1918. See Bot. Absts. 2, Entry 697.

1281. PELLEW, CAROLINE. **Types of segregation.** Jour. Genetics **6**: 317–339. *1 pl.* 1917. —Abst. in Exp. Sta. Rec. **39**: 123. Aug., 1918.

1282. PELLEW, GAROLINE, AND FLORENCE M. DURHAM. **The genetic behaviour of the hybrid Primula Kewensis, and its allies.** Jour. Genetics **5**: 1916.—Rev. by Tage Ellinger in Zeitschr. indukt. Abstamm. Vererb. **19**: 219. June, 1918.

1283. PHILIPTSCHENKO, I. **Observations on the skulls of hybrids between wild and domestic horses and cattle.** Compt. Rend. Soc. Biol. [Paris] **78**: 636–638. 1915.—Abst. in Exp. Sta. Rec. **38**: 65. Jan., 1918.

1284. PLATE, L. **Vererbungsstudien an Mäusen.** [Inheritance studies on mice.] Arch. Entw.-Mech. Organ. **44**: 291–336. *5 fig.* 1918.

1285. PLOUGH, HAROLD H. **The effect of temperature on crossing over in Drosophila.** Jour. Exp. Zool. **24**: 147–209. *9 fig.* 1917.—Abst. by J. Arthur Thomson in Jour. Roy. Microsc. Soc. **1918**: 303. Sept., 1918.

1286. PUNNETT, REGINALD CRUNDALL. **Mimicry in butterflies.** *188 p., 16 pl.* Cambridge Univ. Press: Cambridge, England. 1915.—Rev. by Harry Federley in Zeitschr. indukt. Abstamm. Vererb. **19**: 213–215. June, 1918.

1287. RICHARDS, MILDRED HOGE. **Two new eye colors in the third chromosome of Drosophila melanogaster.** Biol. Bull. **35**: 199–206. Oct. 1918.—During a temperature experiment with *Drosophila melanogaster*, a recessive mutant eye color, scarlet, appeared. Its gene lies in third chromosome (3.8 as calculated from the data) to left of dichaete. Appearance of mutant character is almost identical with older mutant, vermilion, of first chromosome. An independent origin of "scarlet" has been recently reported by Lancefield [See Bot. Absts. 1, Entry 1527.] Another recessive mutant eye color, rose, appeared in same experiment.—*C. B. Bridges.*

1288. ROBERTSON, W. R. B. **A mule and a horse as twins, and the inheritance of twinning.** Kansas Univ. Sci. Bull. **10**: 293–298. *4 pl.* 1917.—Abst. in Exp. Sta. Rec. **38**: 574. June 14, 1918.

1289. ROSEN, D. **Zur Theorie des Mendelismus. 1. Über scheinbare Koppelungs- und Abstossungs-phänomene bei gewissen polymeren Spaltungen. 2. Über den analytischen Wert von Ruckkreuzungen.** [**On the theory of Mendelism. 1. On apparent coupling—and repulsion—phenomena in certain polymeric segregations. 2. On the analytical value of back crossing.** Bot. Notiser **1916**: 289–298. 1916—Rev. by Rasmuson in Zeitschr. indukt. Abstamm. Vererb. **19**: 207. June, 1918.

1290. SCHMIDT, J. **Investigations on hops. X. On the aroma in plants raised by crossing.** Compt. Rend. Trav. Lab. Carlsberg **11**: 330–332. 1917.—Abst. in Exp. Sta. Rec. **39**: 234. 1918.

1291. SEMON, RICHARD. **Die Fusssohle des Menschen.** [**The footsole of man.**] Arch. mikrosk. Anat. **82**: 164–211. 1913.—Rev. by Hermann W. Siemens in Zeitschr. indukt. Abstamm. Vererb. **19**: 209–210. June, 1918.

1292. SHAMEL, A. D. **A dry blood-orange strain.** Jour. Heredity **9**: 174–177. *2 fig.* Apr., 1918.—Abst. in Exp. Sta. Rec. **39**: 142. Aug., 1918. [See Bot. Absts. 1, Entry 45.]

1293. SHAMEL, A. D. **Striking orange bud variations.** Jour. Heredity **9**: 189–191. *2 fig.* 1918.—Abst. in Exp. Sta. Rec. **39**: 142. Aug., 1918. [See Bot. Absts. 1, Entry 46.]

1294. SHAMEL, A. D. **Why navel oranges are seedless.** Jour. Heredity 9: 246–249. Oct., 1918.—Fruits of Washington navel oranges are seedless because anthers do not develop pollen. When pollinated by other varieties, as Valencia, navel bears viable seeds. A very few specimens bearing seeds have been found in crops from performance-record trees, but this is attributed to accidental transfer of pollen by bees. Appearance of navels in the Ruby Blood variety is commonly attributed to cross-pollination with navel, but in reality these navels are true bud-variations which occur in varying degrees on Ruby Blood variety.—A seedy strain of navel was discovered in 1910. In this anthers develop viable pollen which falls on stigma before petals open. Subsequently fecundation takes place.—*C. E. Myers.*

1295. SHAMEL, A. D. **Lemon orchard from buds of single selected tree.** Jour. Heredity **9**: 319–320. *Fig. 11.* Nov., 1918.

1296. SHAMEL, A. D., AND C. S. POMEROY. **A fruiting orange thorn.** Jour. Heredity **9**: 315–318. *Fig. 8–10.* Nov., 1918.

1297. SHORE-BAILEY, W. **Hybrid Wigeon.** Avic. Mag. **10**: 15–16. *1 pl.* Nov., 1918.—Hybrids between Chili ♂ (*Mareca sibilatrix*) × English Wigeon ♀ (*N. penelope*) are said to resemble very closely the American Wigeon or Baldpate (*M. americana*), and author suggests possibility of the American species having arisen as a cross. Five hybrids reared were all drakes. Photograph of two in accompanying plate.—*L. J. Cole.*

1298. SHULL, A. F. **Sex determination in Anthothrips verbasci.** Genetics 2: 480–488. 1917.—Abst. in Exp. Sta. Rec. 38: 558. June 14, 1918.

1299. SHULL, A. FRANKLIN. **Genetic relations of the winged and wingless forms to each other and to the sexes in the aphid Macrosiphum solanifolii.** Amer. Nat. 52: 507–520. Oct.–Nov., 1918.—Four kinds of individuals observed in species discussed: (1) wingless, viviparous females; (2) winged viviparous females; (3) oviparous, sexual females, which are wingless; (4) males.—Breeding tests with first two types (both parthenogenetic) showed that wingless type produced predominantly winged daughters, and *vice versa*. Also, at onset of production of sexual aphids, it was found that wingless, parthenogenetic females produced predominantly males, while winged ones produced predominantly females.—It was further found (1) that in rearing successive generations of parthenogenetic offspring, the proportion of winged forms steadily increased, though wingless forms were chosen in most cases as breeders; (2) there was a gradual increase in tendency of wingless mothers to produce females instead of males, and perhaps also a decrease in number of males produced by winged mothers.—Author endeavors to view these facts from a common standpoint, especially in relation to Riddle's theory of sex, but believes it doubtful if they can be reconciled with latter.—*F. B. Summer.*

1300. SMITH, KIRSTINE. **On the standard deviations of adjusted and interpolated values of an observed polynomial function and its constants and the guidance they give towards a proper choice of the distribution of observations.** Biometrika 12: 1–85. *9 diagrams.* Nov., 1918.

1301. STAKMAN, E. C., F. J. PIEMEISEL, AND M. N. LEVINE. **Plasticity of biologic forms of Puccinia graminis.** Jour. Agric. Res. 15: 221–250. *Pl. 17–18.* Oct. 28, 1918.—Attempts were made to change different biologic forms of *B. graminis* gradually from one parasitic form into another and to increase their virulence on resistant hosts by means of transferring successively to proper, taxonomically related and unrelated, hosts, so-called bridging species. The facts given do not support conclusions of previous workers that pathogenicity of biologic forms is easily changed by host influence. *Puccinia graminis secalis* which does not attack wheat but does infect barley, cultured continuously for three years on barley and other theoretical bridging hosts (Elymus, Agropyrum, Bromus, etc.) acquired no new parasitic capability on account of its association with barley. Same applies to *P. graminis tritici* in its relations to rye as well as to other forms of Puccinia tried by the authors (*avenae, agrostis, phleipratensis*, etc.). Barberry does not increase host range of these forms nor does it act as reinvigorator of the rust; biologic specialization in aecial stage is apparently same as that in uredineal stage. Different forms of Puccinia, which must be isolated from mixtures by using differential hosts before starting any experiments seem to be roughly analogous to pure lines. Plus and minus fluctuations may occur but there is always tendency to return to normal. Biologic forms may have arisen either by mutations or by gradual process of evolution. These processes may be operative yet, but writers have not been able to detect any mutation nôr to induce perceptible evolutionary changes experimentally. Possible rôle of hybridization will be investigated.—*C. A. Gallastegui.*

1302. TAMMES, TINE. **Die gegenseitige Wirkung genotypischer Faktoren. [The antagonistic action of genotypic factors.]** Rec. Trav. bot. Néerland. 13: 1916.—Rev. by Th. Stomps in Zeitschr. indukt., Abstamm. Vererb. 19: 224. June, 1918.

1303. TANAKA, YOSHIMARO. **Genetic studies on the silk worm.** Jour. College Agric., Sapporo 7: 129–255. *Pl. 1–4.* 1916.—Rev. by Harry Federley, Zeitschr. indukt. Abstamm. Vererb. 19: 210. June, 1918.

1304. TAYLOR, GEO. M. **Bud variation in potatoes.** Gard. Chron. 64: 229. Dec. 7, 1918.

1305. TRELEASE, W. **Naming American hybrid oaks.** Science 46: 244. 1917.—Abst. in Exp. Sta. Rec. 37: 820–821. Feb. 28, 1918.

1306. VALLEAU, W. D. **Inheritance of sex in the grape.** Amer. Nat. **50**: 554–564. 1916.—Abst. in Exp. Sta. Rec. **39**: 242. 1918.

1307. VALLEAU, W. D. **Sterility in the strawberry.** Jour. Agric. Res. **12**: 613–670. *6 pl., 4 fig.* Mar., 1918. [See Bot. Absts. 1, Entry 51.]—Abst. in Exp. Sta. Rec. **39**: 48–49. July, 1918.

1308. VENKATARAMAN, T. S. **A study of the arrowing (flowering) in the sugar cane with special reference to selfing and crossing operations.** Agric. Jour. India, Indian Sci. Cong. 1917: 97–108. *6 pl.* 1917.—Abst. in Exp. Sta. Rec. **39**: 237. 1918.

1309. VON CARON-ELDINGEN. **Die Verbesserung der Getreidearten, veranschaulicht an einer Monographie des Weizens. Neue wissenschaftliche und praktische Erfahrungen für Pflanzenzüchter und Landwirte. [The improvement of the small grains; as exemplified by a monograph of wheat. New scientific and practical experiences for plant breeders and agriculturists.]** 8*vo*. Paul Parey: Berlin, 1918.

1310. WALLER, A. E. **Xenia and other influences following fertilization.** Ohio Jour. Sci. 17: 273–284. 1917.—Abst. in Exp. Sta. Rec. 38: 526. June 14, 1918.

1311. WALLER, A., and L. E. THATCHER. **Improved technique in preventing access of stray pollen.** Jour. Amer. Soc. Agron. **9**: 191–195. *1 pl.* 1917.—Abst. in Exp. Sta. Rec. **38**: 430. April, 1918.

1312. WERBER, E. I. **Experimental studies on the origin of monsters. II. Regarding the morphogenesis of duplicities.** Jour. Exp. Zoöl. 24: 409–443. *27 fig.* 1917.—Abst. by J. Arthur Thomson in Jour. Roy. Microsc. Soc. **1918**: 291–292. Sept., 1918.

1313. WHITE, O. E. **Inheritance of endosperm color in maize.** Amer. Jour. Bot. **4**: 396–406. 1917. Abst. in Exp. Sta. Rec. **38**: 226. April 22, 1918. Also *ibid.* **38**: 737–738. June, 1918.

1314. WHITE, O. E. **Studies of inheritance in Pisum. II. The present state of knowledge of heredity and variation in peas.** Proc. Amer. Phil. Soc. **56**: 487–588. 1917.—Abst. in Exp. Sta. Rec. **38**: 822–823. Aug. 9, 1918.

1315. WHITE, O. E. **Inheritance studies in Pisum. IV. Interrelation of the genetic factors of Pisum.** Jour. Agric. Res. **11**: 167–190. 1917.—Abst. in Exp. Sta. Rec. **38**: 226. April 22, 1918.

1316. WILSON, J. **A manual of Mendelism.** *8 + 152 p., 8 fig.* A. and C. Black: London, 1916.—Abst. in Exp. Sta. Rec. **38**: 367. Mar., 1918.

1317. WINKJER, JOEL G. **Coöperative bull associations.** U. S. Dept. Agric. Farmers' Bull. 993. *35 p. 7 fig.* Washington, 1918.—Table shows growth of movement from 3 associations in 1908 to 36 in 1917. Plans for constitution and by-laws are given. Typical association composed of 15 to 30 farmers, territory being divided into "breeding blocks," one bull assigned to each. As many as 50 to 60 cows may belong to farmers of block. Bull kept on farm most conveniently located and moved every two years to next block to prevent inbreeding.—Association in Maryland furnisbed figures showing marked improvement due to method outlined. Further data not yet available. Two methods given for selection of sire: (1) on basis of daughters' records; (2) bull whose ancestors have good production records. First method preferred but not so widely used because of added cost of purchasing such a bull.—*H. K. Hayes.*

1318. WRIGHT, S. **Color inheritance in mammals. II–V.** Jour. Heredity **8**: 373–378, 426–430, 473–475, 476–480. 1917.—Abst. in Exp. Sta. Rec. **38**: 776. June, 1918.

1319. WRIGHT, SEWALL. **On the nature of size factors.** Genetics 3: 367–374. July, 1918.—Mathematical investigation of data obtained by MacDowell and by Castle upon bone measurements of rabbits giving a method of analyzing the effect of factors upon general size and upon individual characters by means of correlation coefficients with one, two and three characters constant. Data treated in this way show slight indications of brachicephaly being associated with long tibia but short femur. Apparently femur most closely related to general growth, *width of skull least. Mode of estimating the relative importance of different* kinds of growth factors presented and applied to data which shows most differences between individuals involve size of body as a whole but also certain amount of variation of each bone length independently of all others measured and also groups of bones which vary together independently of rest of body such as skull length and breadth and as three leg bones. Femur and tibia of hind leg form a group subject to common influences which do not affect humerus, a bone of foreleg. Femur and humerus, homologous bones in hind and foreleg, vary together independently of tibia.—*D. F. Jones.*

MORPHOLOGY, ANATOMY AND HISTOLOGY

E. W. SINNOTT, *Editor.*

[Unsigned abstracts are by the editor.]

THALLOPHYTES

1320. HOWE, M. A. **Further notes on the structural dimorphism of sexual and tetrasporic plants in the genus Galaxaura.** Brooklyn Bot. Gard. Mem. 1: 191–197. *Pl. 3–4.* 1918.—Certain subgeneric groups of Kjellman and others in *Galaxaura* have relations to each other similar to those which author has shown to exist between forms of *Galaxaura obtusata. Evidence is presented that the group Brachycladia includes tetrasporic plants, of which the* sexual phases are found in group *Vepreculae* and that group Rhodura is made up wholly of tetrasporic plants, differing much in general habit and structure from their sexual alternates, currently placed in sections *Micothoë* and *Eugalaxaura.*—*M. A. Howe.*

1321. TURCHINI, JEAN. **Rôle de l'heterocyste des Nostocées.** [Role of the heterocyst of the Nostocaceae.] Rev. Gén. Bot. 30: 273–282. *Pl. 19.* 1918.—Cytological and microchemical studies based upon 3 species of *Nostoc* and 1 of *Anabaena.* Author thinks that idea put forward by some of the older writers, that heterocyst is food-storage organ with possibilities of germination, may be definitely discarded; the heterocyst, once constituted, being in fact a dead cell with vacuolar protoplasm. He finds that in *Nostoc* heterocyst is connected with adjoining vegetative cells by an isthmus longer and more slender than that connecting any two vegetative cells. Owing to fragility of this isthmus, fragmentation of the filaments into hormogones takes places at heterocyst, so that heterocyst presides at *division of filament and contributes, in a way, to dissemination of species.*—*M. A. Howe.*

1322. FITZPATRICK, HARRY M. **The cytology of Eocronartium muscicola.** Amer. Jour. Bot. 5: 397–419. *Pl. 30–32.* 1918.—*Eocronartium muscicola,* parasitic on mosses, has unusually large nuclei. Cells of mycelium, throughout host, are binucleate, as is also young basidium, but its two nuclei soon fuse and the resulting nucleus passes into resting condition. Synapsis follows and later stages of this division and also of second division show 4 chromosomes, which is the reduced number; since each of the two nuclei of mycelium show a nuclei, making 8 the diploid number. Transverse walls divide basidium into 4 cells, from each of which comes a comparatively large sterigma. Nucleus becomes much attenuated in passing through sterigma into young spore. The centrosome does not seem to be involved in this movement. The origin of binucleate mycelium from uninucleate basidiospore has not yet been determined.—*Charles J. Chamberlain.*

1323. SKUPIEŃSKI, F. X. **Sur la sexualité chez les Champignons Myxomycétes.** [Sexuality in the Myxomycetes. Compt. Rend. Paris 167: 31–33. 1918.—Author presents a brief note upon life history of the myxomycete *Didymium nigripes,* when grown in single spore

cultures. Individual spores germinate to zoospores which multiply by division and give rise to myxamoebae which also multiply by division. Ultimately the latter become "gametes" and fuse in pairs to form zygotes which make up plasmodium. Author has succeeded 3 times in starting cultures on sterile media from single isolated myxamoebae and likewise has started cultures twice from single zoospores. In these 5 cases he failed to obtain plasmodia while his original stock culture and the culture secured from an isolated fusion myxamoeba or zygote produced normal plasmodia and fructifications. From observations presented, author concludes that a sexual process exists in *Didimium* in the fusion of (+) and (−) myxamoebae giving rise to zygotes, the aggregation of which forms a plasmodum. Fusion of plasmodia is not considered a sexual process. The species studied is classed as homothallic since a single spore produces both (+) and (−) gametes.—*A. F. Blakeslee.*

SPERMATOPHYTES

1324. ARBER, AGNES. **The Phyllode Theory of the monocotyledonous leaf, with special reference to anatomical evidence.** Ann. Bot. 32: 465–501. *32 fig.* 1918.—Author discusses de Candolle's "Phyllode" theory of the monocotyledonous leaf, (that such a leaf corresponds essentially to petiole of a dicotyledonous leaf), and Henslow's corollary thereto. She shows that in addition to support for this theory derived from external morphology, there is evidence in its favor from anatomy, particularly the occurrence among certain monocotyledons of inverted vascular bundles in the leaf ("phyllodic" structure). The phyllodic anatomy evident in some of the dicotyledons is discussed and anatomical evidence in support of Henslow's corollary brought forward. Phyllodic anatomy is shown to occur among the presumably ancestral monocotyledons—Helobiae, Liliiflorae and Farinosae—and to be absent among the higher forms. It is believed to be an ancestral character, revealing petiolar origin of leaf of monocotyledons. [See Bot. Absts. 1, Entry 1336.]

1325. ARBER, AGNES. **Further notes on intrafascicular cambium in monocotyledons.** Ann. Bot. 32: 87–89. *4 fig.* 1918.—Abst. by J. M. Coulter in Bot. Gaz. 66: 288. 1918. [See Bot. Absts. 1, Entry 61.]

1326. FULLER, GEO. D. **Ecological anatomy of leaves.** Bot. Gaz. 65: 487–488. 1918. [Review of: HANSON HERBERT C. **Leaf structure as related to environment.** Amer. Jour. Bot. 4: 533–560. *21 fig.* 1917.]—Effect of differences in various environmental factors (light, evaporating power of air, temperature, humidity and wind velocity) upon structure of leaves and upon their transpiration was studied for a number of species of trees. A wide range of variation in environment and in leaf character was noted in different parts of the leafy crown. Reviewer regards this investigation as particularly important in opening up a promising field in the study of structural response of aerial organs to measured variations in external factors. [See Bot. Absts. 1, Entry 1328.]

1327. GRIER, N. M. **Sexual dimorphism and variation in Ginkgo biloba.** Torreya 17: 225. 1917.—There seems to be a correlation between the sex of this tree and its growth habit and the shape of its leaves. [Through Abst. in Exp. Sta. Rec. 39: 124. 1918.] [See Bot. Absts. 1, Entry 1215.]

1328. HANSON, H. C. **Leaf structure as related to environment.** Amer. Jour. Bot. 4: 533–560. *21 fig.* 1917.—Abst. in Exp. Sta. Rec. 39: 29. 1918. [See Bot. Absts. 1, Entry 1326.]

1329. HEILBORN, OTTO. **Zur Embryologie und Zytologie einiger Carex-Arten. Embryology and Cytology of some species of Carex.** Svensk. Botanisk Tidskrift 12: 212–220. *14 fig.* 1918.—Oogenesis and spermatogenesis were studied in several species of *Carex*. Gametophyte number of chromosomes is as follows: *C. pilulifera*, 8; *C. erictorum*, 16; *C. digitata*, 24; *C. caryophyllea* and *C. flava*, 32. Juel had found 52 in *C. Acuta*, and Stout 37 in *C. aquatilis*. *C. pilulifera* has the largest chromosomes, and in species with more numerous chromosomes, the chromosomes are correspondingly smaller. Attempts to cross various species have not yet proved successful, but work is still in progress.—*C. J. Chamberlain.*

1330. HOLDEN, H. S., AND DOROTHY BEXON. **Observations on the anatomy of teratological seedlings. 1. On the anatomy of some polycotylous seedlings of Cheiranthus Cheiri.** Ann. Bot. 32: 513-530. *17 fig.* 1918.—A series of seedlings of this species exhibiting cotyledonary abnormalities ranging from hemitricotyly to tetracotyly were studied, with particular reference to the methods by which cotyledonary increase takes place. Evidence from vascular anatomy indicates that such increase may arise from (1) cotyledonary fission, (2) dichotomy of the growing point of cotyledon, and, more doubtfully, (3) by the downward displacement of one or more epicotyledonary leaves. Previous work on schizocotyly, particularly that of Hill and de Fraine and Compton, is shown to be capable of interpretation on this basis and to present illustrations of these three types of increase.

1331. KLIENEBERGER, EMMY. **Ueber die Grösse und Beschaffenheit der Zellkerne mit besonderer Berücksichtigung der Systematik.** The size and character of nuclei, with special regard to taxonomy. Beih. Bot. Centralbl. 35: 219-278. 1918.—Measurements are given of size of nucleus in various tissues of about 100 species of monocotyledons. Nuclear size is more or less constant for a given tissue or organ of a given species. Nuclei of most monocotyledons are not large. Scitamineae, Juncaceae, Cyperaceae, Gramineaceae and Bromeliaceae all have small nuclei, as do part of the Liliaceae, Amaryllidaceae and Convallariaceae. The remainder of last named families and the Iridaceae are the only ones which appear to have large nuclei.—*C. H. Farr.*

1332. MARKLE, M. S. **Root systems of certain desert plants.** Bot. Gaz. 64: 177-205. *35 fig.* 1917.—A study of root systems in region near Albuquerque, New Mexico [Abst. in Exp. Sta. Rec. 39: 29. 1918.]

1333. RECORD, S. J. **Significance of resinous tracheids.** Bot. Gaz. 66: 61-67. *5 fig.* 1918.—Abst. in Exp. Sta. Rec. 39: 451. 1918. [See Bot. Absts. 1, Entry 275.]

1334. RECORD, S. J. **Intercellular canals in dicotyledonous woods.** Jour. Forestry 16: 429-441. *8 fig.* 1918.—Abst. in Exp. Sta. Rec. 39: 145. 1918. Also rev. by J. M. Coulter in Bot. Gaz. 66: 543. 1918. [See Bot. Absts. I, Entries 260, 989.]

1335. SEWARD, A. C. **Plant anatomy in relation to evolution.** Nature 100: 502-503. Feb. 28, 1918. [Review of: E. C. JEFFREY. The anatomy of woody plants. x + 478 p. Univ. of Chicago Press. 1917.]—After summing up contents of the various chapters, author criticizes severely the method of treatment and the scope of book. He calls it "an original and stimulating contribution to botanical literature" but "not a comprehensive text-book," finds "the treatment essentially eclectic and the subject matter to a large extent limited by the scope of the author's researches." That there are no references to published work of other authors and no bibliography he believes a very serious blemish in a book presumably intended for students. He concludes, "The fact that Professor Jeffrey is an original investigator whose position entitles him to speak with authority increases one's regret that his attitude is not more in keeping with the best traditions of scientific exposition." [See Bot. Absts. 1, Entry 986.]—*F. Grace Smith.*

PALEOBOTANY AND EVOLUTIONARY HISTORY

E. W. BERRY, *Editor*

[Unsigned abstracts are by the editor.]

1336. ARBER, AGNES. **The phyllode theory of the monocotyledonous leaf, with special reference to anatomical evidence.** Ann. Bot. 32: 465-501. *32 fig.* Oct. 1918.—The results of an extended examination of anatomical details in a large number of types are considered as supporting the phyllode nature of the leaves in the Monocotyledons. The presence of inverted bundles on the adaxial side is taken to indicate such a phyllodic nature. Phyllodic anatomy as thus interpreted is found to be most widely known in the Helobiales and Lil-

liales. In monocotyledons with differentiated petiole and blade the latter is suggested as having been evolved as an expanded apical portion of a phyllode and is therefore a pseudolamina and not strictly comparable with the lamina of a dicotyledonous leaf. The discussion is full and the author gives lists of genera showing phyllodic anatomy. She believes that the Monocotyledonae are monophyletic and derived from dicotyledonous-like ancestors, and considers the geophilous theory of Sargent as more in harmony with the facts than the hydrophilous theory, so-called. Granting that the premises are well taken it is an interesting commentary on the monophyletic hypothesis that no members of the orders Pandanales, Poales, Palmales, Triuridales, Synanthales, Scitaminales, or Arales except Acorus, have been shown to exhibit traces of phyllodic anatomy.

1337. BENSON, MARGARET I. **Mazocarpon or the structure of Sigillariostrobus.** Ann. Bot. 32: 569–589. *4 fig., pls. 17, 18.* Oct., 1918.—*Mazocarpon* is a form genus for structural remains of sporangia or sporophylls of a *Lepidophyte* type of remarkable interest since the sporangium is filled with continuous tissue the bulk of which is sterile and may in part represent the sporangiophore of the Arthrophyta. The new material studied shows that these sporophylls were borne on pedunculate cones several inches in length and half an inch in diameter, with close set spiral caducous sporophylls of the *Lepidostrobus* type. The megaspores were reduced in number and germinated in situ. The author concludes that the seed habit is approached in two ways (1) in that the megaspore germinated within the sporangium (2) in that the sporangium underwent a certain amount of vegetative development. Fertilization is regarded as having been impossible until fragmentation of the sporangium had taken place owing to the centroscopically directed archegonia. Each prothallus is believed to have normally retained a portion of this nucellar tissue by means of its toothed wall and thus several theoretically seed-like bodies were produced from one sporangium. The structures described in detail may be open to more than a single interpretation, but the author has demonstrated beyond reasonable cavil, that *Mazocarpon* probably represents structural material of cones of the Sigillariaceae—a fact of far reaching importance and interest. Botanists are well acquainted with the cones of the Lepidodendraceae (*Lepidostrobus*) but those of the allied family Sigillariaceae have only been known as the impressions described by Zeiller, Kidston and others under the name of *Sigillariostrobus*. The identity of *Mazocarpon* and *Sigillariostrobus* rests on the intimate association of *Mazocarpon* with leaves bark and denuded cone axes of *Sigillaria*, on detailed comparisons between the structural and impression material and the exact agreement in all of the features that could be compared. Three species of *Mazocarpon* are characterized showing a time range from the Lower Carboniferous through the Upper Carboniferous. A relationship is claimed between *Sigillaria* and the lower Triassic genus *Pleuromoia*, one that most botanists will subscribe to, and much is made of the morphological similarities between *Mazocarpon* and the modern species of *Isoetes*, a suggested relationship that has received rather wide acceptance in the past.

1338. HOLLICK, A. **Some botanical problems that paleobotany has helped to solve.** Mem. Brooklyn Bot. Gard. 1: 187–190. July, 1918.

1339. JEFFREY, E. C. **Evolution by hybridization.** Mem. Brooklyn Bot. Gard. 1: 298–305. *Pl. 5.* July, 1918.—See Bot. Absts. 1, Entry 1242.

1340. ROWLEE, W. W. **Relation of marl ponds and peat bogs.** Mem. Brooklyn Bot. Gard. 1: 410–414. *Fig. 1–3.* July, 1918.

PATHOLOGY

DONALD REDDICK, *Editor*

[Unsigned abstracts are by the editor.]

1341. ARNAUD, G. **[Sooty moulds of southern France.]** Bull. Soc. Path. Vég. France 4: 95. 1917. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 898. 1918.]

1342. BALL, E. D., AND R. E. VAUGHAN. **Pull the dangerous barberry bushes.** Wisconsin Agric. Exp. Sta. Ext. Circ. 102. *4 p.* 1918.—Popular discussion of the wheat stem-rust situation in Wisconsin and the relation of the common barberry to the spread of stem-rust. The common barberry is described and compared with the Japanese barberry.—*James G. Dickson.*

1343. BRIZI, U. [**Observations on the damage done to trees by tarring the streets of Milan, Italy.**] Rend. R. Inst. Sci. e Lett. Lombardo II, 50: 568–591. 1917.—"The injury is caused almost exclusively by the very fine dust raised by the passage of motor cars along the tarred roads." The harmful action of the dust is due largely to the action of the vapors given off by the tar when strongly heated by the sun. The most sensitive plants are *Aesculus hippocastanum* and *Ae. carnea.* [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 626–627. 1918.]

1344. CAMPBELL, C. [**The direct influence on the stock of the sap produced by the scion, and the action on the plant of acid solutions absorbed directly: experiments in Italy.**] Rend. R. Accad. Lincei V, 28: 57–61. 1918.—Comes' theory regarding correlation of resistance with acidity was tested.—A wild scion on a cultivated stock rendered shoots from peach and apple stocks resistant to *Exoascus deformans* and *Oidium farinosum* respectively.—Extraradicate introduction of weak solution of tartaric, citric and malic acids rendered cultivated apple immune to *Oidium farinosum* (*B. leucotricha*) and to certain insects. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 674–675. 1918.]

1345. CAPUS, J. **La défense contre les parasites de la vigne par les methodes culturales. [Protection against grape vine parasites by cultural methods.]** Rev. Vit. 48: 390–393. 1918.—Summer tying of shoots to prevent injury, to allow good circulation of air and to suppress foliage growth thus reducing amount of the mildews, and making treatments easier.—Coulure is reduced by this method but ringing is most effective.

1346. CAPUS, J. **Expériences sur l'action du polysulfure contre l'Oidium. [Experiments on the action of polysulphid against Oidium of the vine.]** Rev. Vit. 48: 393–394. 1918.—Used "liver of sulfur" 500 grams per hectol with 500 grams soft soap. Two treatments with this equaled three treatments with dry sulfur. Notwithstanding author thinks dusting will continue preferable.—Trials with a mixture of lime-sulfur solution and bordeaux mixture for *Oidium* and *Plasmopara* gave promising results. [Abst. in Internat. Rev. Sci. Pract. Agric. 9: 1001–1002. 1918.]

1347. CHRISTENSON, C. I. [**The selection of some varieties of swede resistant to Plasmodiophora brassicae, in Denmark.**] Tidsskr. Plant. 26: 68–82. 1917.—Two varieties more resistant than "Pioneer" are recorded. Resistance is shown to be heritable. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 317–319. *Fig. 5.* 1918.]

1348. DOSDALL, LOUISE. **Overwintering of the aeciospores of Cronartium ribicola Fisher.** Phytopath. 8: 619. 1918.—Aeciospores obtained from deep aecial scars on a dead pine branch and believed to be spores which were produced one year previous gave from 1 to 2 per cent germination in sterilized distilled water.—*W. H. Rankin.*

1349. ELLIOTT, JOHN A. **Wood-rots of peach trees caused by Coriolus proliferans and C. versicolor.** Phytopath. 8: 615–617. *2 fig.* 1918.—Field observations on wood-rots following severe pruning within a small area in Arkansas. *Picnoporus cinnabarinus* and *Schizophylum commune* although common are believed to be of secondary importance. Trees died within three years after pruning. Probable correlation between the severity of the injury and low heavy soil is suggested.—*W. H. Rankin.*

1350. FRACKER, S. B. **Crown gall on young apple trees.** Wisconsin Hortic. 8: 139. 1918. —*Studies in Wisconsin nurseries indicate that the disease reduces the strength and size of the tree during nursery life from 15 to 20 per cent.—James G. Dickson.*

1351. GLOVER, H. M. **An unidentified fungus injurious to the conifer Cedrus deodara in India.** Indian Forester 43: 498–499. Pl. 1. 1917.—Roots of plants about 1 foot high are attacked and the trees die. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 519. 1918.]

1352. HARA, K. [Japanese.] [**Dark-spot of summer orange (Citrus aurantium var. sinensis)**]. Qua-Jū [Fruit culture] No. 188: 22–24. *Fig. 1–3.* 1918.—Studies on the dark-spot disease caused by *Cercospora* sp. on the living leaves of Summer orange (afterwards it was found to be Dai-Dai orange *C. aurantium* var. *amara*). Spots dark, round, 5 to 10 mm. in diameter more numerous near the edge of leaf. Advises spraying two to three times with bordeaux mixture in June.—*S. Hori.*

1353. HILEY, W. E. **Chrysomyxa abietis in England and Scotland.** Quart. Jour. Forestry 11: 191–192. 1917.—First record for England. [Abst. in Internat. Rev. Sci. Pract. Agric. 9: 398. 1918.]

1354. HORI, S. [Japanese.] [**The unusual out-break of the stripe disease caused by Helminthosporium gramineum Rabh. on barley in 1918.**] Nōgyō Sekai [The Agricultural World] 13[4]: 20–28. 1918.—According to the report from the Department of Agriculture, the anticipated production of barley in 1918 was to be diminished about 24 per cent against the annual average, on account of the unfavorable climatic condition. In the late Spring and thenceforth the out-break of stripe-disease on barley was reported from the several prefectural experiment stations and from growers. The author has estimated, on a comparatively exact basis, the loss by the disease at about 800,000 Koku (about 4,092,000 American bushels) or one-third of supposed reduction. In 1896, the disease was severe in Provinces Awa and Mikawa, and author gave the explanation in Bull. Centr. Agric. Exp. Sta. 14: 134–140. 1899. It is generally accepted that late sowing is likely to bring on the disease; in the last autumn the temperature suddenly decreased at the proper sowing time and during the winter the climate was cold and dry, so that the result was the same with the late sowing, i.e., it retarded the germination and growth of barley.—The Jensen's hot water treatment may perfectly prevent the disease and it already has been proved experimentally.—*S. Hori.*

1355. HORI, S. [Japanese.] [**Lecture on mulberry diseases.**] Byo-chu-gai Zasshi [Jour. Plant Protec.] 4: 827–833, 915–920. 1917. *Ibid.* 5: 10–15, 93–95, 173–177, 251–255, 333–338, 423–427, 515–519. 1918.—Lecture on the principal diseases of Japanese mulberry, delivered to the sericulturist's class held at Uyeda, Nagano prefecture in November, 1916. It contains introduction, general relations to the environmental factors, parasitic diseases, non-parasitic diseases, and methods of control.—*S. Hori.*

1356. HUTCHINSON, C. M. [**Pseudomonas tritici n. sp., injurious to wheat in the Punjab.**] Mem. Dept. Agric. India, Bact. Ser. 1: 169–175. *Pl. 1–4.* 1917.—"Its principal characteristics are very similar to those described by Rathay and O'Gara for *Dactylis glomerata* and *Agropyron smithii* respectively." [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 630–631. 1918. Abst. in Exp. Sta. Rec. 39: 454. 1918.]

1357. ISHIKAWA, T. [Japanese.] [**New preventive method for bacterial wilt and stem rot of egg-plant.**] Byo-chu-gai Zasshi [Jour. Plant. Protec.] 5[2]: 20–25. 1918.—Conclusion of the three years experiments in the Niigata prefectural experiment station. It is proved that the application of lime-sulphur solution gives better results than use of wood ashes, lime, lime-nitrogen, formalin, etc. Two or three days before transplanting the seedlings, spray and thoroughly mix the soil with lime-sulphur solution (1°B.) at rate of 2 American gallons for 6 square feet of ground. Spray with 0.6°B. solution, in June to July, once or twice over the surface of the soil near the roots.—*S. Hori.*

1358. KEITT, G. W. **Control of cherry leaf spot in Wisconsin.** Wisconsin Agric. Exp. Sta. Bull. 286: 1–11. 1918.—Leaf spot is the most destructive fungus disease of the cherry in Wisconsin. Control measures recommended are: Early clean cultivation turning under

the dead leaves; and spraying with Bordeux, lime-sulphur or other standard spray (1) when the petals fall, (2) about two weeks later, (3) if necessary just after fruit is picked. [Abst. in Wisconsin Agriculturist **42**: 19. Mar. 8, 1918. Also in Wisconsin Hortic. **8**: 117. Apr., 1919.]—*James G. Dickson.*

1359. KINDSHOVEN, J. **Schädlinge des Gemüsebaues und ihre Bekämpfung. [Enemies of vegetables and their control.]** Flugschr. Deutsch. Landwirtschaftsges. 13. 6 Ed. *32 p.* Berlin, 1917.—Abst. by O. von Kirchner in Zeitschr. Pflanzenkr. **28**: 37. 1918.

1360. LINDFORS, THORE. **[Verticillium albo-atrum a hyphomycete causing "vissnes juka" (wilt) of cucumber in Sweden.]** Land. Akad. Hand. och Tids. **57**: 627–636. *2 fig.* 1917.—"*V. albo-atrum* is specific agent of wilt; its byphae easily enter living tissue of both mature and young plants, and develop in large number in the vessels, which they stop up more or less completely."—*Ascochyta cucumis* produces a leaf-spot but no wilt.—*Fusarium sclerotioides* and *F. redolens* var. *angustius* do not cause wilt, but may give rise to a kind of stem-rot.—Disinfection of soil is not accomplished with 2 per cent potassium permanganate. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 634–635. 1918.]

1361. MCCLINTOCK, J. A. **[The resistance of peanuts to Sclerotium rolfsii.]** Science **47**: 72-73. 1918. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 517–518. 1918.] [See Bot. Absts. I, Entry 334.]

1362. MOREILLON, M. **[Diaporthe taleola, an ascomycete injurious to oaks, in Switzerland.]** Jour. For. Suisse **69**: 1–3. *Pl. 1.* 1918.—Following light wind in September author found as many as ten branches per square meter, measuring as much as 1 cm. in diameter and nearly 50 cm. in length, caused to drop by action of this fungus. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 397–398. 1918.]

1363. NISHIDA, T. [Japanese.] **[Stippen or bitter-pit of apple.]** Byo-chu-gai Zasshi [Jour. Plant Protec.] **5**: 520–526. 1918.—Author has given the Japanese name "Hi-yak" disease for stippen or bitter-pit of apple. It resembles in all respects a disease of Japan plum (Terada plum) which the author is investigating with special interest. For comparison, the stippen of apple is described.—*S. Hori.*

1364. NISHIDA, T. [Japanese.] **[Water supply of the soil in relation to fruit diseases.]** Byo-chu-gai Zasshi [Jour. Plant Protec.] **5**: 801–806. 1918.—Stippen of Japan plum is entirely due to the high fluctuation of water supply of the soil at the growing season of fruit. This was proved by the experiment carried on at Terada, Pref. Ktoto. The disease was entirely prevented by the application of stable manure and by covering ground with rice straw. After observing the occurrence of stippen on apple in Corea and several apple districts of Hondo, author advises the regulation of water supply of orchard by applying stable or green manure, etc. and by other methods.—*S. Hori.*

1365. NOMURA, Y. [Japanese.] **Splits of the navel orange.** En-gei no Tomo [The Horticulturist's Friend] **14**: 815–820. 1918.—Observations on the splits of the navel orange in the orange districts of Kochi Prefecture. It has close relation to the shape and size of fruit and to the climatic conditions especially during the growing season of fruit—September to October. Long fruit splits least, round much, and flat more. Relation to rainfall is proved by meteorological observations. In the rational orchard the damages are least.—*S. Hori.*

1366. PATOUILLARD. **[Observations on the parasitism of the ascomycete, Ustulina vulgaris, in France.]** Bull. Soc. Path. Vég. France **4**: 100. 1917.—Fungus killed two lime trees in Ain. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 772. 1918.]

1367. PEGLION, VITTORIO. **[*Observations on hemp mildew (Peronoplasmopara cannabina)* in Italy.]** Rend R. Accad. Lincei (Cl. Sci. Fis., Mat. e Nat.) **26**: 618–620. 1917.—Disease of little consequence except in rare instances. Life history, morphology and taxonomy of fungus. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 118–119. 1918.]

1368. PESTICO, J. F. [**"Fucha" of the cotton plant in the department of Boyacá, Republic of Colombia.**] Riv. Agric. 4: 113–116. *1 fig.* 1918.—"The disease is characterized by numerous small swellings on the leaves and young branches and, more rarely, on the flowers. It usually becomes visible after prolonged rains and diseased plants fade and die one or two weeks later." Lack of good cultural practice is said to cause the appearance of the disease. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 998. 1918.]

1369. PETHYBRIDGE, GEORGE H., AND H. A. LAFFERTY. **A disease of flax seedlings caused by a species of Colletotrichum, and transmitted by infected seed.** Sci. Proc. Roy. Dublin Soc. 15: 359–384. *Pls. 19–20.* 1918.—Disease has been reported as "yellowing" but the author regards damping-off a more appropriate name. The causal organism is *C. linicolum* n. sp. It hibernates as mycelium in the cells of the epidermis of the seed-coat. Seedlings are infected during or subsequent to seed-germination. Control is accomplished by the application of a mixture of finely powdered copper sulfate crystals and dry sodium carbonate to slightly moistened infected seed. The disease is believed to be widespread over the globe, flax-seed from Russia, Holland, Canada, United States of North America and Japan giving rise to diseased seedlings.—*L. R. Hesler.*

1370. ROHER, J. B. [**The South American Hevea leaf disease in Trinidad.**] Bull. Dept. Agric., Trinidad a. Tobago 16: 128–129. 1917. [Through abst. in Internat. Rev. Sci. Pract. Agric. 9: 253–254. 1918.]

1371. SALOMON, RENÉ. [**Vines offering a relative resistance to mildew.**] Rev. Vit. 47: 314–316. 1917.—[Through abst. (naming the varieties and their relative resistance) in Internat. Rev. Sci. Pract. Agric. 9: 117–118. 1918.]

1372. SCHANDER. **Welche Ursachen bedingten die geringe Kartoffelernte im Jahre 1916 und was können wir darans lernen?** [**What causes contributed to the reduced yield of the potato in the year 1916 and what we can learn from them?**] Landw. Centralbl. Prov. Posen Heft. 12. 1917.—[Through abst. by O. von Kirchner in Zeitschr. Pflanzenkr. 28: 41. 1918.]

1373. SCHANDER. **Einfluss der Bodenbearbeitung, Düngung u. s. f. auf den Ertrag und den Gesundheitszustand der Kartoffeln.** [**Influence of soil-treatment, fertilization, etc. on the yield and health of the potato.**] Landwirtschaftl. Centralbl. Prov. Posen. H. 14. *5 p.* 1917. —Abst. by Matouschek in Zeitschr. Pflanzenkr. 28: 40–41. 1918.

1374. SCHÖYEN, T. H. **Om skadeinsekter og snyltesopp paa skogträerne i 1915.** [**On the injurious insects and fungi of forest trees in 1915.**] *Skogdirectörens indberetning for kalenderaaret 1915:* 154–159. *Pl. 1.* Kristiania, 1917.—*Phytophthora omnivora, Brunchorstia destruens* (*Crumenula abietina*) and *Fusoma pini* mentioned. [Through abst. by O. von Kirchner in Zeitschr Pflanzenkr. 28: 33–34. 1918.]—*W. H. Rankin.*

1375. SCHÖYEN, T. H. **Statsentomolog T. H. Schöyens beretning. 1916.** [**Fungi, insects and animals injurious to cultivated plants in Norway in 1916.**] Aarsberetning angaande de offentlige foranstaltninger til landbrucketsfremme i Aaret 1916: 39–94. *24 fig.* 1917.—Abstract of the Norwegian law of 1916 for the suppression of diseases and pests. A penalty is imposed on those who fail to report diseases, etc. *Berberis vulgaris* is to be destroyed. *Puccinia graminis, Synchytrium endobioticum* and *Sphaerotheca mors-uwae* are considered injurious to agriculture.—Record of diseases of various crops.—Experiment for control of *Sphaerotheca mors-uwae* showed formaldehyde, 1.6 per cent solution, most effective. [Through abst. by O. von Kirchner in Zeitschr. Pflanzenkr. 28: 31–33. 1918. Also through abst. in Internat. Rev. Sci. Pract. Agric. 9: 514–517. 1918.]

1376. SETCHELL, WILLIAM A. **Parasitism among the red algae.** Proc. Amer. Phil. Soc. 57: 155–172. 1918. [See Bot. Absts. 1, Entry 767.]—"Parasites among the members of the Rhodophyceae, or Red Algae, are becoming more and more known. The author has been paying special attention to these parasites for some years. Of some 51 species, old or new,

known to be wholly or partially parasitic, 39 are on plants of the same family of Red Algae, 8 others are on Red Algae not of the same family but with some on hosts fairly nearly related, while only 4 are parasitic on hosts belonging to other groups (brown or green algae). These facts seem significant as to the origin of these parasites. The epiphytic red algae often penetrate the host plant which is commonly also one of the Red Algae, but also may be either brown or green. Some light may be thrown on the origin of red parasites, particularly of those parasitic on close relatives by the behavior of the tetrasporangia of *Agardhiella tenera*. As described by Osterhout in 1896 the zonate tetrasporangia germinate as a whole even after division into tetraspores, and produce dwarf unbranched plantlets which penetrate the tissues of the parent plant by basally produced rhizoids. The plantlets produced are largely antheridial, but some are cystocarpic and some even tetrasporic. Such mutations as these plantlets of *Agardhiella* seem to represent, accompanied by a greater or less degree of chlorosis, go far toward indicating a possible origin of these parasites on closely related hosts." [Through author's abst. in Science **47**: 620. 1918.]

1377. SHREVE, FORREST. **Cultures of mistletoe.** [Rev. of: Weir, James R. Experimental investigations on the genus Razoumopkya. Bot. Gaz. **66**: 1–31. 1918.] Plant World **21**: 159. 1918. [See Bot. Absts. 1, Entry 1648.]

1378. STEBLER, F. G., A. VOLKART, AND A. GRISCH. **Samenuntersuchungen vom 1. Juli 1915 bis 30. Juni 1916 und Versuchstätigkeit für das Jahr 1916.** [Seed investigations from July 1, 1915, to June 30, 1916, and research activities for the year 1916.] Jahresber. Schweiz. Samenuntersuchungs- und Versuchsanstalt in Oerlikon-Zürich **39**: 1–34. 1917.—A disease of rye caused by a species of *Fusarium* was very common and destructive. The stem-scorch of red clovers caused by *Gloeosporium caulivorum* was observed once. [Through abst. by O. von Kirchner in Zeitschr. Pflanzenkr. **28**: 30. 1918.]—*W. H. Rankin.*

1379. TAUBENHAUS, J. J. **On a sudden outbreak of cotton rust (Aecidium gossypii) in Texas.** Science **46**: 267–269. 1917.—Abst. in Internat. Rev. Sci. Pract. Agric. **9**: 518–519. 1918.

1380. TUNSTALL, A. C. **The spraying of tea in north-east India.** Agric. Jour. India (Special Indian Science Congress Number). *P. 73–80.* 1918.—An account of the improvements in machinery and in organization necessary to make spraying practicable in tea gardens. Plants are sprayed in dormant condition with caustic soda to remove epiphytes. Strengths above 2 per cent are harmful. Preventive treatments during growing season interfere with tea culture because of habit of growth and nature of product.—Plans have been made for disease patrols similar to fire patrols who will on occasion stamp out incipient epiphytotics.—Types of knap-sack sprayers, nozzles, spray mixtures, etc., have been tested.

1381. UZEL, H. **Zum Verziehen der Zuckerrübe.** [On the distortion of sugar-beets.] Blätter für Zuckerrübenbau **24**: 138–139. 1917.—Abst. by O. von Kirchner in Zeitschr. Pflanzenkr. **28**: 41. 1918.

1382. VAUGHAN, R. E. **Potato seed treatment—Lessons from 1917.** Wisconsin Potato Growers' Assoc. Bull. **3**: 60. 1918.—Corrosive sublimate—1:1000—recommended in potato seed treatment as it is more effective than formaldehyde against Rhizoctonia and equally as good for scab (Oospora) and black leg (bacterial).—*James G. Dickson.*

1383. VOGLINO, P. **[Bacteria and fungi recorded as parasitic on cultivated plants in the province of Turin and adjacent regions in 1916].** Ann. R. Acad. Agric. Torino **40**: 205–229. 1918.—A review listing 110 diseases caused by bacteria and fungi.—A service of "preventive detection" for vine mildew is described. [Through abst. in Internat. Rev. Sci. Pract. Agric. **9**: 909. 1918.]

1384. YORK, H. H., AND PERLEY SPAULDING. **The overwintering of Cronartium ribicola on Ribes.** Phytopath. **8**: 617–619. 1918.—Uredinios pores from dead leaves remaining on

the bushes over winter were used to inoculate *R. nigrum* in greenhouse in April. One uredinium developed. A similar experiment in another greenhouse yielded seven sori. Also urediniospores from specimens placed in herbarium for one year produced two sori on inoculated plants. A single spore from unbroken urediniosorus on the herbarium material was observed to germinate under the microscope. These results are believed to indicate that *C. ribicola* may occasionally overwinter on dead *Ribes* leaves.—*W. H. Rankin.*

PHARMACEUTICAL BOTANY AND PHARMACOGNOSY

HENRY KRAEMER, *Editor*

1385. ANONYMOUS. **Note on a new oil-containing fruit.** Mexican Notes, March 2, 1918. —A new fruit "chichopoxtle," containing a large amount of fatty oil has been found growing in the region of Torreon. Since the oil proved to be a lubricant of high quality and occurs in quantities amounting to 25 per cent, the cultivation of this oil fruit on a large scale is planned. No scientific name is given. [Through abst. in Chem. News 117: 228. 1918.]—*Arno Viehoever.*

1386. GRIEBEL, C. **Contributions to the microscopy of coffee substitutes (especially spurry and locust seeds.)** Zeitschr. Nahrungs- u. Genussmit. 35: 272–277. 1918.—Among the numerous coffee substitutes chicory and beets play the main rôle. In addition however waste products have been used like potato pulp, husks of grapes or other fruits, tree bark, the stony part of fruitshells and kernels or stonefruits of plants such as hawthorn, rose, etc. Spurry as well as locust seeds have been used as coffee substitutes and Griebel discusses them in detail.

1. Spurry (*Spergula arvensis*, Caryophyllaceae), growing quite generally as a weed on sandy soil, is under cultivation for feed in Western Germany. The black seeds are a little larger than 1 mm., spherical in diameter, somewhat compressed and surrounded by a small light wing. The seed surface is minutely warty and more or less covered with thick, club shaped, hair like structures of gray brown color. The appearance of the testa epidermis, as is the case with that of other caryophyllaceae, is characteristic for microscopic identification representing black brown cells with thick walls, the outlines showing wavelike curves. Some of these cells are grown out to the thick walled, hair like structures referred to. These structures are covered with warts which are formed somewhat like a sucking bowl. The remaining tissue is not especially characteristic except possibly that of the wing in so far as the epidermis cells here also have small wartlike thickenings. Illustrations are given of the structures referred to.

2. Locust seed (*Robinia Pseudo-Acacia*, Leguminosae). Repeated feeding of locust seeds to mice showed, contrary to previous belief, their nonpoisonous character. The anatomy of the 6 mm. long, brown seeds is not different from the structure generally characteristic for Leguminosae. The seed-coat consists of slender palisade cells, 90 to 100μ high, of column cells, about 30μ high and of endosperm, formed by a layer of cells containing aleurone masses and another inner layer of cells with somewhat mucilaginous walls. The tissue of the cotyledons contains besides protein, some fat but no starch. The regular, long and slender cells are especially characteristic for the roasted and ground product. Drawings are given, illustrating the observations recorded.

3. Seeds of *Gleditsia triacanthos* (American bean tree). Griebel makes the suggestion that possibly also these seeds could be used as coffee substitute, since they were fed to mice and eaten by other animals without injury. The seeds are flat, egg shaped and may be as large as 1 cm. (The presence of alkaloids in the seeds of this species has been reported and again been disputed.)—*Arno Viehoever.*

1387. KOFLER, LUDWIG. **Typha as a starch plant.** Zeitschrs. Unters. Nahrungs- u. Genussmit. 35: 266. 1918.—Of the 5 species of Typha indigenous to Middle Europe, Typha latifolia, T. angustifolia, T. minima, T. Shuttlewortbii, T. gracilis, only T. latifolia has prac-

tical value. The plant or certain parts have already in previous times been used for technical as well as medicinal purposes. Of special interest is the use of the rhizome as food in Asia, New Zealand and North America. The rhizomes especially in fall or winter are filled with starch. Loges found in the dried material 46 per cent of starch, while Thoms isolated only 30 per cent from rhizomes that had been collected in spring and showed some young growth.—Detailed description of the rhizomes, roots and runners is given and the characteristics of the powder are pointed out. Two distinct kinds of starch grains were observed: large grains, monarch to triarch, a single grain measuring about 13μ in diameter, the point of origin, if visible, centrally located, lamellae not visible; small grains, monarch to polyarch, usually monarch, 3.5μ average diameter. The tracheae have ladder-like thickenings, the sclerenchyma bundles consist of fibers with walls only very little thickened and with pits oblong and arranged at 45° to the longitudinal axis. The star shaped parenchyma, forming part of the bark, contains only the small starch grains. Of especial diagnostical value are also cells called "Inklusen." These are rather uniformly, though not abundantly, distributed throughout the tissue and contain, bedded in a gummous groundmass, phloroglucinol and catechin derivatives of a tanninlike nature. Sections or powder treated with p-dimethyl-amidobenzaldehyd and sulphuric acid colors these cells wine red, while the other tissue remains colorless. Illustrations are included showing some of the characteristics mentioned.—The striking characteristics of other plant products, such as *Pteridium aquilinum*, *Cyperus*, *Asphodeles*, *Scirpus* and *Juncus* are also very briefly mentioned. [See next following Entry, 1388.]—*Arno Viehoever.*

1388. KOFLER, LUDWIG. **Note on the eagle fern, Pteridium aquilinum.** Since with the usual methods of analysis no poisonous substance had been found by some other investigators, this fern was collected in large amounts for use in food or feed. Bread was prepared containing a considerable amount. The consumption of this bread, especially in Bosnia, caused serious injuries and in a number of cases even death. The rootstocks of *Pteridium aquilinum* contain starch grains with oblong and irregular shape, tracheae with bordered pores and a brown, strongly suberized rind. (Of interest is that Greshoff found a cyanogenetic amygdalin-like glucoside in *Pteris aquilina* L, a plant which is now considered synonymous with *Pteridinum aquilinum* Kuhn. Only mature plants were found to yield no hydrocyanic acid.) [See next preceding Entry, 1387.)—*Arno Viehover.*

1389. WEEHUIZEN, M. F. **On the phenol of the leaves of Coleus amboinicus Lour. (C. carnosus Hassk.)** Recueil. Trav. Chim. Pays Bas et Belgique 37: 355–356. 1918.—The leaves of *Coleus amboinicus* Lour (Labiatae), a much desired medicinal plant, indigenous to Java, have a distinct aromatic odor which is due to an ethereal oil present in small amounts. While Boorsma previously had obtained 0.055 per cent, Weehuizen after distilling 120 kilos of the fresh herb found only about 25 cc. or about 0.021 per cent of ethereal oil. The low yield is attributed to the presence of stems, which do not contain any volatile oil. From the ethereal oil a phenolic substance was isolated which could be identified as carvacrol. The melting point of the carvacrolphenylurethane was found to be 134°-135°, thus agreeing with data given by Goldschmidt and not with other data in literature, stating the compound to melt at 140°.—*Arno Viehoever.*

PHYSIOLOGY

B. M. DUGGAR, *Editor*

[Unsigned abstracts are by the editor.]

GENERAL

1390. ANONYMOUS. **Suitable storage conditions for certain perishable food products.** U. S. Dept. Agric. Bull. 729. *p. 10.* 1918.

1391. ROGERS, L. A. **The occurrence of different types of the colon-aerogenes group in water.** Jour. Bact. 3: 313–328. 1918.—An attempt to determine (1) the fate of the two chief

forms of the fecal bacillus in water in respect to multiplication and attenuation, and (2) if a colon isolation necessarily indicates fecal contamination. The *Bacillus-aerogenes* type is found to survive unfavorable conditions longer than *B. coli*, and some data are furnished regarding the effect on physiological cultural characters of the exposure to such conditions. Evidence in regard to the second point is not yet final. It is believed that material assistance in methods is assured by the ability to separate the colon-aerogenes group into varieties.

1392. SMITH, ANNIE L. **The relation of fungi to other organisms.** Trans. Brit. Mycol. Soc. 6: 17–31. 1918.—A presidential address with discussion of the literature on phases of parasitism, methods of parasitic attack, reaction of the host cell, and symbiosis.—*S. M. Zeller.*

1393. TRUOG, E. **Soil acidity: 1. Its relation to the growth of plants.** Soil Science 5: 169–195. 1918.—This is a general article which draws to the attention of physiologists and agronomists the complexity of the problems relating to soil acidity, a condition which is considered to have many indirect and general influences on the growth of plants due to a relation of physical, chemical, and biological soil factors. In the discussion of soil acidity the following points receive consideration, namely: general fertility, prevalence of plant diseases, competitive powers of plant species, the relation of available calcium to the symbiotic nitrogen-fixing bacteria and to the root tissue of the plants.

WATER RELATIONS

1394. HARRINGTON, GEORGE T., AND WILLIAM CROCKER. **Resistance of seeds to desiccation.** Jour. Agric. Res. 14: 525–532. 1918.—Using seeds of Gramineae the authors were able to corroborate the results of Pickholz and Waggoner and (in part) to controvert those of Ewart. It was shown that the germination capacity of a number of grasses was not changed when the seed had been dried in vacuo over calcium oxide to 1 per cent or less of moisture. Careful determinations were made of germination energy as well as germination capacity, the former being more readily affected than the latter.

1395. LIVINGSTON, B. E. **Porous clay cones for the auto-irrigation of potted plants.** Plant World 21: 202–208. 1918.—A modification of the cylindrical porous cup method devised especially to overcome the difficulty of imperfect soil contact. An important feature of the new device is that it is conical; the widest portion may impinge against the narrower basal portion of the side wall of the pot, and the neck with cork, etc., projects above the soil. Such an arrangement with an oblique porous surface insures contact with the shifting or slipping soil, and at the same time furnishes a large water-supplying surface. The remainder of the mechanism follows the plan of the older device except that an arrangement is included for liberating contained air and for emptying the system.

MINERAL SALT RELATIONS

1396. HEADDEN, W. P. **Alkalies in Colorado (including nitrates).** Colorado Agric. Exp. Sta. Bull. 239. *58 p.* 1918.—A popular account of the problems of alkali in agriculture, using term "alkali" to designate all soluble salts (including nitrates) found in the soil. Discusses the source of the various salts and their transport by streams. Includes summary of author's views upon harmful action of excess of nitrate, in which it is stated that harmful amounts of nitrates are formed by the agency of *Azotobacter*. "White alkali," consisting of sulphates and chlorides of sodium, calcium, and magnesium, is not regarded as harmful to cultivated plants. "Black alkali," consisting of sodium carbonate, is held to be dangerous only where drainage conditions are poor.—*H. S. Reed.*

1397. REED, HOWARD S. **Absorption of sodium and calcium by wheat seedlings.** Bot. Gaz. 66: 374–380. *Fig. 1.* 1918.—For the tests reported wheat seedlings were grown on disks of perforated aluminum floated by glass bulbs on solutions of the same composition as those

in the experiments. Special precautions were taken to prevent contamination through dust and chemical injuries. The experiments were designed primarily to determine the value of some of Osterhout's proportions in weak solutions supplemented by analyses which should indicate the amount of the solutes absorbed. The results indicate that the antagonism of calcium and sodium exists in extremely dilute solutions (230 to 4000 parts per million) and the most successful antagonism in the solutions employed was 98:2. This ratio seemed not to exclude the sodium from entrance but rendered it harmless, and is considered an internal effect rather than a peripheral effect.

1398. WINSLOW, C. E. A., AND I. S. FALK, **Studies on salt action. I. Effect of calcium and sodium salts upon the viability of the colon bacillus in water.** Proc. Soc. for Exp. Biol. and Med. 15: 67–69. 1918.—A study of the antagonistic influence of calcium and sodium chloride in order to secure a viability curve, the latter being found to be much the same for this bacillus as for higher forms of life. [See Bot. Absts. 1, Entry 177.]

METABOLISM (GENERAL)

1399. HASSELBRING, HEINRICH. **Effect of different oxygen pressures on the carbohydrate metabolism of the sweet potato.** Jour. Agric. Res. 14: 273–284. 1918.—Since from earlier studies evidence had been adduced to the effect that reducing sugar in the sweet potato is an intermediate product in the transformation from starch to cane sugar under storage conditions this investigation was undertaken in the hope of further separating the various steps in this process. The method of study consisted in halving lengthwise the freshly dug sweet potatoes, utilizing one set of halves for immediate analysis and storing the other under experimental conditions, the latter being subjected to gas pressures, varying from several atmospheres to less than one atmosphere. Among the results are to be noted (a) the killing action on the tissues of gas pressures of five atmospheres or more, (b) the demonstration that starch and cane sugar hydrolysis are independent of free oxygen supply, and (c) the greater consumption of material by the sweet potato and a greater CO_2 output in anaerobic respiration than in normal respiration—the time and temperature factors being comparable.

1400. HUGHES, J. S. **Some nutritive properties of corn.** Kansas Agric. Exp. Sta. Tech. Bull. 5. *59 p., 9 fig.* 1918.—A physiological study of the effects upon animals of the constituents of maize grain. Corn grain alone is an adequate diet for adult pigeons for maintenance, at least during a period of one year. Corn bran contains relatively large amounts of antineuritic substances similar to those called vitamines by Funk, and water-soluble B by McCollum. However, a diet of corn+ synthetic salt mixture was not adequate for normal growth of chickens. Corn + synthetic salt mixture + casein formed a suitable ration, but if the casein were extracted with alcohol and ether or autoclaved, it lost its value. The loss of efficiency is probably due to destruction of accessories.—*H. S. Reed.*

1401. JOHNSEN, B., AND R. W. HOVEY. **The determination of cellulose in wood.** Jour. Soc. Chem. Indust. (Trans.) 37: 132–137. 1918.—A modification of Cross and Bevan's chlorination method is described, which chiefly differs from theirs in that the cellulose is hydrolyzed by a mixture of acetic acid and glycerin (in equi-molecular proportions) at 135°C. before chlorination. The results of analyses of different woods are given and variations in cellulose content in different parts of the same tree are recorded. A number of analyses are also given in regard to other substances in wood—namely, lignin, the substances yielding furfural, and other carbohydrates of comparatively low molecular weight. [Through abst. by W. S. in Physiol. Absts. 3: 282. 1918.]—*S. M. Zeller.*

1402. KRAUS, E. J., AND H. R. KRAYBILL. **Vegetation and reproduction with special reference to the tomato.** Oregon Agric. Exp. Sta. Bull. 149. *90 p., 22 fig.* 1918.—One of a series of investigations on the problem of pollination of the pomaceous fruits considered from the physiological and bio-chemical standpoint. Four general conditions of the relation of nitrates, carbohydrates, and moisture within the plant itself, and the responses apparently

correlated therewith are discussed. These are: (1) Though there be present an abundance of moisture and mineral nutrients, including nitrates, yet without an available carbohydrate supply vegetation is weakened and the plants are non-fruitful; (2) An abundance of moisture and mineral nutrients, especially nitrates, coupled with an available carbohydrate supply, makes for increased vegetation, barrenness, and sterility; (3) A relative decrease of nitrates in proportion to the carbohydrates makes for an accumulation of the latter, and also, for fruitfulness, fertility, and lessened vegetation; (4) A further reduction of nitrates without inhibiting a possible increase of carbohydrates, makes for a suppression both of vegetation and fruitfulness. Results of recent investigations on cultivation and companion cropping, nitrogenous fertilizer applications, and pruning are examined in the light of these four general conditions. The literature dealing with a suggested relationship between plant responses and the availability of elaborated and non-elaborated food is reviewed. The experimental data deals with a comparative study of the internal conditions in tomato plants which were setting fruit and those which were not, particularly with reference to the presence of total nitrogen, nitrates, moisture and carbohydrates and the relations between them. Extensive chemical and micro-chemical determinations of moisture, dry matter, total nitrogen, free reducing substances, sucrose and starch were made on stems and leaves of tomato plants growing for varying periods under varying nutrient conditions. Plants grown with an abundant supply of available nitrogen and the opportunity for carbohydrate synthesis, are vigorously vegetative and unfruitful. Plants grown with an abundant supply of nitrogen and then transferred and grown with a moderate supply of available nitrogen are less vegetative but fruitful. Plants grown with an abundant supply of nitrogen and then transferred and grown with a very low supply of available nitrogen are very weakly vegetative and unfruitful. When plants which have been grown with a large supply of available nitrogen and moisture are subjected to a reduced moisture supply just about the wilting point there is a decrease in vegetative activity. Whatever the conditions under which a plant has been grown, considering the whole plant as a unit, increased total nitrogen and more particularly increased nitrate nitrogen are associated with increased moistnre and decreased free-reducing substances, sucrose, polysaccharides, and total dry matter. Fruitfulness is associated neither with highest nitrates nor highest carbohydrates, but with a condition of balance between them. There is a correlation between moisture content and nitrate nitrogen. In general, within the plant itself, in the stem from the top to bottom, there is a descending gradient of total nitrogen and moisture, and an ascending gradient in total dry matter, polysaccharides and sucrose. The proportion of free-reducing substances to other carbohydrates, total nitrogen, and nitrate nitrogen is variable. The available carbohydrates constitute as much of a limiting factor in growth as the available nitrogen and moisture supply. The conditions for the initiation of floral primordia and even blooming are probably different from those accompanying fruit setting. Fruit production is seemingly a specialized vegetative function usually more or less closely associated with the function of gametic reproduction. Until more exact information is available, both environmental and hereditary factors must be considered in any attempted explanation of the reproductive or vegetative behavior of plants.—*E. W. Bailey.*

1403. NAKEBEKO, ROKURO. **Approximate determination of protein in physiological fluids.** Mem. Coll. Sci. Kyoto Imp. Univ. 3: 93–112. 1918. [Through abst. by Joseph S. Hepburn in Chem. Abstr. 3: 1887–1888. 1918.]

1404. O'NEILL, P., AND A. G. PERKIN. **The coloring matters of camwood, barwood, and sanderswood.** Jour. Chem. Soc. (Trans.) 113: 125–140. 1918.—These dye woods and caliaturwood give very similar red dyes. Camwood gives to mordanted wood somewhat bluer tones than the other three. The more insoluble coloring matter is isosantalin, $C_{32}H_{34}O_8(OMe)_2$, and is isomeric with the santalin of sanderswood. The coloring properties of barwood are identical with the latter. [Through abst. by W. S. in Physiol. Abstr. 3: 282. 1918.] —*S. M. Zeller.*

MISCELLANEOUS

1405. BIGELOW, W. D. **Scientific research in the canning industry.** Jour. Franklin Ins 186: 1–14. 1918.

1406. CLARK, A. W. AND L. DU BOIS. **"Jelly value" of gelatin and glue.** Jour. Indus and Engin. Chem. 10: 707–709. 1918.

1407. GORTNER, R. A. AND E. H. DOHERTY. **Hydration capacity of gluten from "strong and "weak" flours.** Jour. Agric. Res. 13: 389–419. 1918.

1408. KOESSLER, J. K. **Studies on pollen and pollen disease. I. The chemical compositio** of ragweed pollen. Jour. Biol. Chem. 35: 415–424. 1918.—Walls of pollen grains do not disir tegrate after boiling 15 minutes in 15 per cent. HCl or after digestion with trypsin at 37°C. fo 24 hours. An extract was made which was active on hayfever patients. It was expresse from 11 gms. of pollen which had been in 300 cc. of 8.5 per cent. NaCl at 37°C. for 10 hours and gave the ordinary protein tests. The amount of nitrogen present in the pollen is 4.7 per cent. The highest possible protein content would be 11.37 per cent. The water conten is 10.5 per cent and the ash 10.6 per cent. Reducing sugars, 6.89 per cent. Ether solubl lipoids, 10.3 per cent. Insoluble in ether but soluble in 95 per cent alcohol, 12.5 per cent Extractives soluble in alcohol and water, 11.5 per cent. Insoluble residue, 37.71 per cent [See Bot. Absts. 1, Entry 719.]—*C. H. Farr.*

1409. SHARPLES, A. **The lactiferous system of Hevea brasiliensis and its protective func** tion. Ann. Bot. 32: 247–257. 1918.—In spite of the long accepted belief that the gum is inhibitive against insect and fungous attacks, experiments show that the corky layer of bark is the important protective agent and not the lactiferous layer; for, if the green cork cambium is left undisturbed the susceptibility to attack is less than when removed. In tapping the limiting factor is the rapid removal of the bark, which disturbs the inner cortical tissues and does not give sufficient time for renewal, but not the quantity of sap taken. The open problem is whether the latex is a waste product, the removal of which does not affect the living processes of the tree, or whether it is an essential product, the removal of which stimulates increased replacement activity.—*S. M. Zeller.*

TAXONOMY OF NON-VASCULAR CRYPTOGAMS

J. R. SCHRAMM, *Editor.*

BRYOPHYTES

1410. ANDREWS, A. LEROY. **A collection of mosses from North Carolina.** Bryologist 21: 61–67. 1918. This is a list of species determined from collections made mostly by Prof. G. F. Atkinson in 1901 at various points in the Blue Ridge and Black Mountains. The data include only the localities and collection numbers.—*E. B. Chamberlain.*

1411. BRITTON, ELIZABETH G. **Mosses from Florida collected by Severin Rapp.** Bryologist 21: 27–28. 1918.—*This is a brief notice of the recent discovery in Florida of the occurrence of certain species of tropical mosses. New combinations occur in Sematophyllum and Raphidostegium.—E. B. Chamberlain.*

1412. BRITTON, E. G. **"The Catkin-Hypnum with long hoses."** Bryologist 21: 32. 1918. —The paper notes a distinguishing character of *Leucodon julaceus*, and the range of Austin's *"forma stolonifera"* of the same species.—*E. B. Chamberlain.*

1413. BRITTON, E. G. **Jaegerinopsis squarrosa, n. sp.** Bryologist 21: 48–50. *Pl. 24.* 1918.—A sterile species of moss from Cuba and Florida is described and figured as new.— —*E. B. Chamberlain.*

1414. BRITTON, E. G. **Further notes on Jaegerinopsis, Broth.** Bryologist 21: 80. 1918. Additional differentiating characters for *Jaegerinopsis squarrosa* are given and brief comparisons made with other species of the genus.—*E. B. Chamberlain.*

1415. BRITTON, ELIZABETH G. **Porotrichum, not Thamnobryum.** Bryologist 21: 83–84. 1918.—The author maintains that the publication of new combinations under the new generic name *Thamnobryum* was needless, as all species may be included in *Porotrichum.*—*E. B. Chamberlain.*

1416. EMIG, W. H. **Octodiceras julianum Brid., var. ohioense, new variety.** Bryologist 21: 60–61. *Pl. 26.* 1918.—A new form of aquatic moss is described from Ohio, figures being given of both species and variety.—*E. B. Chamberlain.*

1417. FRYE, T. C. **The Rhacomitriums of Western North America (concluded).** Bryologist 21: 1–16. *Pl. 1–14.* 1918.—This article is a continuation from November, 1917, issue of same journal. Thirteen species and varieties, of the genus *Rhacomitrium*, occurring north of the Mexican boundary in the western part of North America are described and figured. Changes, comparative notes, and the principal synonyms are given as well as a tabular key to the various species; in the earlier portion of the article (November issue) a key of the usual form is also given. One new combination is made.—*E. B. Chamberlain.*

1418. JENNINGS, O. E. **Notes on the mosses of northwestern Ontario. I. Sphagnum.** Bryologist 21: 69–77. *Pl. 27, map.* 1918.—This is an annotated list of twelve species of *Sphagnum* collected along the northern shore of Lake Superior and around Lake Nipegon. Detailed lists of the collections are given, and brief summaries of the general continental range of the various species, as well as specific citation of previous Canadian reports. An outline of the general character of the country is also given.—*E. B. Chamberlain.*

1419. LEVY, DAISY J. **A station for Ephemerum near New York City.** Bryologist 21: 33. 1918.

1420. NICHOLS, GEORGE E. **Additions to the list of Bryophytes from Cape Breton.** Bryologist 21: 28–29. 1918.—Four hepatics and twelve mosses are listed as additions to the author's previous list of species.—*E. B. Chamberlain.*

1421. NIEUWLAND, J. A. **Critical notes on new and old genera of plants. X.** Amer. Midland Nat. 5: 50–52. 1917.—The author changes the generic name *Thamnium* Bry. Eur. to *Thamnobryum* on account of an older *Thamnium* Klotsch, making eight new combinations. He also publishes *Villania*, with three new combinations, in place of the algal genus name *Zonaria* J. Ag., and *Kulmites*, with one new combination in place of the fossil-plant name *Taenidium* Heer.—*E. B. Chamberlain.*

1422. SHERRIN, W. R. **The Lamellae of Polytrichum.** Jour. of Bot. 56: 105–107. 1918. The lamellae on the inner surface of the leaves of *Polytrichum* which furnish valuable diagnostic characters can be scraped off and examined laterally under the microscope without the necessity of section-cutting. Figures and keys illustrate the use of the characters thus obtained for the species found in Great Britain.—*A. Le Roy Andrews.*

1423. THÉRIOT, I. **Note sur une mousse du Chili.** Recueil Publ. Soc. Havraise d'études diverses. 1er trimestre, 1917: 1–7. [Repaged reprint, no date of publication.]—*Barbula flagellaris* Schimp. has been misinterpreted by authors. The plants currently called *P. flagellaris* belong to *P. depressa* Sull. while the true form is a *Tortula* (*T. flagellaris* (Schimp.) Ther.) that has also been described as *T. perflaccida* Broth.—*E. B. Chamberlain.*

1424. THÉRIOT, I. **Mousses du Caucase.** Bull. Geog. Bot. July–Sept., 1918: 121–137. 1918.—An annotated list of species from two collections made principally in Daghestan and in Adzaria, with new forms in *Dicranella* (2), *Fissidens*, *Mniobryum*, *Bartramia*; and new species in *Homalia* and *Brachythecium* (2).—*E. B. Chamberlain.*

TAXONOMY OF VASCULAR PLANTS

J. M. GREENMAN, *Editor*

[Unsigned abstracts are by the editor.]

1425. ANONYMOUS. **Novitates Africanae.** Ann. Bolus Herb. 2: 153–162. *Pls. 10–13.* 1918.—Under the above title the following new species are described from South Africa: *Empleurum fragrans* Glover, *E. latiflora, E. Ethelae, E. dulcis, E. gallorum, E. excavata, E. Westii, E. Symonsii* L. Bolus, *Erica Cameronii, E. elimensis, E. Varderi, E. Dykei, E. Pearsoniana, E. arenaria* L. Bolus, *Geissorhiza tulbaghensis, Tritonia lilacina, T. Planaganii* Bolus f., and *Watsonia albertiniensis* Glover.

1426. FERNALD, M. L. **An intergeneric hybrid in the Cyperaceae.** Rhodora 20: 189–191. *Pl. 125.* 1918.—Fernald describes and illustrates a new hybrid, × *Cyperus Weatherbianus* (*Cyperus dentatus* × *Rynchospora capitellata*), from Massachusetts.

1427. FORBES, CHARLES N. **The genus Lagenophora in the Hawaiian Islands.** Occasional Papers Bernice Pauhi Bishop Mus. Polynes. Ethn. and Nat. Hist. 6: 55–62 [301–308]. *Pl. 1–4.* 1918.—Three species and one variety are recognized of which *Lagenophora maviensis* Mann forma *emarginata, L. Erici* Forbes, and *L. Helena* Forbes & Lydgate are described as new to science.

1428. FREEMAN, GEORGE F. **The purple hyacinth bean.** Bot. Gaz. 66: 512–523. *Fig. 1–7.* 1918.—The author presents a discussion of the plants cultivated under the name of hyacinth bean and concludes that there are two distinct species namely, *Dolichos Lablab* L. and *D. lignosus* L.

1429. JUEL, H. O. **Beiträge zur Blütenanatomie und zur Systematik der Rosaceen.** K. Sv. Vet. Akad. Handl. 58⁵: *p. 1–81. Text fig. 135.* 1918.—The author proposes a rearrangement in the sequence of the genera of the Rosaceae, based primarily on considerations of the ovule.

1430. MACBRIDE, J. FRANCIS. **I. Further new or otherwise interesting Liliaceae. II. A revision of Mirabilis, subgenus Hesperonia. III. A revision of Mentzelia, section Trachyphytum. IV. Certain North American Umbelliferae. V. Reclassified or new Compositae, chiefly North American Heleniеae. VI. Various American Spermatophytes, new or transferred.** Contrib. Gray Herb. Harvard Univ. N. S. 56: 1–61. 1918.—The titles clearly indicate the general character of their contents. The following new combinations with the name-bearing synonym in parenthesis, new names, and new species are included: *Dichopogon fimbriatus* (*Arthropodium fimbriatum* R. Br.), *Arthropodium milleflorum* (*Anthericum milleflorum* Red.), *Trichopetalum plumosum* (*Anthericum plumosum* R. & P.), *Corynotheca micrantha* (*Asparagus micranthus* Lindl.), *Schoenolirion albiflorum* (*Amblostima albiflora* Raf.), **Schizobasopsis** nom. nov., *S. volubilis* (*Bowiea volubilis* Harv.), *Aloe disticha* Mill. var. *brachyphylla* (*A. Saponaria* (Ait.) Haw. var. *brachyphylla* Baker), *Acanthocarpus mucronatus* (*Xerotes mucronata* R. Br.), *Lomandra effusa* (*Xerotes effusa* Lindl.), *L. Endlicheri* (*Xerotes Endlicheri* Muell.), *L. glauca* (*Xerotes glauca* R. Br.), *L. leucocephala* (*Xerotes leucocephala* R. Br.), *L. obliqua* (*Dracaena obliqua* Thumb.), *L. spartea* (*Xerotes spartea* Endl.), *Gagea villosa* (*Anthericum villosum* Labill.), *Allium cernuum* Roth var. *neo-mexicanum* (*A. neo-mexicanum* Rydb.), *A. Rydbergii, A. jubatum, Bloomeria maritima* (*Hesperoscordium maritimum* Torr.), *B. maritima* (Torr.) Macbr. var. *serotina* (*Muilla serotina* Greene), *B. transmontana* (*Muilla transmontana* Greene), *B. Purpusii* (*Muilla Purpusii* Brandg.), *Brodiaea grandiflora* (*Triteleia grandiflora* Lindl.), *B. capitata* Benth. var. *insularis* (*B. insularis* Greene), *B. coerulea* (*Milla coerulea* Scheele), *B. breviflora* (*Androstephium breviflorum* Wats.), *Bessera tenuiflora* (*Behria tenuiflora* Greene), *Calochortus macrocarpus* Dougl. var. *cyaneus* (*Cyaneus* A. Nels.), *C. macrocarpus* Dougl var. *maculosus* Nels. & Macbr. (*C. maculosus* Nels. & Macbr.), *Scilla hyacinthina* (*Ledebouria hyacinthina* Roth), *Camassia Walpolei* (*Quamassia Walpolei* Piper), *Hyacinthus atroviolaceus* (*Bellevalia atroviolacea* Regel), *Yucca*

Treleasei, *Nolina juncea* (*Dasylirion junceum* Zucc.), *Dasylirion longistylum*, *D. recurvatum* (*Beaucarnea recurvata* Lemaire), *D. strictum* (*Beaucarnea stricta* Lemaire), *D. gracile* (*Beaucarnea gracilis* Lemaire), *Cordyline mauritiana* (*Dracaena mauritiana* Bojer), *Asparagus Krausianus* (*Myrsiphyllum Krausianum* Kunth), *A. asparagoides* (L.) W. F. Wight var. *angustifolius* (*Medeola angustifolia* Mill.), *A. Fysoni*, *Clintonia alpina* (Royle) Kunth var. *udensis* (*C. udensis* Traut. & Mey.), *Smilacina amplexicaulis* Nutt. var. *glabra*, *S. purpurea* Wall. forma *pallida* (*S. pallida* Royle), *Polygonatum odoratum* (Mill.) Druce var. *ambiguum* (*P. ambiguum Link*), *Trillium Underwoodii* Small var. *luteum* (*T. sessile* L. var. *luteum* Muhl.), *Aletris pauciflora* (Klotsch) Franchet var. *khasiana* (*A. khasiana* Hook. f.), *Luzuriaga polyphylla* (*Callixene polyphylla* Hook.), *Mirabilis tenuiloba* Wats. var. *polyphylla* (*Hesperonia polyphylla* Standley), *M. oligantha* (*Hesperonia oligantha* Standley), *M. californica* Gray var. *cedrosensis* (*Hesperonia cedrosensis* Standley), *M. Heimerlii* (*Hesperonia Heimerlii* Standley), *Mentzelia dispersa* Wats. var. *latifolia* (*Acrolasia latifolia* Rydb.), *M. dispersa* Wats. var. *compacta* (*M. compacta* A. Nels.), *M. congesta* T. & G. var. *Davidsoniana* (*Acrolasia Davidsonia* Abrams), *Tauschia arguta* (*Deweya arguta* T. & G.), *T. Hartwegi* (*Deweya Hartwegi* Gray), *T. Parishii* (*Velaea Parishii* Coult. & Rose), *T. vestita* (*Deweya vestita* Wats.), *T. Howellii* (*Velaea Howellii* Coult. & Rose), *T. fusiformis* (*Museniopsis fusiformis* Rose), *T. biennis* (*Museniopsis biennis* Coult. & Rose), *T. peucedanoides* (*Cnidium peucedanoides* HBK.), *T. drudeophytoides*, *T. pubescens* (*Museniopsis pubescens* Coult. & Rose), *T. scabrella* (*Museniopsis scabrella* Coult. & Rose), *T. guatemalensis* (*Donnellsmithia guatemalensis* Coult. & Rose), *Lomatium simplex* (*Peucedanum simplex* Nutt.), *L. Nuttallii* (*Seseli Nuttallii* Gray), *L. alpinum* (*Peucedanum graveolens* Wats. var. *alpinum* Wats.), *L. Parryi* (*Peucedanum Parryi* Wats.), *L. Eastwoodae* (*Cynomarathrum Eastwoodae* Coult. & Rose), *L. Brandegei* (*Peucedanum Brandegei* Coult. & Rose), *Ericameria Bloomeri* (*Aplopappus Bloomeri* Gray), *E. fasciculata* (*Chrysoma fasciculata* Eastw.), *Aster deserticola*, *Peritylе megalocephala* (*Laphamia megalocephala* Wats.), *P. Stansburii* (*Laphamia Stansburii* Gray), *P. Toumeyi* (*Laphamia Toumeyi* Rob. & Greenm.), *P. tenella* (*Laphamia tenella* Jones), *P. gilensis* (*Laphamia gilensis* Jones), *P. Lemmoni* (*Laphamia Lemmoni* Gray), *P. trisecta* (*Leptopharynx trisecta* Rydb.), *Bahia integrifolia* (*Schkuhria integrifolia* Gray), *Actinea depressa* (T. & G.) Ktze. var. *pygmaea* (*Actinella depressa* T. & G. var. *pygmaea* Gray), *A. acaulis* (Pursh) Spreng. var. *lanata* (*Actinella lanata* Nutt.), *A. acaulis* (Pursh) Spreng. var. *lanata* forma *caespitosa* (*Tetraneuris acaulis* var. *caespitosa* A. Nels.), *A. acaulis* (Pursh) Spreng. var. *lanata* (Nutt.) Macbr. forma *arizonica* (*Tetraneuris arizonica* Greene), *A. acaulis* (Pursh) Spreng. var. *simplex* (*Tetraneuris simplex* A. Nels.), *A. Torreyana* (*Actinella Torreyana* Nutt.), *A. leptoclada* (Gray) Ktze. var. *Ivesiana* (*Tetraneuris Ivesiana* Greene), *Helenium tinctorium* (*Santolina tinctoria* Mol.), *H. plantagineum* (*Cephalophora plantaginea* DC.), *H. Leguiffei* (*Cephalophora Leguiffei* Phil.), *Monolopia major* DC. var. *gracilens* (*M. gracilens* Gray), *Dyssodia Palmeri* (*Urbinella Palmeri* Greenm.), *Matricaria suffruticosa* (*Tanacetum suffruticosum* L.), *Cirsium californicum* Gray var. *bernardinum* (*Carduus bernardinus* Greene), *Suaeda nigra* (*Chenopodium nigrum* Raf.), *Guatteria boyacana*, *Duguetia vallicola*, *Krameria parvifolia* Benth. var. *glandulosa* (*K. glandulosa* Rose & Painter), *K. parvifolia* Benth. var. *imparata*, *Draba Paysonii*, *Machaerium Whitfordii*, *Clarkia Dudleyana* (*Godetia Dudleyana* Abrams), *Cornus californica* C. A. Mey. var. *pubescens* (*C. pubescens* Nutt.), *Rhododendron Warrenii* (*Azalenstrum Warrenii* A. Nels.), *Gilia debilis* Wats. var. *Larseni* (*G. Larseni* Gray), *G. Rawsoniana* (*Collomia Rawsoniana* Greene), *G. effusa* (*Loeselia effusa* Gray), *G. grandiflora* (Dougl.) Gray var. *axillaris* (*Collomia grandiflora* var. *axillaris* A. Nels.), *G. biflora* (*Phlox biflora* Ruiz. & Pav.), *Cryptantha echinosepala*, *C. quentinensis*, *C. barbigera* (Gray) Greene var. *Fergusonae*, *C. intermedia* (Gray) Greene var. *Johnstonii*, *Pedicularis canadensis* L. var. *fluviatilis* (*P. fluviatilis* Heller), *P. crenulata* Benth. forma *candida*, and *Plantago Parishii*.

1431. MERRILL, E. D. **Oreomyrrhis borneensis Merr. sp. nov., an interesting addition to our knowledge of the Malayan flora.** Amer. Jour. Bot. 5: 514–515. *Pl. 36*. 1918.—The author describes and illustrates a new species of *Oreomyrrhis* from specimens collected on Mount Kinabalu, British North Borneo. This species is regarded as an outlying representative of the New Zealand-Australian flora.

1432. MERRILL, E. D. **New or noteworthy Philippine Plants, XIV.** Philippine Jour. Sci. Bot. 13: 263–333. 1918.—The present paper, like the preceding ones of this series, is devoted primarily to the description of new species of which there are 84, distributed in 26 families; these are as follows: *Pandanus subacaulis, P. philippinensis P. occultus, P. aculatus, P. biliranensis, Freycinetia acutifolia, F. platyphylla, F. botuliformis, F. bulusanensis, F. apayaoensis, Phacelophrynium cylindricum, Laportea pendula, Elatostema catanduanense, Quercus rizalensis, Loranthus confertiflorus, L. crassilimbus, L. Edanoii, L. samarensis, L. pachycladus, L. amplifolius, L. ovalibracteus, L. Spragueí* (*L. pubiflorus* Merr., not Sprague), *L. palawanensis* (*L. fragilis* Merr., not Sprague), *Elytranthe Acuñae, Aristolochia foveolata. Myristica mindorensis, M. discolor, M. nitida, M. palawanensis, Gymnacranthera macrobotrys, Horsfieldia confertiflora, H. megacarpa, H. oblongata, Knema parvifolia, K. Alvarezii, Aglaia rizalensis, A. pyriformis, A. puncticulata, A. Robinsonii, A. tayabensis, A. grandifoliola, A. lancilimba, A. Mirandae, A. myriantha, A. pallens* (*A. elaeagnoidea* var. *pallens* Merr.), *Chisocheton parvifoliolus, Dysoxylum hexandrum, D. ilocanum, D. panayense, Vanaea retusa, V. pilosa, V. heterophylla, V. pachyphylla, Canarium microphyllum, Santiria elliptifolia, Microtropis philippinensis, Leea papillosa, Saurauia oligophlebia, Ternstroemia megacarpa, Eurya pachyphylla, E. pachyrhachis, Vatica pachyphylla, Wikstroemia Fenicis, W. brachyantha, Begonia Edanoii, Memecylon elliptifolium, Everettia octodonta,* **Acanthophora** *scandens* (a new genus and species of the Araliaceae), *Boerlagiodendron catanduanense, Schefflera catanduanensis, S. elliptifoliola, S. myrianthella, Maesa brunnea, Diospyros streptosepala, Bassia oblongifolia, B. Mirandae, Linociera remotinervia, Mastixia pachyphylla, Cyrtandra Alvarezii, C. castanea, C. multifolia, C. microphylla, C. longipes, C. tenuipes* (*C. longipeduncúlata* Merr., not Rechinger), *Dischidia lancifolia, Hoya pentaphlebia, H. pubicalyx,* and *Trichosanthes ellipsoidea.*

1433. ROCK, JOSEPH F. **Cyrtandreae Hawaiienses, Sect. Crotonocalyces Hillebr.** Amer. Jour. Bot. 4: 259–277. *Pl. 18–23.* 1918.—The author has revised the Cyrtandreae of Hawaii, as this group was defined by Hillebrand. Thirteen species, 11 varieties, and 1 form are recognized of which the following are either new or new combinations: *Cyrtandra Knudsenii, C. malacophylla* Clarke var. *erosa, C. cordifolia* Gaud. var. *gynoglabra, C. crassifolia* (*C. Pickeringii β* var. *crassifolia* Hillebr.), *C. mauiensis, C. mauiensis* var. *truncata, C. lintinnabula, C. platyphylla* Gray *typica, C. platyphylla* var. *stylopubens,* C. *platyphylla* var. *stylopubens* forma *ovata, C. platyphylla* var. *parvilora, C. platyphylla* var. *membranacea, C. platyphylla* var. *hiloensis, C. platyphylla* var. *robusta, C. caulescens, C. Pickeringii* Gray var. *waiheae, C. Pickeringii* var. *honolulensis* (*C. honolulensis* Wawra).

1434. RYDBERG, PER AXEL. **Rosaceae (Conclusio).** North Amer. Flora 22[1]: 481–533. Dec. 30, 1918.—The present part concludes the author's treatment of the rose family and includes 3 tribes namely, *Kerrieae* with 2 genera, *Kerria* and *Neviusia* each with one species, *Osmaronieae* also with one species, *Osmaronia cerasiformis* (T. & G.) Greene, and *Roseae* with one genus in which 129 species are recognized. The following species are published as new to science: *Rosa nanella, R. obtusiuscula, R. subserrulata, R. Bicknellii. R. petiolata, R. Aucuparia, R. Palmeri, R. Treleasei, R. texarkana, R. subglauca, R. conjuncta, R. Bushii, R. Butleri, R. subblanda, R. columbiana, R. palustriformis, R. arizonica, R. granulifera, R. bidenticulata, R. corymbiflora, R. Johnstonii, R. Eastwoodiae, R. Standleyi,* and *R. oligocarpa.* Several hybrid roses are described. This part, pp. 535–560, also contains "Additions and Corrections" to the families Podostemonaceae by G. V. Nash, Crassulaceae by J. N. Rose, Penthoraceae and Parnassiaceae by P. A. Rydberg, Saxifragaceae and Hydrangeaceae by J. K. Small and P. A. Rydberg, Cunoniaceae, Iteaceae, Hamamelidaceae, and Connaraceae by N. L. Britton, Escalloniaceae by J. K. Small, Altingiaceae by P. Wilson, Grossulariaceae by F. V. Coville and N. L. Britton, and Platanaceae by H. A. Gleason. The following new combinations and new species are included: *Micranthes gaspensis* Small (*Saxifraga gaspensis* Fernald), *M. interrupta* Small, *Neodeutzia occidentalis* Rydb. (*Deutzia occidentalis* Standley), and *Connarus Williamsii* Britton.

1435. SCHNEIDER, CAMILLO. **A conspectus of Mexican, West Indian, Central and South American species and varieties of Salix.** Bot. Gaz. **65**: 1–14. 1918.—The present conspectus is concerned primarily with forms of the *Pleiandrae* group. About twenty species and thirteen varieties are included of which three species and eleven varieties are either described as new to science or result from a recombination of names.

1436. STANDLEY, PAUL C. **Blepharidium, a new genus of Rubiaceae from Guatemala.** Jour. Washington Acad. Sci. **8**: 58–60. 1918.—*Blepharidium guatemalense* Standley is published as the type of a new genus of the tribe *Cinchoneae*. The genus is based on specimens collected by Henry Pittier in the department of Alta Verapaz, Guatemala.

1437. STANDLEY, PAUL C. **A new species of Rondeletia from Mexico.** Jour. Washington Acad. Sci. **8**: 126–127. 1918.—*Rondeletia Rekoi* Standley is described as a new species from the state of Oaxaca.

1438. STANDLEY, PAUL C. **Omiltemia, a new genus of Rubiaceae from Mexico.** Jour. Washington Acad. Sci. **8**: 426–427. 1918.—*Omiltemia longipes* Standley is proposed as the type of a new genus of the Rubiceae. The original diagnosis is drawn from specimens collected by E. W. Nelson in the state of Guerrero.

1439. VAN ESELTINE, G. P. **The allies of Selaginella rupestris in the southeastern United States.** Contrib. U. S. Nation. Herb. **20**: 159–172. *Pl.* 15–22, *text fig.* 8. 1918.—Descriptions with a key, of *S. rupestris* and 7 allied species endemic to the southeastern states. Two new species, *S. Riddellii* of central and eastern Texas and probably southern Louisiana, and *S. humifusa* of central and southern Florida, are included in this consideration, which is one of a series concerning the *Selaginella rupestris* group.—*Norma E. Pfeiffer.*