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Herausgegeben unter der Leitung

des Präsidenten: **Dr. D. H. Scott.** *des Vice-Präsidenten:* **Prof. Dr. Wm. Trelease.** *des Secretärs:* **Dr. J. P. Lotsy.**

und der Redactions-Commissions-Mitglieder:

Prof. Dr. Wm. Trelease, Dr. C. Bonaventura, A. D. Cotton, Prof. Dr. C. Wehmer und **Mag. C. Christensen.**

von zahlreichen Specialredacteuren in den verschiedenen Ländern.

Dr. J. P. Lotsy, Chefredacteur.

No. 43. | **Abonnement für das halbe Jahr 25 Mark** durch alle Buchhandlungen und Postanstalten. | **1919.**

Alle für die Redaction bestimmten Sendungen sind zu richten an: Redaction des Botanischen Centralblattes, Haarlem (Holland), Spaarne 17.

Wherry, E. T., The reactions of the soils supporting the growth of certain native Orchids. (Journ. Wash. Acad. Sci. VIII. 8. p. 589—598. Nov. 4, 1918.)

Except for species of *Cypripedium* and *Orchis,* all of the Orchids investigated affect an acid soil. Trelease.

Palm, B. and **A. A. L. Rutgers.** The embryology of *Aucuba japonica.* (Rec. Trav. bot. néerl. XIV. p. 119—126. 1917.)

Though it was known, that the female japanese *Aucuba,* introduced into Europe for its decorate leaves (1783), only then began to produce the beautiful red berries, when male individuals were brought over from Japan (1860), some authors have supposed the possibility that its fruits would develop apogamously, a female plant having given berries though male plants were entirely absent. The authors have made a many isolation-experiments and artificial pollinations, that indicate without doubt the impossibility of apogamous development of the fruit and the necessity of pollination.

Also have they confirmed these experiments microscopically, by fixing and cutting pollen and embryosacs of *Aucuba japonica.* The chromosome number in the second devision of the embryosac mother cell and in pollentetrads was found as to be 18; the nucleï of root-tips gave the 2x number of chromosomes repeatedly as 36. In the endosperm the exact number was not made out with absolute exactness. In one mitosis, 48 chromosomes could clearly be distinguished, of which number at least 30 were nicely arranged in pairs. The figure 54 was awaited, but rather often a lower number is found.

Other cytological observations are discussed: a. o. the possibility of development of embryoless fruit, when the embryosac sooner or later completely degenerates. Thus *Aucuba japonica* would be added to the list of plants, capable of forming parthenocarpic fruits. The original opinion about the apogamy in *Aucuba* will have been the result of the presence of male inflorescences upon female plants, as is repeatedly found by the writers; the reversed case may also happen sometimes, as Lombard-Dumas reports male individuals now and then producing female flowers.

M. J. Sirks (Wageningen).

Schacke, M. A., A chromosome difference between the sexes of *Sphaerocarpus texanus.* (Science. N. S. IL. p. 218—219. Feb. 28, 1919.)

The female gametophyte nucleus contains a larger, and the male gametophyte nucleus a smaller chromosome than usual, as in *S. Donnellii.* Trelease.

Warming, E., Om Jordudlóbere. [Underground runners]. (Mém. Acad. roy. sc. et lettres de Danemark. Sect. Sc. 8me série. II. N⁰ 6. p. 295—378, with 43 text figs., and an english resumé. Kóbenhavn 1918.)

As stolons are named plagiotropic overground root-forming shoots with elongated internodes and foliage-leaves. Distinct from these should suboles be kept; they are pale and slender underground runners with elongated internodes and scale leaves. The term rhizome should be restricted to denote underground plagiotropic shoots with short internodes, rich in nutritive matter and therefore thick. The name rhizodes is suggested for such plagiotropic underground shoots which have elongated internodes but are like rhizomes therein that the lateral shoots arise from main buds situate in the axil of a particular leaf which is often numerically definable. (Ex.: *Hippuris vulgaris, Heleocharis palustris*). — Distinct from the above types whose plagiotropic shoots are from orthotropic aerial shoots, are those where the main stem bearing foliage leaves is plagiotropic. They are either overground creepers or underground leaf bearing suboles or rhizomes (Ex. *Pteridium aquilinum*). — Erect short-stems lying in or near the soil-surface have been named vertical rhizomes, pseudorhizomes, or radix multiceps; they are surviving basal parts of erect aerial shoots. The author terms them mesocormus.

The paper contains morphological descriptions of a series of soboliferous plants, mostly of northern origin. The general part gives a comprehension of the biological aspects and of the authors views; some of the items are mentioned below.

The length of the internodes is dependent on the resistance and the moisture of the soil. The longest soboles being found in sandy soil, moist forest mould, field and garden soil, and mud. — The different ways of piercing through the soil are discussed, and the different shape of the curving section of the runners described. — The author has brought together a quantity of observations concerning the depth in which different species keep their runners. The result is that it is extremely difficult to determine a normal soil level for the species, many factors coming in and modifying the result. Thus, a law of level for each species cannot be given yet.

Different ways of changing soil level are mentioned; as to how the plant perceives the depth where the underground organs are, the author is inclined to find the working factors in the soil itself, (moisture, oxygen content etc.). — The question whether subterranean runners are adapted to particular habitats is replied to by a statistical investigation, which shows that 35,5% are found growing in loose mouldy soil, 30,09% on wet soil, 11,5% in water etc.

Underground runners must originate from aerial shoots; the first step may have been the root-striking of a prostrate shoot, such shoot being later transformed into a stolon, which, covered by earth or waste products of the forest, finally becomes an underground runner. Ove Paulsen.

Sirks, M. J. Stérilité, auto-inconceptibilité et différentiation sexuelle physiologique. (Archiv. neerl. Sc. ex. nat. Serie III B. T. III. p. 205—234. 1917.)

Unter dem Namen Sterilität sind in der botanischen Litteratur sehr heterogene Erscheinungen zusammengeworfen worden. Um in dieser verwickelten Sachlage einige Klärung zu schaffen, habe ich in obengenannter Arbeit versucht, der Bedeutung des Wortes Sterilität eine scharfe Umschreibung beizulegen, welche wie folgt ins Deutsche übertragen werden konnte: „Sterilität ist die Erscheinung, dass organismen oder Organismenteile, welche anscheinend zur Fortpflanzung bestimmt sind, degenerieren und ganz des Entwicklungs- sowie des Vermehrungsvermögens entbehren." In dieser Weise begrenzt, ist die Sterilität eine in der Natur des Organismus inhärente Eigenschaft; sie kann durch keine äusseren Umstände beseitigt werden. Eine weitere Einteilung der manchen Sterilitätserscheinungen wird nun vorläufig versucht nach den Stellen der Pflanze, wo die Degeneration sich bemerklich macht und zwar in dieser Weise: a) Gametensterilität mit vier Möglichkeiten: 1. Partielle unilaterale Gametensterilität, 2. partielle bilaterale, 3. totale unilaterale, und 4. totale bilaterale Gametensterilität. Daneben b) Zygotensterilität. Einige Beispiele dieser verschiedenen Fälle werden der Litteratur entnommen.

Ganz anders aber verhält sich die Erscheinung, welche als Selbststerilität bekannt ist Diese Erscheinung hat mit der echten Sterilität, wie sie oben umschrieben wurde, nichts gemeinsam; der Namen ist also sehr unangebracht. Deshalb habe ich vorgeschlagen, diesen Namen durch einen anderen zu ersetzen und die bis jetzt als Selbststerilität bekannte Erscheinung in Zukunft als Selbstunempfänglichkeit (Holländisch zelfonbevruchtbaarheid; Französisch auto-inconceptibilité, Englisch selfimpotence) zu bezeichnen.

Ueber die genannte Erscheinung liegt eine grössere Litteratur vor, besonders über die Vererbbarkeit der Selbstunempfänglichkeit, seitdem Correns darüber seine weitbekannten Versuche mit *Cardamine pratensis* veröffentlicht hat. Diese Litteratur wird in vorliegender Arbeit berücksichtigt, und besonders wird darauf hingewiesen, dass die anscheinend einfache Erklärung der Verhältnisse, welche Correns gegeben hat, der tatsächlichen Sachlage nicht entspricht, wie schon aus den Ergebnissen von Correns hervorgehen kann.

Im Jahre 1913 sind von mir Versuche über die Vererbbarkeit der Selbstunempfänglichkeit angestellt werden, welche, teilweise abgeschlossen, in vorliegender Arbeit beschrieben wurden. Als

Versuchsmaterial diente *Verbascum phoeniceum*, welche Pflanze aus manchen Gründen (leichte Zucht, grosser Samenertrag, reiche Blütenmenge usw.) zu diesen Versuchen sehr bequem ist. In der Weise, wie auch Correns gearbeitet hat, habe auch ich die Sache geprüft, die Ergebnisse waren aber sehr viel verwickelter, als sie nach der Corrensschen Auffassung sich verhalten sollten. Eine scharfe Klassenverteilung wurde nirgends beobachtet; dennoch gab es gewisse Beziehungen zwischen den Zahlen gelungener und misslungener Befruchtungsversuche. Aus einer Gruppe, welche die ganze Nachkommenschaft eines einzigen Elternpaares enthielt, seien hier vier Pflanzen entnommen, deren Ergebnisse besonders einleuchtend waren; zwei dieser Pflanzen gaben, wenn sie als Mutterpflanze dienten, auf jede vier Bestäubungen nur ungefähr eine gelungene (genau 0,93 und 0,75), als Vaterpflanze dagegen ungefähr drei gelungene Bestäubungen aus jeder Vierzahl (genau 3,00 und 3,31). Demgegenüber verhielten sich die beiden anderen Pflanzen gerade umgekehrt; aus jeden vier ergaben sie als Mutterpflanzen drei gelungene Bestäubungen (3,14 und 2,94) und als Vaterpflanze eins (0,81 und 0,60). Die ganze Menge der übrigen Pflanzen standen zwischen diesen beiden Extremen ein; sie bildeten eine kontinuierliche Reihe von Individuen, deren „Befruchtungskoëffiziënten" als Vaterpflanze schwankten zwischen 3,14 und 0,72, als Mutterpflanze zwischen 3,31 und 0,60. Die Mehrzahl der Pflanzen hatte für diese beide Richtungen Koëffiziënten, welche zwischen 1,75 und 2,25 liegen.

Die Erklärung dieser Erscheinungen lässt sich nicht ganz so leicht bringen: Vorläufig neige ich zu der Auffassung, dass die Erscheinung der Selbstunempfänglichkeit mit der Geschlechtsdifferentiation zusammenhänge und wir in den genannten Erscheinungen eine Geschlechtsdifferentiation physiologischer Natur sehen dürfen. In dieser Beziehung wird in der Arbeit noch einige Litteratur über die Geschlechtsdifferentiation besprochen, und darauf hingewiesen, dass die Entscheidung dieser Erscheinung jetzt auf rein physiologischem Boden liegt. M. J. Sirks (Wageningen).

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Terao, H., On reversible transformability of allelomorphs. (American Naturalist. LI. p. 690—698. 1917.)

In this paper the writer presents us a remarkable instance of the phenomenon, that with a certain frequency a dominant allelomorph occurs in the corresponding recessive homozygotes. In certain pedigree cultures of the rice plant, *Oryza sativa* L., there happened to occur in 1912 families containing besides ordinary fertile plants a number of sterile plants. Some of these sterile plants yielded no seed whatsoever, others bore a small number of normal seeds, and very few were mosaic forms with higher fertility. Sterility behaves as a simple recessive to fertility, and the seeds resulting from partial fertility of sterile plants again give segregating families. In one of the two experiments, the family shows an exceedingly slight fertility of sterile plants, the segregation ratio in the offspring derived from fertile individuals being quite close to expectation, but in the other family, which shows a considerably higher grade of partial fertility of sterile plants, the progeny of fertile individuals exhibit considerable deviations of the expected segregation ratio. These deviations may be an excess of dominants (fertiles) in the

segregating progeny from the few seeds of a sterile plant as also in the progeny of heterozygotic fertile plants; but there could in some families also be found an excess of recessives (steriles) in the offspring of these plants. In the present investigation therefore, not only the occurrence of a dominant allelomorph in the corresponding recessive homozygote was observed, but also the transformation of allelomorphs in the opposite direction, that is, the transformation of the dominant allelomorph into the recessive allelomorph. The probable frequency of these allelomorphic transformations may be practically constant in a certain strain, and possibly may be different in different strains. As to the conditions under which such allelomorphic transformations take place, nothing is yet certain except that these conditions are of a hereditary nature.

M. J. Sirks (Wageningen),

Troland, L. T., Biological enigmas and the theory of enzyme action. (American Naturalist. LI. p. 321—350. 1917.)

It is the writers conviction that the conception of enzyme action, or of specific catalysis, provides a definite, general solution for all of the fundamental biological enigmas: the mysteries of the origin of living matter, of the source of variations, of the mechanism of heredity and ontogeny, and of general organic regulation. In this conception he believes we can find a single, synthetic answer to many, if not all, of the broad, outstanding problems of theoretical biology. It is an answer moreover, which links these great biological phenomena directly with molecular physics, and perfects the unity not only of biology, but of the whole system of physical science, by suggesting that what we call life is fundamentally a product of catalytic laws acting in colloidal systems of matter throughout the long periods of geologic time. This view implies no absurd attempt to reduce every element of vital activity to enzyme action, but it does involve a reference of all such activity to some enzyme action, however distantly removed from present activity in time or space, as a necessary first cause. Catalysis is essentially a determinative relationship, and the enzyme theory of life, as a general biological hypothesis, would claim that all intra-vital or hereditary determination is, in the last analysis, catalytic. The paper gives an extensive exposure of these the writers views about enzymes as biological factors, with many quotations from other authors on chemistry and biology.

M. J. Sirks (Wageningen).

Weatherwax, P., The evolution of maize. (Bull. Torrey Bot. Club. XLV. p. 309—342. f. 1—36. Aug. 1918.)

"Vestigial organs being considered, *Zea, Euchlaena* and *Tripsacum* are identical in structural plan. The present aspect of each is due to the suppression of some parts which were present in a primitive ancestor having perfect flowers borne in one type of inflorescence..... *Zea, Euchlaena* and *Tripsacum* have descended independently from a common ancestral form now extinct."

Trelease.

MacDougal, D. T. and **H. A. Spoehr.** The origination of xerophytism. (Plant World. XXI. p. 245—249. (Oct. 1918). 1919.)

The conclusions reached are, in the words of the authors "that

succulence results from the conversion of polysaccharids into pentosans or mucilages, and xerophytism from a conversion of the polysaccharids into the anhydrides or wall material, both transformations being induced by a depleted or lessened water supply in the cells." W. B. McDougall.

Rankin, W. H., The penetration of foreign substances introduced into trees. (Phytopathology. VII. p. 5—13. f. 1. Feb. 1917.)

Experiments with lithium nitrate show a very complete penetration to places where there is an active translocation of food materials. Trelease.

Paulsen, O., Plankton and other biological investigations in the sea around the Faeroes in 1913. (Meddelelser fra Kommissionen for Havundersögelser. Ser. Plankton. I. N⁰ 13. p. 1—27. 6 textfigs. Kóbenhavn 1918.)

The first part is a description of the *Laminaria* forests in a fjord (Frangisvaag) in the Faeroes. These forests play an important economic rôle, producing organic matter and being hideplaces for fishes and other animals. An annexed chart shows that the *Laminaria* forests are distributed every-where within the 20 m curve but as a rule they do not extend farther out.

A list of bottom diatoms is given, after the determinations of E. Oestrup.

The second part is a detailed investigation of the plankton of the same fjord. From May 28th to June 16th a water sample was taken every day in the inner fjord and the plankton was later centrifuged out and counted (Gran's method). Only light variations in the composition of the (neritic) plankton were found, whereas the quantity was greatly changing. This is compared with another series of samples, taken on different days with plankton nets from the innermost part of the fjord to the water outside it, thus giving, as it were, longitudinal plankton-sections of the fjord. Here, both quantity and quality were different, the outer fjord having partly another plankton than the inner. A comparison of the two series brings the suggestion, that fluctuations in both quantity and quality originate from alterations in the currents, ingoing surface-current bringing outside species in and packing the true fjord-species closely together, whereas outgoing current would carry fjord-species out to the mouth, thus dilute the inner plankton, and prevent outside species from moving in.

The currents themselves have not been pointed out; hydrographers have been able to find only very slight currents in Frangisvaag.

The third part of the paper is an investigation as to stomach contents of fish.

The fourth part deals with the plankton of the Faeroe Bank, lying ab. 50 miles S.W. of the Faeroes and surrounded by deep water. Countings were made. The plankton above the Faeroe Bank is partly neritic, and its quantity is often greater than that of the surrounding deep water. The bank water being also colder and fresher than the surrounding water all things point to an introduction of water from lower depths by means of vertical currents, in other words a mixture of water layers occasioned by the bank.

Also at coasts bottom water is brought up; hence the resemblance between neritic plankton and bank plankton. Ove Paulsen.

Petersen, H. E., *Algae* (excl. Calcareous *Algae*). (Report Danish Oceanographical Expeditions 1908—10 to the Mediterranean and adjacent Seas, edited by Johs. Schmidt. II. Biology. K. 3. p. 1—20, with 11 textfigs. Copenhagen 1918.)

A list of 123 species of *Algae* collected at 21 stations in the Mediterranean Sea. Only the few dredgings along the coasts of Africa east of Tunis and in the Aegean Sea have given any remarkable geographical information. The paper contains critical remarks with figures to several species and one species: *Ceramium brevizonatum* is described as new. About 35 species are for the first time recorded from the Aegean Sea.

Carl Christensen.

Transeau, E. N., Notes on the *Zygnemales.* (Ohio Journ. Sci. [Continuation of The Ohio Naturalist]. XVI. p. 17—31. Nov. 1915.)

Contains as new: *Debarya glyptosperma formosa, D. americana, D. decussata, D. reticulata, D. reticulata* (*Zygnema* Hallas), *Zygnema cruciatum caeruleum, Z. cylindricum, Spirogyra Bargeana, S. submarina* (*S. decimina submarina* Collins), *S. propria, S. braziliensis* (*S. lineata braziliensis* Nordst.), *S. novae angliae, S. micro-punctata, S. reflexa, S. hydrodictya, S. Farlowii,* and *S. floridana.*

Trelease.

Transeau, E. N. and **H. Tiffany.** New *Oedogoniaceae.* (Ohio Journ. Sci. XIX. p. 240—242. pl. 14. Feb. 1919.)

Oedogonium hystricinum, O. pisanum gracilis, and *Bulbochaete Bullardi.* Trelease.

Murrill, W. A., The *Agaricaceae* of tropical North America. (Mycologia. X. p. 62—85. Mar. 1918.)

Contains as new: *Drosophila castaneidisca, D. brevipes, D. campestris* (*Gymnochilus campestris* Earle), *D. pallidispora, D. flocculosa* (*G. flocculosus* Earle), *D. tepeitensis, D. jalapensis, D. tenuis, D. truncatispora, D. atricastanea, D. caespitosa* (*G. caespitosus* Earle), *Hypholoma flavovirens, Gomphidius jamaicensis, Stropharia troyana, S. caespitosa, S. bermudiensis* (*Hypholoma* Mass.), *Agaricus angustifolius, A. subsilvicola, A. Johnstonii, A. cinchonensis, A. Venus, A. subpratensis, A. herradurensis, A. Earlei, A. xuchiiensis, A. praemagnus, A. ochraceidiscus, A. Hornei, A. Shaferi, Coprinus jalapensis, C. mexicanus, C. jamaicensis* and *C. cinchonensis.* Trelease.

Wilson, G. W., Studies in North American *Peronosporales.* VIII. New and noteworthy species. (Mycologia. X. p. 168—169. May 1918.)

Contains as new: *Rhysotheca Acalyphae* and *Plasmopara Acalyphae* — as alternative names for the one species. Trelease.

Zeller, S. M. and **C. W. Dodge.** *Arcangeliella, Gymnomyces,* and *Macowanites* in North America. (Ann. Mo. Bot. Gard. VI. p. 49—59. f. 1—3. Mar. 1919.)

Contains as new: *Arcangeliella caudata, A. Soderstromii* (*Hydnangium* Lagerh.), *Gymnomyces Gardneri,* and *Macowanites echinosporus.* Trelease.

Zeller, S. M. and **C. W. Dodge.** *Rhizopogon* in North America. (Ann. Mo. Bot. Gard. V. p. 1—36. pl. 1—3. Feb. 1918.)

Contains as new: *Rhizopogon maculatus, R. viridis, R. pannosus, R. diplophloeus, R. pachyphloeus, R. occidentalis,* and *Hydnangium aurantium* (*R. aurantius* Harkness). Trelease.

Osner, G. A., Additions to the list of plant diseases of economic importance in Indiana. (Proc. Indiana Ac. Sc. p. 327—332. 1916, issued 1917.)

Supplementary to "A list of plant diseases of economic importance in Indiana" by F. J. Pipal, in the Volume for 1915 of the same series. Trelease.

Rands, R. D., *Alternaria* on *Datura* and potato. (Phytopathology. VII. p. 327—338. f. 1—4. Oct. 1917.)

Contains the new name *Alternaria crassa* (*Cercospora crassa* Sacc.). Trelease.

Rankin, W. H., Manual of tree diseases. (New York, The Macmillan Company. 1918. XX + 398 pp. 70 ff. Price $ 2,50.)

One of the Rural Manuals issuing under the editorial management of L. H. Bailey — of which the Manual of Fruit Diseases, by Hesler and Whetzel, is one.

The first four chapters are given over to a general discussion of types of disease or injury to trees, — seedlings, foliage, body and branch, and root troubles. A chapter each is devoted to tree surgery and the use of fungicides. The remaining 28 chapters give an account of the diseases of as many kinds of shade and forest trees, arranged alphabetically under their common names, Glossaries, bibliographic lists, and an index complete the volume. Trelease.

Rose, D. H., Blister canker of apple trees: a physiological and chemical study. (Bot. Gaz. LXVII. p. 105—46. f. 1—10. Feb. 1919.)

Referring to the disease caused by *Nummularia discreta.* Trelease.

Rose, D. H., Blister spot of apples and its relation to a disease of apple bark. (Phytopathology. VII. p. 198—208. f. 1—3. June 1917.)

Contains description of the causative organism, *Pseudomonas papulans,* n. sp. Trelease.

Stakman, E. C. and **M. N. Levine.** Effect of certain ecological factors on the morphology of the urediniospores of *Puccinia graminis.* (Journ. agr. Research. XVI. p. 43—77. Jan. 13, 1919.)

Extensive experiments were carried on for about two years for the purpose of determining the effect of hosts and of physical factors upon the morphology of urediniospores. It was found that congenial hosts of any biologic form have no perceptable influence on the morphology of the spores, negative results being obtained both when the same biologic form was grown on several different hosts and when several different biologic forms were grown on the same host. Unfavorable physical factors or an uncongenial host have a tendency to decrease the size of the urediniospores but as soon as the unfavorable factors are removed the spores regain their normal size and structure. W. M. McDougall.

Stevens, F. L. and **J. True.** Black spot of onions sets. (Bull. N⁰ 220, Illinois Agr. Exper. Sta. p. 507—532. f. 1—19. May, 1919.)

Contains as new: **Cleistothecopsis** n. gen. (*Perisporiaceae*), with *C. circinans*; and, for the conidial form of this, *Volutella circinans* (*Vermiculária circinans* Beck.). Trelease.

Stewart, A., A consideration of certain pathologic conditions in *Ambrosia trifida.* (Amer. Journ. Bot. VI. p. 34—46. Pl. 1. Textf. 1. Jan. 1919.)

The structural changes brought about in the stem by two gall producing organisms, one a fungus and the other an insect, are compared with the structural characteristics of traumatic tissue. "The most marked similarities between the structure of the fungus gall and that of traumatic wood are in the presence of bundle ellipses and in the reduction in number and size of the vessels. Similarities between the insect gall and traumatic wood consist in a greater radial growth of xylem, resulting in a more distinctly woody growth than takes place normally." The violent misplacement of cells so common in traumatic wood is but little evident in the fungus gall and not at all in the insect gall.

The stimulus from the fungus is much stronger than that of the insect and is able to overcome and neutralize the latter when the two organisms are present in the same tissue. On the other hand the fungus is able to influence growth only where the fungus is actually present in the tissue while the insect exerts an influence on growth in all parts of the stem which are in close proximity to it. W. B. McDougall.

Stewart, V. B., A twig and leaf disease of *Kerria japonica.* (Phytopathology. VII. p. 399—407. f. 1—7. Dec. 1917.)

Contains description of the new species *Coccomyces Kerriae,* as causative. Trelease.

Stewart, F. C., Witches brooms on hickory trees. (Phytopathology. VII. p. 185—187. f. 1. June 1917.)

Referring to the effects of *Microstroma Juglandis* on *Carya ovata*. Trelease.

Taubenhaus, J. J., Pink root of onions. (Science. N. S. IL. p. 217—218. Feb. 28, 1919.)

The nomen nudum *Fusarium malli* is proposed for the causative organism. Trelease.

Tisdale, N. H., *Physoderma* disease of Corn. (Journ. Agr. Res. XVI. 5. p. 137—154. With distribution map and pl. A, B, and 10—17. Feb. 3, 1919.)

Referring to *Physoderma Zeae-Maydis*. Trelease.

Weir, J. R. and **E. E. Hubert.** Notes on forest tree rusts. (Phytopathology. VIII. p. 114—118. Mar. 1918.)

Referring to species of *Peridermium, Calyptospora,* and *Melampsora*. Trelease.

Williams, R. S., The Genus *Desmatodon* in North America. (Bull. Torrey Bot. Club. XLVI. p. 207—220. pl. 11. June 1919.)

Twelve species are differentiated. The following new names appear: *Desmatodon Sprengelii* (*Barbula Sprengelii* Schwaegr.) and *D. stomatodontus* (*Hyophila stomatodonta* Cardot). Trelease.

Nakai, T., Trigonotis Japono-Coreanae. (Bot. Mag. Tokyo. XXXI. p. 215—218. 1917.)

A key to the determination of the species occurring in Japan and Corea and an enumeration of species and varieties with notes on synonymy and distribution and description of a new species.

T. brevipes (Maxim.) Maxim., *T. peduncularis* (Trev.) Benth., *T. radicans* (Turcz.) Maxim., *T. Guilielmi* A. Gray, *T. Icumae* (Maxim.) Makino, *T. coreana* sp. nov., near *T. myosotoidea* and *T. Icumae* (Insula Quelpaert, Corea, Russian Manshuria near Nikolsk).

Jongmans.

Ness, H., Hybrids of the live oak and overcup oak. (Journ. of Heredity. IX. p. 263—268. f. 6—8. Oct. 1918.)

Artificially produced hybrids of *Quercus virginiana* (♀) and *Q. lyrata* (♂), — constituting the same product as the spontaneous hybrid × *Q. Comptonae* Sargent. A secondary cross with *Q. stellata* (♂) appears to be indicated. Trelease.

Nichols, G. E., The vegetation of northern Cape Breton Island, Nova Scotia. (Transactions Connecticut Acad. Arts & Sc. XXII. p. 249—467. f. 1—70. June 1918.)

In the analysis of the vegetation the system of classification recently proposed by the same author is used. The deciduous

forest climatic formation and the northeastern coniferous forest climatic formation are described separately and in both cases considerable attention is given to the rôle of bryophytes in the component associations. The deciduous forest climatic formation occupies the lowlands and its climax association type is characterized by *Fagus grandifolia, Acer saccharum, Betula lutea, Abies balsamea, Tsuga canadensis* and *Pinus strobus*. The uplands are occupied by the northeastern evergreen coniferous forest climatic formation in which the dominant climax species is *Abies balsamea*. The conclusion is reached that the inability of *Abies balsamea* to compete successfully with the climax species of the lowlands can be attributed largely to its shorter tenure of life and its greater susceptibility to fungus disease as well as possibly to its less pronounced tolerance of shade.

The important part played by different species of *Sphagnum* in the development of bogs, especially raised bogs, is discussed and the species of *Sphagnum* occurring in the region are classified into five groups based on the degree of hydrophytism.

W. B. McDougall.

Nieuwland, J. A., Critical notes on new and old genera of plants. (Amer. Midl. Nat. V. p. 50—52. Mar. 1917.)

Contains as new: **Thamnobryum** (*Thamnium* Bry. Eur.), with transfer of the species *pumilum, latifolium, "Bilgelovii", angustifolium, alleghaniense, Leibergii, pseudoneckeroides* and *microalopecurum*; **Villania** (*Zonaria* Ag.), with transfer of the species *flava, lobata* and *Turneriana*; and **Kulmites** (*Taenidium* Heer), with the fossil species *K. Fischeri* (*Taenidium Fischerii* Heer). Trelease.

Ostenfeld, C. H., A revision of the West Australian species of *Triglochin, Crassula* (*Tillaea*) and *Frankenia*. Contributions to West Australian Botany. V. (Dansk Bot. Arkiv. II. N° 8. p. 30—55, with illustr. and plate. 1918.)

A critical revision of the species of the said genera known from West Australia. Seven annual species of *Triglochin* are accepted as valid ones and figured on the plate. *Tillaea* is regarded as a subgenus of *Crassula,* to which genus subsequently all the species, 6 in all, are tranferred: *C. pedicellosa* (F. v. M.) comb. nov., *C. colorata* (Nees) comb. nov., *C. intricata* (Nees) comb. nov. *C. Miriamae* is described as new. Most of the species are figured. — 15 species of *Frankenia* are accepted and several of them illustrated. New are *F. Maidenii, F. interioris* with the var. *conspicua* and *F. compacta*. A key to the species is given for each genus.

Carl Christensen.

Ostenfeld, C. H., Bemaerkninger om danske Traers og Buskes Systematik og udbredelse. I. Vore Aelme-Arter. [Taxonomic and distributional remarks on Danish trees and shrubs. I. Our elm-species]. (Dansk Skovforenings Tidsskr. p. 421—442. 7 Text figs. Copenhagen 1918.)

A review of danish species of *Ulmus*. The following species are recorded: *U. glabra* Huds. (= *U. montana* With), common; a var. *nitida* Fr. is very rare. *U. vegeta* (Loud.) C. K. Schn.; *U. laevis*

Pall., *U. hollandica* Mill., *U. campestris* L., and *U. sativa* Mill. (= *U. suberosa* Fl. D.) are found cultivated only. Ove Paulsen.

Ostenfeld, C. H., Stray Notes from the Tropical West Australia. Contributions to West Australian Botany. II. (Dansk Bot. Arkiv. II. N° 8. p. 1—29, with illustr. and 3 plates. 1918.)

The author visited in November 1914 a few places on the N.W. coast of West Australia, and in the present paper he gives some general remarks on the vegetation, which is very imperfectly known. The predominant plant-formations are the mangrove, the sandy-shore, the salt-pan, the sand-dune and the savannah forest formations, of which sketches are given accompanied by photographs. The second part of the paper contains a list of the species collected with several informations and additional descriptions of more species. The recently described *Adansonia Stanburyana* Hochr. is shown to be a glabrous form only of *A. Gregorii* F. v. M., of which characteristic photographs are reproduced on the plates. *Abutilon flavum* and *Frankenia ambita* are described and figured as new species. Carl Christensen.

Osterhout, G. E., Additions to the flora of Colorado. (Bull. Torrey Bot. Club. XLVI. p. 53—56. Feb. 1919.)

Contains as new: *Nuttallia hastata, Phacelia formosula, Oreocarya monosperma, Mertensia Clokeyi,* and *Agoseris frondifera.* Trelease.

Osterhout, G. E., A new *Hymenopappus* from Colorado. (Torreya. XVIII. p. 90. May 1918.)

H. polycephalus. Trelease.

Pammel, L. H., Prickly lettuce. (Rhodora. XX. p. 180—181. Oct. 1918.)

Notes on the replacement of *Lactuca Scariola integrata* by the lobed type of the species, as an American weed. Trelease.

Paulsen, O., *Chenopodiaceae* from West Australia. In: C. H. Ostenfeld, Contributions to West Australian Botany. II. (Dansk Bot. Arkiv. II. N° 8. p. 56—66, with illustr. and plate. 1918.)

A list of the 30 species collected by Prof. Ostenfeld in 1914. Besides critical remarks to several species descriptions and figures are given of the new species: *Kochia Ostenfeldii, Arthrocnemium Benthami* and *A.(?) pruinosum. Salicornia leiostachya* Benth. is transferred to *Arthrocnemium* as *A. leiostachyum* (Benth.) comb. nov. Carl Christensen.

Payson, E. B., Notes on certain *Cruciferae.* (Ann. Mo. Bot. Gard. V. p. 143—151. Apr. 1918.)

Contains as new: *Physaria didymocarpa australis, P. Osterhoutii, Dithyrea Wislizeni Palmeri, D. Wislizeni Griffithsii* (*D. Griffithsii*

Woot. & Standl.), *D. membranacea, D. clinata* and *Draba Standleyi* (*D. Gilgiana* Woot. & Standl.). Trelease.

Pennell, F. W., Notes on plants of the southern United States. III. (Bull. Torrey Bot. Club. XLIV. p. 337—362. July 1917.)

Contains as new: *Cracca angustifolia* (*Tephrosia* Featherm.), *Chamaecrista Wrightii* (*Cassia* Gray), *C. aristellata, C. texana* (*Cassia* Buckl.), *C. keyensis,* and *C. Deeringiana* Small & Pennell. Trelease.

Petry, L. C., Studies on the vegetation of New York State. II. The vegetation of a glacial plungebasin and its relation to temperature. (Bull. Torrey Bot. Club. XLV p. 203—210. f. 1—3. May 1918.)

A continuation of N. L. Bray, The development of the vegetation of New York State. (Technical Publ. N⁰ 3. N. Y. St. Coll. of Forestry. 1915). Trelease.

Piper, C. V., New Pacific Coast plants. (Proc. Biol. Soc. Washington. XXXII. p. 41—44. Apr. 11, 1919.)

Sidalcea Nelsoniana, Cryptantha suffruticosa, Stachys caurina, S. confertiflora, S. ciliata macrantha, Penstemon deserticola, and *Cirsium oreganum.* Trelease.

Pritzel, E., *Basedowia,* eine neue Gattung der Compositen aus Zentral-Australien. (Ber. Deutsch. Bot. Ges. p. 332—337. Taf. XII. 1918.)

Unter dem vom Staatsgeologen H. Basedow im Jahre 1903 gesammelten Material fand sich auch eine Composite, deren Merkmale die Aufstellung einer neuen Gattung erforderten. Die Pflanze wurde *Basedowia helichrysoides* E. Pritzel benannt. Es besteht eine gewisse Aehnlichkeit mit den Gattungen *Cassinia* und *Helichrysum.* Das Köpfchen ist differenziert in drei äussere, weibliche Blüten, die von eigentümlich gestalteten Spreuschuppen umgeben sind und in 4—6 innere Blüten, die von einem gemeinsamen Kranze von Spreuschuppen eingeschlossen sind. Diese Blüten sind zwitterig, erscheinen aber ihrer Funktion nach als männlich. Der Pappus ist reduziert, ebenso das Involucrum, das aus einer ausseren und 3 innere Kelchschuppen besteht. Friedrich Morton.

Pulling, H. E., Root habit and plant distribution in the far north. (Plant World. XXI. p. 223—233. f. 1. Sept. 1918.)

Studies were made of the root systems of 7 species of trees in Wisconsin and northern Canada. Some trees have a very rigid root habit while with others it is more flexible. The conclusion is reached that the degree of flexibility of habit and the degree of penetration in deep soils may be the determining factor in the northern distribution of many plants. W B. McDougall.

Ramalay, F., Notes on dune vegetation at San Francisco,

California. (Plant World. XXI. p. 191—201. f. 1—4. Aug. 1918.)

A description of the various parts of the dunes and a systematic list of the forty-eight species found. Forty of these species are native and eight are introduced. W. B. McDougall.

Robinson, B. L., A descriptive revision of the Colombian *Eupatoriums.* (Proc. Amer. Acad. Arts & Sc. LIV. p. 264—330. Oct. 8, 1918.)

Contains as new: *Eupatorium inulaefolium* H.B.K. f. *typicum, E. turbacense* Hieron. var. *typicum, E. celtidifolium* Lam. var. *typicum,* and *E. ballotaefolium* H.B.K. var. *typicum.* Trelease.

Robinson, B. L., Diagnoses and notes relating to tropical American *Eupatorieae.* (Proc. Amer. Acad. Arts & Sc. LIV. p. 235—263. Oct. 8, 1918.)

Contains as new: *Eupatorium Apollinairei, E. arcuares,* with its var. *typicum* and *caucense, E. celtidifolium kirtellum, E. chiriquense, E. choricephalum, E. chrysostictum, E. cuencanum, E. diaphanophlebium, E. diplodictyon, E. droserolepis, E. erioclinium, E. flavisetum, E. glischrum, E. glyptophlebium, E. hammatocladum, E. hylibates, E. intercostulatum, E. iridolepis, E. Jahnii, E. lanulatum, E. macrophylloides, E. magdalenense, E. Maxonii, E. meridense, E. microdon, E. miserum, E. ornithophorum, E. Pennellii, E. perezioides, E. rorulentum* with its vars. *typicum* and *Shrevei, E. sciaphilum, E. sciatraphes, E. Squiresii* Rusby, *E. tacotanum* var. *typicum* and its ff. *normale* and *apodum,* and var. *trineurolepis, E. tovarense, E. Trianae, E. uromeres, E. xestolepis, E. zinniifolium, Fleischmannia repens* and *Kuhnia oreithales.* Trelease.

Robinson, B. L., Keyed recensions of the *Eupatoriums* of Venezuela and Ecuador. (Proc. Amer. Acad. Arts & Sc. LIV. p. 331. Oct. 8, 1918.)

Contains as new: *Eupatorium squalidum* DC. var. *typicum, E. oxylepis* D.C. var. *typicum, E. exserto-venosum pseudofastigiatum* (*E. pseudofastigiatum* Hieron), *E. solidaginoides* H.B.K. var. *typicum,* and *E. Turczaninowii* (*Conclinium rugosum* Turcz.). Trelease.

Rock, J. F., *Cyrtandreae* Hawaiienses, Sect. *Microcalyces* Hillebr. (Amer. Journ. Bot. VI. p. 203—216. pl. 29—32. May 1919.)

Conclusion of a monograph of the Hawaiian species of *Cyrtandra* (Op. cit. Vol. 4. p. 604; Vol. 5. p. 259; Vol. 6. p. 47). The following names appear here: *Cyrtandra Giffardii, C. laxiflora rhizantha, C. laxiflora grandifolia, C. polyantha ambigua, C. limosiflora, C. paludosa brevicalyx* f. *linearis, C. montis-Loa, C. ramosissima,* and *C. Hashimotoi.* Trelease.

Rock, J. F., *Cyrtandreae* Hawaiienses, Sections *Schizocalyces* Hillbr. and *Chaetocalyces* Hillebr. (Amer. Journ. Bot. VI. p. 47—68. pl. 3—8. Feb. 1919.)

Contains as new: *Cyrtandra lysiosepala haleakalensis, C. Con-*

radtii, C. Grayana latifolia f. *grandis, C. Grayana lanaiensis, C. Grayana nervosa, C. Oliveri* (*C. Hillebrandi* Oliver), *C Kohalae, C. halawensis, C. umbracculiflora, C. Kalichii tristis* (*C. tristis* Hillebr.), and *C. Macraei parvula.* Trelease.

Rock, J. F., New species of Hawaiian plants. (Bull. Torrey Bot. Club. XLV. p. 133—139. pl. 6. Apr. 1918.)

Cyanea Giffardii, C. rollandioides, Rollandia angustifolia (*R. longiflora angustifolia* Hillebr.), *Lobelia oahnensis,* and *Straussia glomerata.* Trelease.

Rock, J. F., Notes on Hawaiian *Lobelioideae,* with descriptions of new species and varieties. (Bull. Torrey Bot. Club. XLIV. p. 229—239. pl. 9—16. May 1917.)

Contains as new: *Cyanea noli-me-tangere, C. Copelandii, C. Fernaldii, C. Remyi, C. truncata* (*Rollandia* Rock), *C. angustifolia Hillebrandii, C. angustifolia lanaiensis, C. ferox horrida, C. Grimesiana cylindrocalyx, C. Hardyi, Lobelia kanaiensis villosa,* and *L. Gaudichaudii coccinea.* Trelease.

Safford, W. E., Notes on the Genus *Dahlia,* with descriptions of two new species from Guatemala. (Journ. Washington Acad. Sci. IX. p. 364—373. f. 1—4. July 19, 1919.)

Contains as new: *Dahlia Popenovii* and *D. Maxonii.* Trelease.

Sargent, C. S., Notes on North American trees. III. *Tilia.* 1. (Bot. Gaz. LXVI. p. 421—438. Nov. 1918.)

Fifteen species are differentiated for the United States, the following appearing as new: *Tilia nuda, T. nuda glaucescens, T. nuda brevipedunculata, T. venulosa, T. venulosa multinervis, T. littoralis, T. littoralis discolor, T. creno-serrata, T. floridana australis* (*T. australis* Small), *T. floridana oblongifolia, T. floridana hypoleuca,* and *T. Cocksii.* Trelease.

Standley, P. C., *Rubiales*: *Rubiaceae* (pars). (N. A. Flora. XXXII. p. 1—86. Dec. 28, 1918.)

Contains as new: *Chimarrhis ferruginea* (*Rustia ferruginea* Standl.), *Portlandia Shaferi, Portlandia albiflora* Britt. & Harris, *Isidorea cubensis, Clavenna tetrandra* (*Peplis tetrandra* L.), *Houstonia procumbens* (*Anonymas procumbens* Wolt.), *H. floridana, Neomazaea Shaferi, Acrosynanthus parvifolius* Britt., *A. latifolius, A. lucidus* Britt., *A. trachyphyllus, Rondeletia Ehrenbergii* K. Schumann, *R. Langlassei, R. darienensis, R aspera, R. Bourgaei, R. pansamalana, R. Galeottii, R. Deamii* (*Bouvardia Deamii* Donn. Sm.), and *R. costaricensis.* Trelease.

Swingle, W. T., *Merrillia,* a new rutaceous Genus of the tribe *Citreae,* from the Malay Peninsula. (Philipp. Journ. Sci. C. Bot. XIII. p. 335—343. pl. 5—6. Nov. 1918.)

Based on *Murraya caloxylon* Ridley. Trelease.

Trelease, W., Bearing of the distribution of the existing

flora of Central America and the Antilles on former land connections. (Bull. Geol. Soc. Amer. XXIX. p. 649—656. Dec. 30, 1918.)

"*Quercus* suggests lack of land connection with North America: *Nolineae* and *Yucceae* indicate absence of continental land connection: *Phoradendron* and *Furcraea* suggest land connection with North and South America: *Agave* indicates relationship to a succsssively fragmented Antillean bridge or spur extending southeastward from Yucatan." Trelease.

Martin, J. N., Botany for agricultural students. (New York, John Willy & Sons. X + 585 pp. 8°. 488 f. 1919.)

The subject-matter falls under the following topics: The nature and subdivisions of botany, A general view of plants, Flowers, Pistils and stamens, Seeds and fruits, Germination of seeds, Cells and tissues, Roots, Stems, Buds, Leaves; Thallophytes, Bryophytes, Pteridophytes, Spermatophytes, Classifications of Angiosperms and some of their families of most economic importance, Ecological classification of plants, Evolution, Heredily and Plant breeding. Though the chapter divisions are mainly morphological, the main physiological processes find consideration under one or another of them. Trelease.

Sampson, A. W., Climate and plant growth in certain vegetative associations. (U. S. Dept. Agric. Bull. N° 700. p. 1—72. f. 1—37. Oct. 1918.)

Experiments were carried on in the Manti National Forest on the Wasatch mountains in Central Utah using *Pisum arvense, Triticum durum,* und *Bromus marginatus* as standard plants. These three species were grown in the oak-brush association at 7100 feet altitude, in the aspen-fir association at 8700 feet, and in the spruce-fir association at 10,000 feet and measurements of the physical and climatic factors were made at the three altitudes. Tables and graphs are given to show the relation between the environmental factors and the growth of the standard plants. The author concludes that the ordinary agricultural crops cannot be grown profitably at elevations exceeding about 8,000 feet.

W. B. McDougall.

Sampson, A. W., Effect of grazing upon aspen reproduction. (U. S. Dept. Agr. Bull. 741. p. 1—29. 7 Textfig. 5 pl. Feb. 1919.)

The paper is based on five years of study in the Manti National Forest in central Utah. Sheep browsing is very much more destructive to young aspen than is browsing by cattle. When aspen forest land is „clean cut" the young shoots grow very rapidly and in three years reach an average height of 45 inches. They are then safe from serious injury by sheep but in the meantime many of them will have been killed by bark eating mammals such as gophers, field mice and rabbits. W. B. McDougall.

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