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**Association Internationale des Botanistes
für das Gesamtgebiet der Botanik.**

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Alle für die Redaction bestimmten Sendungen sind zu richten an:
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Uexküll, J. von, Bausteine zu einer biologischen Weltanschauung. (Herausgeg. von F. Gross. 8°. 298 pp. München, F. Bruckmann 1913.)

Vier Teile umfasst das Werk.

I. „Die neuen Probleme“. Der Darwinismus zerstöre die Lehre von der Planmässigkeit der Organismen. Letztere wird erläutert. Die materiellen Faktoren reichen zur Deutung des Lebens.

II. „Der neue Standpunkt“. Alle Gegenstände, die uns umgeben, bestehen aus Sinnesempfindung, die durch räumliche und auch zeitliche Schemata geordnet werden. Die von jedem Tiere aufgenommenen Merkmale der Aussenwelt setze eine besondere Welt zusammen, die Verf. „Merkwelt“ nennt. Sie ist nur von der Organisation der Sinneswerkzeugen und des Zentralnervensystems der Tiere abhängig und wird ergänzt von der „Wirkungswelt“. Letztere umfasst jene Gegenstände, an welche die Bewegungs- und Fresswerkzeuge der Tiere angepasst sind. Die Aufdeckung der „Merkwelt“ ist sehr mühsam, das Experiment ist da entscheidend. Man müsse untersuchen, auf welche Merkmale eines Gegenstandes das Tier reagiert und ob diese Merkmale in einem bestimmten oder zeitlichen Zusammenhange miteinander stehen, um auf das Tier als ein Ganzes zu wirken. Es müsse der planmässige Zusammenhang zwischen Tier und Aussenwelt erforschen, dann wird man der „Tierseele“ ausweichen können. Nicht Tierseele, sondern die Tierwelt!

III. „Das neue Weltbild“. Die Weltanschauung des in der Natur draussen lebenden Menschen, z.B. des Landwirts ist eine solche, nach der alles „entstanden“ ist, die des Grossstädtlers, nach

der alles „gemacht“ ist. Verf. schwärmt für die Errichtung von Tropenaquarien. Er stellt einen neuen Wissenszweig auf: die „subjektive Biologie“; sie hat zu behandeln die Beziehungen eines jeden einzelnen Menschen zu seiner Merkwelt. Die subjektive Anatomie der Gegenstände gibt uns Aufschluss, welche Empfindungen beim Aufbau der Gegenstände vorhanden sein müssen und welche Anordnung der Empfindungen sich feststellen lasse. Die subjektive Physiologie der Gegenstände soll das Nacheinander der auftretenden Empfindungen erläutern. Diese Art der biologischen Forschung öffnet ein neues Tor zum Kant'schen Idealismus. Es werden die Punkte aufgedeckt, an denen sich die monistisch-darwinistische und die kantisch-biologische Weltanschauung an der Wurzel trennen. Inbezug auf letztere Anschauung muss gesagt werden, dass das Wesen der Naturmacht — das Leben — uns ewig unerkennbar bleiben wird. Zuletzt fasst Verf. seine Ansichten zu einem „Weltbild der Biologie“ zusammen. Es gibt eine planmässig arbeitende, zielstrebige Naturmacht!

IV. „Spezielle Fragen“. Dieser Abschnitt handelt über das Problem der tierischen Formbildung, den Mendelismus, die Entstehung des Raumes und neue Ernährungsprobleme.

Matouschek (Wien).

Harvey, B. T., Notes on the Dissemination of Virginia Creeper Seeds by English Sparrows. (Plant World. XVIII. p. 217–219. Aug. 1915.)

Bird excrements were found on the trunks and limbs of a cottonwoodtree, *Populus deltoides*, at Colorado Springs, Colorado, which were found to contain the seeds of the Virginia Creeper, *Parthenocissus quinquefolia*. Germination experiments were started, and it was proved, that the seeds can pass through the digestive tract of the English Sparrow (*Passer domesticus*) and still retain their power of germination to a marked degree. Harshberger.

Fromme, F. D., The morphology and cytology of the *Aecidium* cup. (Botan. Gazette. LVIII. p. 1–35. 1914.)

The writers summary runs as follows:

The essential features in the development of the cup are similar to those found in the development of the caeoma. The initial hyphal mass, or primordium, is formed by hyphae growing radially toward the center of the future cup.

The cup is more deeply seated and produces a greater number of sterile cells and gametes to each gametophoric hypha. The gametes form a fertile layer two or more cells in thickness. The sterile cells that form the pseudoparenchyma of the cup are homologous with the "buffer" cells of the caeoma.

Sexual cell fusions, by the breaking down of the cell walls between two equal gametes, were found in 6 additional species of cupulate aecidia, namely *Uromyces Caladii* Farlow, *Puccinia Claytoniata* Peck, *P. Violae* (Schum.) DC., *P. Hydrocotyles* (Link) Cke, *P. Eatoniae* Arthur and *P. angustata* Peck. Although the actual fusion stages were not seen in the last named species, the presence of two-legged basal cells is evidence that the fusions are of the same type as those found in the other species. No central organs ("fertile hyphae") or multinucleated cells were found. The organization of

the cup, therefore, is merely that of a remarkably unified colony of gametophores.

Triple cell fusions were observed in *P. Claytoniata* and *P. Violae*, and trinucleated aecidiospores were frequently found in both of these species and in *Ur. Caladii*. Several quadrinucleated aecidiospores and a chain of quadrinucleated cells were found in *P. Claytoniata*.

The first fusion cells are formed at the center of the gametic tissue and the subsequent ones are formed on all sides of this center in centrifugal order, until the lateral borders of the aecidium are reached.

The fusing cells may have their long axes in general in the long axis of the cup for example *P. Claytoniata*, *P. Violae*, *P. Hydrocotyles* and *Ur. Caladii*, or tangential to its surved basal surface, for example *P. Eatoniae*.

The presence or absence of a peridium is a natural but not very fundamental distinction between the aecidium cup and the cacoma. The production of a peridium is correlated with the deep location of the cup and the extensive formation of sterile cells.

As has long been known, the peridial cells are metamorphosed aecidiospores and aecidiospore initial cells. The central arch of the peridium is formed from the apical aecidiospores of the interior spore chains and the lateral walls from entire peripheral spore chains. The first peridial cells are produced at the center of the arch and the peridium enlarges from this point centrifugally until the bases of the lateral walls are reached. Its subsequent enlargement is by the basipetal growth and sterilization of the peripheral spore chains.

M. J. Sirks (Haarlem).

Mattoon, W. R., Life History of Shortleaf Pine. (U. S. Dept. Agricult. Bull. 244. July 21, 1915.)

This bulletin describes the name and identification of *Pinus echinatus* Mill, its geographic and economic range, the character of stands, size, age, habit light requirements, reproduction, growth, injury and yield.

Harshberger.

McAllister, F., The development of the embryosac in the *Convallariaceae*. (Botan. Gazette. LVIII. p. 137—153. 1914.)

In the eight members of the *Convallariaceae* investigated by the author, the embryosac is formed from one reduction nucleus in *Polygonatum*, from 2 in *Smilacina racemosa*, *S. amplexicaulis*, and *Streptopus roseus*, and from 4 in *Smilacina stellata*, *S. sessifolia*, *Maianthemum canadense* and *Medeola virginica*.

In all forms in which more than one reduction nucleus enters into the structure of the embryosac, these nuclei are at first more or less completely separated by cell membranes, the degree of separation varying from split cell plates in *Smilacina stellata* to evanescent cell plates in *Medeola virginica*.

The difference in the degree of the separation of these cells cannot affect their morphological status; they are all megaspores.

In the light of this evidence it seems reasonable to conclude that all reduction nuclei arising from the nucleus of the megaspore mother cell, whether temporarily separated or not separated at all, should be regarded as megaspore nuclei.

Two megaspore mother cells were occasionally observed in six of the eight species investigated. M. J. Sirks (Haarlem).

Peklo, J., Ueber Mikrophotographic der Strukturen lebender Pflanzenzellen mit ultravioletem Lichte. (Naturwiss. II. p. 364–368. 1914.)

Arthur Meyer hat 1897 als erster den Zellkern bei Bakterien entdeckt; er sah sogar in vivo bei *Bacillus asterosporus* ohne Färbung den Zellkern. Vejdovský sah 1900 in Bakterien, welche die Lymphe und das Fettgewebe eines *Gammarus* aus dem Garschina-See bewohnen, Kerne. Král hat auf Photographien von *Azotobacter chroococcum* 1905 Kerne gesehen. Kruis arbeitete Methoden aus, um solche Kerne gut auf die photographische Platte zu bringen; sie beruhen auf der Anwendung des ultravioletten Lichtes. Doch haben wir infolge leicht begreiflicher Schwierigkeiten noch keine sicheren Belege dafür, dass mehrkernige nicht in Teilung begriffene Zellen („Oidien“) wirklich existieren. Die komplizierte Struktur von *Beggiatoa* konnte bisher auch nicht mit ultravioletten Strahlen enträtselt werden. Die Methoden von Kruis werden wohl imstande sein, folgende Studien zu fördern:

1. Wie verändern sich die Zellkerne der Bakterien im Laufe des Lebens derselben? Die Ernährung des Bakteriums spielt wohl dabei eine grosse Rolle.

2. Welche Beziehungen der Kernmasse zum Zerfalle der Zellen des Azotobaktors in „Microazotobacters“ existieren?

3. Es müssen die interessanten Angaben Prażmowskis über die „Kernzellen“ in kokkenartigen Vermehrungsstadien Azotobacters und in ihren Homologien bei anderen Bakterien tiefer durchgearbeitet werden.

Matouschek (Wien).

Sharp, L. W., Spermatogenesis in *Marsilia*. (Botanical Gazette. LVIII. p. 419–431. 1914.)

The following summary is given by the writer:

In the first spermatogenous mitosis there is present at each spindle pole a dense region with radiations, but no centrosome.

During anaphase of the second mitosis a centrosome develops at each spindle pole and at telophase divides to two daughter centrosomes. These only rarely develop farther; they usually degenerate at once in the cytoplasm.

In the third mitosis a centrosome develops at each spindle pole at anaphase exactly as in the second mitosis, and during telophase or later divides to two daughter centrosomes.

These daughter centrosomes, which may now be called blepharoplasts, move apart and occupy the spindle poles through the fourth or final mitosis.

The centrosomes are at all times accompanied by extensive radiations, which in the fourth mitosis give rise to the achromatic figure. When the centrosome divides there is present a central spindle and amphiaster as in animal cells.

Before the fourth mitosis is completed the blepharoplast becomes vacuolate and breaks up to a number of fragments. In the spermatid these form a band which elongates spirally in close union with the nucleus and bears the cilia.

The evidence afforded by *Marsilia*, together with that gained

from other plants and certain animals, is believed to show conclusively that the blepharoplasts of bryophytes, pteridophytes and gymnosperms are derived ontogenetically or phylogenetically from centrosomes.

M. J. Sirks (Haarlem).

Tokugawa, Y., Zur Physiologie des Pollens. (Journ. Coll. Sc. imp. Univ. Tokyo. XXXV. 8. 53 pp. 1914.)

Verf. gibt folgende Uebersicht der von ihm erhaltenen Resultate:

1. Zur Auskeimung ist im allgemeinen für die Pollenkörner eine passende Feuchtigkeit erforderlich; die Pollenkörner einiger Pflanzen bedürfen dazu ausserdem eines speziellen Reizstoffes.

2. Für das Wachstum der Pollenschläuche sind der passende osmotische Druck und die passende Nahrung unentbehrlich. Die Pollenschläuche können allerdings bis zu einem gewissen Grade ohne jede Nahrungsaufnahme auf Kosten ihres eigenen Reservestoffes wachsen. Rohrzucker allein ist nicht vollwertig für ihr Wachstum.

3. Gegen die Schädlichkeit anorganischer Salze verhalten sich die verschiedenen Pollenkörner verschiedenartig. Als allgemeine Tatsache kann anerkannt werden, dass die Salze von Schwermetallen schädlicher als die von Leichtmetallen wirken.

4. Die Lebensdauer der Pollenkörner wird durch die Veränderung der Feuchtigkeit bedeutend beeinflusst.

5. Als Lockmittel für die Pollenschläuche sind Eiweiss- und Zuckerarten wirksam. In dem Nährstoff der Pollenschläuche müssen aber Eiweissstoff und Zucker gleichzeitig zugegen sein. Die Pollenschläuche scheinen sich nach ihrer Art durch einen dieser Stoffe anziehen zu lassen.

6. Die Pollenschläuche zeigen bezüglich ihres Nährstoffes eine ziemlich strenge Spezifizität, verhalten sich aber verhältnismässig nicht so spezifisch gegen den Reizstoff.

7. Die Pollenschläuche dringen tief in Agar oder Gelatine hinein. Die Ursache davon ist aber noch nicht ermittelt.

8. Die Pollenschläuche suchen vermittels des Chemotropismus die Oeffnung des Griffelkanals und die Mikropyle auf. Das Hinwachsen der Pollenschläuche in dem Griffelkanal bis zu dem Fruchtknoten stellt dagegen einen mechanischen Vorgang dar.

9. Zwischen einer monokotylen und dikotylen Pflanze können die Pollenkörner einer Art auf der Narbe einer anderen Art auskeimen und sogar bisweilen ein gewisses Wachstum erreichen. Sie können jedoch selbst auf der Narbe einer nahe verwandten Pflanzenart, die den Pollenschläuchen kein mechanisches Hindernis entgegen stellt, nicht bis zum Fruchtknoten hinwachsen. Das ist vielleicht auf den Mangel eines Nährstoffes zurückzuführen.

M. J. Sirks (Haarlem).

Wolf, F. A., Abnormal roots of figs. (Phytopathology. III. p. 115—118. 1913.)

The writer describes peculiar cylindrical or conical outgrowths, that were found in great number upon branches from cultivated fig trees, 3 to 5 mm. in length and 1 to 2 mm. in diameter at the base. These outgrowths may be more or less grouped or isolated, and in the young condition show a fissure in the cortex, indicating that they have been formed from the underlying tissues and have penetrated the bark upon emergence.

An examination of the anatomy of these cylindrical outgrowths from transverse and longitudinal sections adds further evidence to the fact that they are roots which have arisen from dormant buds. They are found to possess radial vascular bundles with a tetrarch arrangement of the elements.

This development by figs of processes which are morphologically roots and which may be made to function as roots if they are brought in contact with the soil, seems to be primarily a response to a superabundance of moisture. The annual rainfall for the locality in which the trees are growing is between 60 and 70 inches. Further than this the affected trees are so shaded and protected against suitable air drainage by buildings and other trees that the growth of vegetation on the groundfloor is completely inhibited. The absence of direct illumination seems however, to be only an indirect factor, judged from experiments in which new outgrowths were formed by plants placed under bell jars and exposed to direct sunlight.

M. J. Sirks (Haarlem).

Jeffrey, E. C., Spore conditions in hybrids and the mutation hypothesis of de Vries. (Botanical Gazette. LVIII. p. 322—336. 1914.)

The writer summarizes his paper in the following manner:

Spontaneous hybridization is comparatively rare among lower plants, but very common in the angiosperms.

A long recognized criterion of hybridism is sterility, partial or complete, of the reproductive cells. In plants this is recognized with particular ease in the case of the pollen.

In forms which are ordinarily recognized taxonomically as species, pollen infertility frequently indicates past genetical contamination.

In families such as the *Rosaceae* and the *Onagraceae*, we find grading into each other recognized species and recognized hybrids, having in common the character of partial or complete reproductive sterility, most easily recognized in the organisation of the pollen.

This situation points inevitably to the hybrid origin of these abnormal species.

The species of *Oenothera* and many of those of *Epilobium* and probably those of *Fuchsia* as well are crypthybrids.

This condition must be clearly recognized in connection with any investigation in regard to the origin of species based on material of this sort, that is, on crypthybrids such as *Oenothera Lamarckiana*, *O. biennis* etc.

Although there appears to be good evidence that hybridism has been an important cause of the multiplication of species, there seems to be no logical support for the view that it has to do with their actual origin.

M. J. Sirks (Haarlem).

Darsie, M. L., Ch. Elliott and C. J. Pierce. A study of the germinating power of seeds. (Bot. Gazette. LVIII. p. 101—136. 1914.)

The writers' experiments with seeds of different known ages indicate that one may readily ascertain the quality of these seeds, that is, their germinating power or variability, and the vigor of their growth immediately following germination, by determining

the temperatures which they develop in silvered Dewar flasks under conditions suitable for germination.

Each species of plant which the writers have studied appears to have, like the higher animals, a "normal" temperature, departures from which indicate departures from the best condition of the organism. A temperature in excess of the normal generally indicates an infection; a subnormal temperature, on the other hand, indicates lessened vigor. Decreased vigor is very generally due to increased age.

This "normal temperature" has been worked out by the writers for some seeds; the average daily heat yield in terms of 10 grams of seed seems to be for hemp 1.82°C. , for barley 0.88°C. , for clover 0.75°C. , for wheat 0.73°C. , for oats 0.55°C. , for corn 0.49°C.

Departures from the "normal" temperatures are accompanied by differences in the amounts of growth immediately following germination. This may be true of the other stages in the life of the plant, as is the case in the higher animals, though the nature of the experiments does no more than suggest this possibility.

M. J. Sirks (Haarlem).

Marras, F. M., Ueber die Ektoprotease der Weintraube. (Cbl. Bakt. 2. XLIII. p. 641—644. 1915.)

Fermi und Buscalioni sind in einer Untersuchung zu dem Ergebnis gekommen, dass die Weintraube kein proteolytisches Enzym enthält. Pantanelli hat die Richtigkeit dieses Ergebnisses in Zweifel gezogen und sich auf Grund eigener Untersuchungen für das Vorhandensein einer Endoprotease ausgesprochen; auch hält er die Gelatinemethode für nicht einwandfrei. Der Verf. wendet sich gegen die Ausführungen von Pantanelli und kommt auf Grund seiner Untersuchungen zu dem Schluss, dass die Ergebnisse von Fermi und Buscalioni zu Recht bestehen und dass jeder Zweifel an der Brauchbarkeit der Gelatine fallen gelassen werden müsse.

Fuchs.

Molisch, H., Ueber einige Beobachtungen an *Mimosa pudica* und anderen Pflanzen. (Sitzber. kais. akad. Wissensch. Wien. Math.-naturw. Kl. Okt. 1915.)

1. Es ist seit langem bekannt, dass das Hauptgelenk des Blattstieles von *Mimosa pudica* bei der Reizung einen Farbumschlag erfährt: das Gelenk wird unterseits dunkler grün. Diese Farbänderung ist aber nicht besonders deutlich, ja Schwendener sagt ausdrücklich, es sei ihm nie geglückt, den erwähnten Farbenwechsel bei der Senkung des Blattstieles zu beobachten.

Der Verf. hat nun gefunden, dass dieser Farbumschlag sehr deutlich an den kleinen Gelenken der Fiederblättchen von *Mimosa pudica* und *M. Spegazzinii* zu beobachten ist und dass der Farbenwechsel leicht und sicher an gesunden Pflanzen folgendermassen demonstriert werden kann: Man fasst mit dem Zeigefinger und Daumen jeder Hand je zwei bis vier horizontal ausgebreitete Fiederblättchen und hält sie in dieser Stellung fest. Bei dieser Reizung sieht man deutlich, wie die gelblichgrüne Farbe des Gelenkes plötzlich in eine mehr grüne umschlägt. Das Gelenk wird plötzlich dunkler. Die Beobachtung wird hier wesentlich erleichtert, weil ein Vergleich der gereizten und der unmittelbar benachbarten ungereizten Gelenke möglich ist und dieser den Farbenunterschied nur noch deutlicher macht.

Wenn die Fiederblättchen von *Biophytum sensitivum* sich nach der Reizung senken, so erscheinen die gesenkten Blättchenspreiten auch dunkler grün, allein während der Farbenumschlag bei *Mimosa* ein innerer, höchst wahrscheinlich durch die Injektion der Interzellularen mit Wasser bedingt ist, ist der der *Biophytum*-Blättchen nur ein äusserlicher, beruhend auf einem durch die Lageänderung des Blättchens verursachten ungleichen Reflex der Lichtstrahlen auf der Epidermis. Mit anderen Worten: Der Farbenumschlag bei *Mimosa* ist eine physiologische und der bei *Biophytum* eine rein physikalische, d. h. optische Erscheinung.

2. Die Gelenke der *Mimosa pudica* und anderer *Mimosa*-Arten zeichnen sich bekanntlich durch das Vorkommen zahlreicher, grosser Gerbstoffvakuolen aus. Der Verf. untersuchte ihre Verbreitung und ihre Eigenschaften bei den *Leguminosen* und *Oxalideen* und konnte zeigen, dass die Gerbstoffvakuolen mit den sogenannten Inklusen anderer Pflanzen nahe verwandt und sogar identisch sind. Gleich den Inklusen sind ihre Inhaltsstoffe nach ihrer Zusammensetzung als Phloroglykottannoide anzusprechen.

In einem direkten Zusammenhange mit der Reizreaktion stehen die Gerbstoffvakuolen der *Mimosa pudica* und anderer „Sensitiven“ nicht, doch kommt ihnen vielleicht eine Bedeutung bei der Regulierung der Turgordrucke innerhalb der Gelenke zu.

3. Der Flüssigkeitstropfen, welcher beim Anschneiden der *Mimosa pudica* ausfliesst und der nach Haberlandt sicher aus den Schlauchzellen des Leptoms stammt, stellt unter anderem eine überaus konzentrierte Lösung eines leicht kristallisierenden Körpers der aromatischen Reihe, vielleicht einer phenolartigen Substanz dar. Er findet sich auffallenderweise nicht in dem Tropfen von *Mimosa Spegazzinii*, wohl aber in dem von *Leucaena glauca*.

Autoreferat.

Weaver, J. E., A Study of the Root-Systems of Prairie Plants of Southeastern Washington. I. (Plant World. XVIII. p. 227—248. 1915.)

The first instalment of this study is concerned with the plant formations and associations of the semi-arid southeastern Washington and investigation of 350 root systems of 25 of the most important ecologic species. The author describes the factors of the habitat, the soils and soil moisture by aid of graphs and tables, the soil temperature and the other factors. An investigation of the root systems was undertaken to determine the depth at which the most important prairie plants obtain their water supply; to get accurate data on the distribution and extent of the root systems in the soil; and to examine enough plants of each species, so that data might be used in solving the problems of the succession and structure of prairie vegetation. A detailed account of plant roots follows.

Harshberger.

Roddy, H. J., Concretions in Streams formed by the Agency of Blue Green Algae and Related Plants. (Proc. Amer. Philos. Soc. LIV. p. 246—258. August 1915.)

This paper describes concretions formed around a nucleus and consisting of concentric layers of calcium carbonate, silica and organic matter of vegetable origin. The concretions were found in Little Conestoga Creek, Lancaster County, Penns. They

occur also in deposits that underlie the flood plain meadows along the creek banks. The author found species of *Gleocapsa*, *Microcystis*, *Coelospherium*, *Aphanocapsa*, *Oscillatoria*, *Rivularia*, *Nostoc* and *Chroococcus* associated with the nodules. Harshberger.

Setchell, W. A., The Marine Flora of the Pacific Coast. (Nature and Science on the Pacific Coast. p. 177—184. 1915.)

The author of this chapter describes the zones controlled by temperature and the principal algae of each zone. The algae proper are dealt with as *Myxophyceae*, *Phaeophyceae*, *Rhodophyceae*. Finally references are given. Harshberger.

Graves, A. H., Notes on diseases of trees in the Southern Appalachians. I. (Phytopathology. III p. 129—139. 1913.)

It was the purpose of the writer in these notes, the first of a series of papers, to bring together the most important data obtained about several hitherto undescribed or little known diseases. In this paper some diseases, of the white pine (*Pinus strobus* L.) are discussed:

Bark blight, caused by *Coccomyces Pini* (Alb. et Schw.) Karst.; the writer is inclined to the belief that it is a facultative parasite, for besides its frequent occurrence in the long discolored strips surrounded by the healthy bark, it often entirely envelops the smaller, terminal twigs, which are quite dead, apparently as a result of its attack. On the other hand it is quite possible that its attack is of a secondary nature; i.e. preceded by injury to the branches from drought, cold, sun-scald etc. This question can only be conclusively settled by thorough inoculation experiments.

A case of heart rot of white pine, caused by *Trametes Pini* (Brot.) Fr. was observed as a good example of the way in which a fungus causing heart rot can indirectly bring about the death of a tree by weakening its mechanical support and thus render it susceptible to windfall.

About leaf blight, caused by *Lophodermium brachysporum* Rostrup, the writer gives as his belief, that this species is identical with *Hypoderma Desmazierii* Duby, but a final decision of the question must rest upon a careful comparison of our form with the type specimens of *H. Desmazierii* Duby, which the writer has not yet been able to obtain.

In connection with the *Lophodermium brachysporum* Rostrup associated with the leaf blight there commonly occurred a form which appeared to agree with the description and exsiccati of another fungus: i.e. *Hypoderma lineare* Peck. This may, however, be nothing but an abnormally developed form of *Lophodermium brachysporum*. The considerations, upon which the writer bases this belief, are pointed out. M. J. Sirks (Haarlem).

Melchers, L. E., A new alfalfa leaf-spot in America. (Science. N. S. XLII. p. 536—537. Oct. 15. 1915.)

An undetermined species of *Pleosphaerulina*, considered as of possible economic importance since like *Pseudopeziza*, it causes destruction of the foliage. Trelease.

Plehn, M., Fischkrankheiten. (Die Naturwissensch. II. p. 1049—1053, 1065—1068. 1914.)

Eine gedrungene Uebersicht der Fischkrankheiten, die Verfasserin in Bayern beobachten konnte.

Kinderkrankheiten: Nachkommen gemästeter Forellen sind blutarm, Mopsköpfe kommen oft vor, desgleichen die Zusammenschmelzung beider Augen (Cyclopenbildung), abnorme Ausbildung des Zungenbeines. — Junge, zarte Fische: *Costia necatrix* (Flagellat) siedelt sich in Massen auf den Kiemen und der Haut von Forellenbrut an. *Gyrodactylis* (Saugwurm) befällt die Kärpfchen. Gegenmittel sind Bäder, im ersten Falle Kochsalzbäder, im zweiten Ammoniak. Magen- und Darmkrankheiten treten auf, wenn die verabreichten Nahrungsmittel (Topfen, Eigelb, Milz oder Blut von Warmblütlern) nicht frisch sind. Die Tierchen gehen oft zugrunde. Die Kärpfchen leiden oft an Darmcoccidiose (*Eimeria subepithelialis*). Am schlimmsten wirtschaftet der Myxobolide *Lentospora cerebrealis* bei den Salmoniden und hier auch der Fischmörder *Ichthyophorus* (Pilz). Erstere Krankheit nennt man Drehkrankheit, die letztere Taumelkrankheit. Beide sind bei den Karpfen noch nie gesehen worden. Ein anderer Pilz erzeugt bei den Karpfen die „Kiemenfäule“ (bei den Forellen nie gesehen); Ursache ein Phycomycet, *Branchiomyces sanguinis*. — Bakterien erzeugen die Furunkulose der Salmoniden. Doch gibt es noch andere Bakterienkrankheiten, die andere Fische befallen. — Häufig sind Geschwülste, gutartige und bösartige. Am eingehendsten wird erläutert der Kropf der Salmoniden. Mit Material aus einem verdächtigen Fischbehälter konnte man Thyreoideavergrößerung bei jungen Hunden und Ratten hervorbringen. Doch gibt es da noch genug zu untersuchen.

Matouschek (Wien).

Stewart, V. B., The importance of the tarnished plant bug in the dissemination of fire blight in nursery stock. (Phytopathology. III. p. 273—276. 1913.)

Among the sucking bugs, that were collected from apple nursery stock, the tarnished plant bug (*Lygus pratensis* L.) has appeared to be the most important in transmitting the blight parasite to healthy trees, and usually it has been the most common insect observed on the stock susceptible to the disease. During the month of July the tarnished plant bugs are most abundant on the apples and as a rule the blight has become more prevalent in the apples with their appearance.

As determined by the experiments, discussed in this paper, these insects disseminate the blight in the following manner:

Visiting blighted tissues the insects become smeared with the gummy exudate from the blight lesions and carry bacteria to the tender twigs. Here in sucking the sap the insects puncture the tissues, thus forming a means of entrance for the blight germs with the result that the twigs may soon become infected.

M. J. Sirks (Haarlem).

Sturgis, W. C., *Herpotrichia* and *Neopeckia* on conifers. (Phytopathology. III. p. 152—158. 1913.)

In this paper *Herpotrichia nigra* Hartig and *Neopeckia Coulteri* (Pk.) Sacc. are considered at some length, partly because of the damage which they are undoubtedly capable of causing to conifers

either in the seed-bed or later, but chiefly because, notwithstanding their common occurrence, one of them has heretofore been reported only once from the United States and neither has received the attention it deserves from American mycologists. The past history of both, too, appears to have been so confused owing, in a measure, to their extraordinary similarity in external appearance and in structure, that the writer thought it advisable to straighten out this confusion as best as possible.

M. J. Sirks (Haarlem).

Land, W. J. G., A Protocorm of *Ophioglossum*. (The Bot. Gaz. LII. p. 478—479. 1 Textfig. 1911.)

About 150 miles northeast of Mexico City, great quantities of *Ophioglossum Pringlei* Underw. were found. Of many hundred small plants, only one showed anything resembling a prothallus. This supposed prothallus was sectioned and found to be a protocorm.

The protocorm, buried in the soil to a depth of 5 cm., is almost spherical and 9 mm. in diameter, with a slightly roughened surface caused by the irregular collapse of dead cells of the outer cortex. The leaf, including the petiole, is 13.5 cm. long and shows no trace of a fertile spike. The remains of the leaf traces of five other leaves are present, showing that the protocorm is at least seven years old. The growing point is sunken in a pit made by cortical upgrowth. Numerous rootlets are penetrating the cortex in all directions, but only three or four in the upper region of the corm have reached the soil, and have partly decayed. The outermost cells of the cortex have lost their contents and collapsed, forming a protecting layer. These empty outer cells, as well as those of the partly decayed rootlets, are infested with fungal hyphae, which, however, do not enter the living cortical cells. The cells of the cortex are very full of starch.

It was further noticed that nearly all of the plants of a group are connected, and that the smaller plants were produced by adventitious budding of the roots of the larger plants.

Jongmans.

Abrams, Leroy. The Deserts and Desert Flora of the West. (Nature and Science on the Pacific Coast. p. 168—176. 1915.)

The principal desert regions of North America are given. Then follows an account of the character of the desert vegetation and its origin. The sage-brush plains of the Great Basin, the Grand Cañon of the Colorado and its flora, the Mohave Desert and its vegetation, the flora of the desert mountains, the Colorado Desert of southern California are dealt within this section of the book.

Harshberger.

Ayers, P. W., New England's Federal Forest Reserve. (Amer. Forestry. XXI. p. 803. July 1915.)

This is an account of the forest land purchased under the Weeks Act signed by President Taft in 1911 and which carries an appropriation of \$11,000,000 of which only \$8,000,000 became available. The forest lands purchased under this act are at the head of navigable streams. Maps and illustrations show the location, extent and character of the forest lands, which form a part of the White Mountain reserve.

Harshberger.

Brown, W. H. and D. M. Matthews. Philippine Dipterocarp Forests. (Philippine Journal Science. IX. 5 and 6. Ser. A. p. 414—561. pl. 1—13. 1914.)

This is a detailed account of a forest type, which is the most extensive and important of the Indo-Malayan region. It is a tall, tropical lowland forest. The dominant species of trees belong to the family *Dipterocarpaceae*. The number of other large trees varies inversely as the number of Dipterocarps. The distribution of this forest in the Philippines is described, and the material of the paper is arranged under the following captions: importance, composition (with lists of species), plant associations on cleared land, volume, growth (with tables), environmental conditions in the forest, effect of cutting, planting, general considerations of management, summary and lists of species.

Harshberger.

Cockerell, T. D. A., Some Plants from the Vicinity of the Arapahoe Glacier. (Torreya. XV. p. 202—205. Sept. 1915.)

An account of the more interesting plants, such as: *Silene acaulis*, *Papaver coloradense*, *Primula angustifolia*, *P. Parryi*, *Eritrichium argenteum* found near the Arapahoe Glacier at the elevation of about 13,500 feet on the Arapahoe Peaks, Colorado.

Harshberger.

Detwiler, S. B., The American Chestnut Tree. (American Forestry. XXI. p. 957—960. Oct. 1915.)

Illustrated notes on the distribution, botanic characters, growth, diseases and wood of *Castanea dentata* are given in this article.

Harshberger.

Gates, F. C., A Woody Stem in *Merremia gemella* induced by High Warm Water. (Amer. Journ. Bot. II. p. 86—88. Feb. 1915.)

This plant which is herbaceous in dry land and dies down each year, but in a swamp a little west of Los Baños, Laguna, Philippine Islands in water a meter deep fed by hot springs and with a temperature between 30° and 40° C. it develops a woody stem.

Harshberger.

Gates, F. C., Notes from the tropical Strand: *Ipomoea pes-caprae* and *Canavalia lineata*. (Torreya. XV. p. 27—28. 1915.)

A note describing the similarity in appearance of these two plants and a brief statement as to the movements of their leaves.

Harshberger.

Gates, F. C., Relation of Sunshine to the Habitat of *Rottboelia exaltata*. (Torreya. XV. Sept. 1915.)

The plant is a weed common to corn and rice fields in the Philippine Islands. After the harvest, during the cloudy rainy season, it is dominant and 6 feet tall, as the sunshine increases, it dies down below *Mimosa pudica* (7 foot). It lives at the shaded border of woods throughout the year restricted to partial shade.

Harshberger.

Gleason, H. A., Botanical Sketches from the Asiatic Tropics. (Torreya. XV. p. 93—101, May 1915 (Japan); p. 117—133, June 1915 (Philippines); p. 139—153, July 1915 (Philippines); p. 161—175, August 1915 (Java); p. 187—202, Sept. 1915 (Java).)

These papers give the author's impressions of the tropic vegetation, the botanic gardens, the agriculture, the horticulture, the cultivated plants and incidentally the people and the customs of the countries visited, as above noted. A number of figures accompanied each paper taken by Gleason during his travels.

Harshberger.

Hall, H. M., Flora of the Pacific Coast. (Nature and Science on the Pacific Coast. p. 147—158. 1915.)

A sketch of the flora of the Pacific Coast issued as part of a volume published as a guide book for scientific travellers in the west, and edited under the Pacific Coast Committee of the American Association for the Advancement of Science. Hall divides his chapter into several sections: Coastal formations, plains and lower foothill slopes, the chaparral, the mountain flora. The flora of the northwest coast and localities of special botanic interest are considered with a list of the more important books of reference.

Harshberger.

Harper, R. M., Some Correlations between Vegetation and Soils, indicated by Census Statistics. (Science. N. S. XLII. p. 500—503. Oct. 8, 1915.)

A brief study is made of different types of soils in order to determine whether these soils influence the distribution of evergreen trees. The results of the study are tabulated for 24 states into 4 columns: percent of evergreens, improved land (1880), fertilizer per acre (1909—10), average rank. The percent of evergreens in Florida is 91.5 percent and in Indiana, another extreme, 0.1 percent. The author concludes that the correspondence of evergreen percentage and soil fertility is as close as could reasonably be expected.

Harshberger.

Harper, R. M., The Natural Resources of an Area in Central Florida. Vegetation types. (Annual Rep. Florida Geol. Surv. p. 117—188. 1915.)

The report includes an account of the geology, the mineral resources, the native vegetation and the soils. The following types of vegetation are described by Harper: Shallow lakes, ponds and prairies, scrub thickets, the scrub palmetto flatwoods or low pine land, high pine land, red oak woods, sandy hammocks, calcareous high hammocks, low hammocks, calcareous swamps and streams short leaf-pine and cabbage palmetto bottoms, clayly pine woods or open flatwoods. The plants, noted as to their frequency, are classified in the lists as trees, woody vines, shrubs and herbs. Its summary and conclusions brings in the coefficients of community.

Harshberger.

Harshberger, J. W., The Diversity of Ecologic Conditions and its Influence on the Richness of Floras. (Proc. Acad. Nat. Sci. Phila. p. 419—425. 1915.)

Ecologic conditions are those which are associated with the

environment. They include the influence of climate, soil, physiography, chronology and the life relations of the surroundings. The influence of these conditions on the richness of floras may be considered statistically. The generic coefficient, which is the relativity of genera and species, is inversely proportional to the diversity of the ecologic conditions. The generic coefficient was worked out for the floras of Point Pelee, Ontario; for the pine-barrens of New Jersey; for Hartsville, South Carolina; for the Alabama Grit Region of Georgia; for Miami, Florida; for the Florida Keys; for the Upper Susquehanna, Pennsylvania; for Lancaster County, Pennsylvania; for Columbia, Missouri; for Jackson County, Missouri; for the Yosemite National Park, California; for the State of Connecticut; for the State of Pennsylvania; for Alabama; for the central Rocky Mountains; for the State of Washington. It was found that Point Pelee with a simple topography was at one extreme with a generic coefficient of 74.7 per cent; and the Central Rocky Mountains, and the Southeastern United States at the other extreme with highly diversified and generic coefficients of 23.9 per cent and 23 per cent respectively. Harshberger.

Howe, C. D. and J. H. White. Trent Watershed Survey. (Canadian Commission of Conservation, Committee on Forests. Toronto 1913.)

This report of 153 pp. with maps and illustrative plates with an introduction by B. E. Fernow deals with the forests of a portion of the watershed of the Trent Canal, situated in Hastings, Peterborough, Haliburton, and Victoria counties, Ontario. The report considers the drainage, topography, geology soils and the condition of the various forest types. Harshberger.

Illick, J. S., American Trees in German Forests. (Amer. Forestry. XXI. p. 922—927. Sept. 1915.)

Observations are given regarding the growth of the following trees in German forests: arbor-vitae (introduced in 1566), bald cypress (1640), tulip tree (1663), red cedar (1664), balsam fir (1697), white and black spruces (1700), white pine (1705) and at later dates the black locust, red oak, cottonwood, black walnut, black cherry, shellbark, hickory, Douglas fir, Sitka spruce and *Sequoia*. The illustrations show a number of American trees in German forests.

Harshberger.

Illick, J. S., Pennsylvania Trees. (Bull. 11, Penns. Dept. Forestry. June 1914.)

This finely illustrated book deals in the first 50 pp. with the forests and forestry of Pennsylvania, the structure of the forest, its establishment, its development and its protection. These pages also consider the value of trees and forests, deciduous and evergreen trees, the age of trees, the form and structure of trees. Pages 53 to 223, constituting Part II of the book, are concerned with the identification, tabulation and description of the species. Each species is illustrated by a drawing of leaves, flowers, fruit

twigs and buds. The description of each tree includes a statement as to its distribution in Pennsylvania. Harshberger.

Jepson, W. L., Forests of the Pacific Coast. (Nature and Science on the Pacific Coast. p. 159—167. 1915.)

The principal forest trees of the Sierra Nevada mountains, the Cascades, the alluvial plains of the Sacramento are considered. The big trees and redwood trees are described in detail. The forests of Oregon and Washington are noted. References to literature and the chapter. Harshberger.

Miller, W. H., Hardwoods on the Country Estate. (Amer. Forestry. XXI. p. 780—791. July 1915.)

This paper is a collection of notes on the growth reproduction for flowers and fruit of such trees as *Liriodendron*, *Tilia*, *Liquidambar*, *Nyssa*, *Cornus* and *Fagus* grown for the embellishment of country estates. Illustrations add to the value of the notes, Harshberger.

Paulsen, O., Some Remarks on the Desert Vegetation of America. (Plant World. XVIII. p. 155—161. June 1915.)

The author, who was a member of the International Phytogeographic Excursion in America, gives a short comparative account of his investigation of American desert conditions. His definition of deserts are plant formations the soil of which is devoid of humus or very poor in it and contains often sulphates or chlorides. The formations are very open and they frequently include trees and shrubs, which together with long-lived herbs are strongly adapted to drought. Spring plants are numerous. Desert thus defined includes, presumably, all that in America is called desert from the sage brush plains to salt flats, sand deserts and the shrub and cactus desert in Arizona. Using the published papers of Shantz, Briggs, Mc Lane Piemeisch, Spalding and Parish, the author constructs a biologic spectrum, according to the system of Raunkiaer, for Akron, Tooele Valley, Tucson and Salton Sink. Harshberger.

Standley, P. C., Vegetation of the Brazos Canyon, New Mexico. (Plant World. XVIII. p. 179—191. July 1915.)

After a brief account of his itinerary, the author describes the vegetation of the Canadian Zone, the transition Zone (typical and lower divisions) with mention of the principal trees shrubs and herbs found in each zone. Harshberger

Sterling, E. A., California Tree Novelties. Part 1. (Amer. Forestry. XXI. p. 768—778. July 1915; Part 2. p. 853—860. August 1915.)

The first paper deals with the general distribution of the forests of the Pacific coast and a general statement as to the diversity of conditions with Jolin Muir quoted. The second part treats specifically of the *Sequoias*, the Monterey cypress, Monterey

pine, bigcone pine, piñon pine, bristlecone pine, lodge pole pine, knobcone pine. The hardwood trees of California are also noted and other points of interest. The paper is illustrated.

Harshberger.

Stomps, T. J. The Dunes of Lake Michigan. (Plant World. XVIII. p. 205—216. Aug. 1915.)

The writer, as a member of the International Phytogeographic Excursion, gives his impressions of the vegetation of the dunes along the shores of Lake Michigan.

Harshberger.

Killer, I. Die Behandlung der braunen, geschrumpften Körner in Kleesaaten. (Natw. Zschr. Forst. u. Landw. XIII. p. 103. 1915.)

Verf. unterzieht die für die Praxis der Samenkontrolle bestehenden Vorschriften zur Ermittlung der Reinheit einer nicht ganz zutreffenden Kritik. Nach Ansicht des Ref. kann die Behandlung der braunen geschrumpften Körner, wie sie als Folge von Alter oder Befall durch *Alternaria tenuis* besonders bei schlecht geernteten Samen oft in hohem Prozentsatz Kleesaaten minderwertig machen, einem Zweifel nicht unterliegen: Da die Keimfähigkeit derartiger Samen nicht nach dem Augenschein sondern nur durch den Keimversuch zuverlässig beurteilt werden kann, sind dieselben als echte Samen zu behandeln und bei der Reinheitsbestimmung nicht auszuscheiden. Die Resultate der diesbezüglichen Versuche des Verf. bestätigen diese an sich selbst verständliche Tatsache.

Simon (Dresden).

Löbner, M. Grundzüge der Pflanzenvermehrung. 2. Aufl. (VIII, 52 pp. 8°. Berlin, 1915.)

Der für die Hand des Gärtners bestimmte Leitfaden behandelt die Vermehrung der Pflanzen durch Aussaat und auf ungeschlechtlichem Wege in einfacher, klarer Form und inhaltlich dem praktischen Bedürfnis entsprechender Weise. Dadurch dass das Schriftchen auch nach der wissenschaftlichen Seite hin gebotene Aufklärung giebt und selbst die neueren Forschungsergebnisse auf dem Gebiet der Vererbungslehre (Baur) berücksichtigt, erscheint dasselbe in erhöhtem Masse empfehlenswert. Die sonst für den Praktiker so spröden und schwer verständlichen Vererbungsgesetze, die Elemente der Kreuzung, Bastardierung u.s.w. sind recht klar und ansprechend behandelt.

Simon (Dresden).

Mason, D. T. Utilization and Management of Lodgepole Pine in the Rocky Mountains. (U. S. Dept. Agric. Bull. N° 234. July 12, 1915.)

This bulletin with map, tables and 7 plates describes the lodgepole pine, *Pinus contorta* (= *Murrayana*) from the foresters point of view as to characteristics of the wood, annual cut, methods of lumbering and management in the forest.

Harshberger.

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