Band 135. Nr. 18. XXXVIII. Jahrgang. II. Bd. Nr. 44.

Botanisches Centralblatt.

Referierendes Organ

der

Association Internationale des Botanistes für das Gesamtgebiet der Botanik.

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. 18.	**Abonnement für das halbe Jahr 15 Mark** durch alle Buchhandlungen und Postanstalten.	1917.

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

Anonymus. The lease of the tropical botanical station at Cinchona. (Science. N. S. XLV. p. 209—210. Mai 2, 1917.)

Through the intermediary of the Smithsonian Institution, this Jamaican property has been leased again for scientific use, Professor D. S. Johnson, of the John Hopkins University, at Baltimore Md., standing ready to give information to those desirous of working at Cinchona. Trelease.

Goeldi, E. A., Vergleich zwischen dem Entwicklungsverlauf bei der geschlechtlichen Fortpflanzung im Pflanzen- und Tierreich und Vorschlag zu einer Verständigung zwischen Zoologen und Botanikern auf Grund einer einheitlichen biologischen Terminologie. (Actes soc. helv. sc. natur. 97me sess. sept. 1915 à Genève. IIme part. p. 295—311. Mit Tafeln. Aarau, Sauerländer. 1916.)

Der artliche Lebenszyklus bei Pflanze und Tier verläuft inbezug auf Entwicklung und Fortpflanzung in übereinstimmender Weise. Ausgangspunkt und Grundprinzip desselben sind im Generationswechsel gegeben, der bei den archegoniaten Pflanzen deutlich vorliegt in seiner ursprünglichen Einfachheit, bei den höheren Blütenpflanzen aber bis zum Tiere hinauf schrittweise in der äusserlichen Erscheinung zurücktritt, verblasst, sodass in der obersten Organismenreihe sein Vorhandensein bloss noch durch theoretische Erwägung zu erkennen ist. Am Generationswechsel lassen sich bei dieser Wandlung 2 Phasen unterscheiden:

α. niedere, frühere Phase: räumliches Aneinander bei zeitlichem Nacheinander;

β. höhere, spätere Phase: räumliches Ineinander bei zeitlichem Nacheinander. Für den 1. Fall passt gut der Ausdruck „Generationswechsel"; beim 2. Falle aber gestaltet sich die Sachlage infolge der innigen somatischen Vereinigung und Durchdringung von Sporobiont mit Gametobiont zu einem einheitlichen Individuum anders, sodass ihrem Wesen eher die Bezeichnung „Generationsdurchwachsung" gerecht würde. Aber sicher hat das Gesetz des „Generationswechsels" für Pflanze und Tier Gültigkeit. Die Zoologen beziehen den Begriff auf den anormalen Entwicklungszyklus gewisser Tier-Arten, daher ist ihnen der Generationswechsel eine isolierte Ausnahmeerscheinung. Die Botaniker postulierten diesen Wechsel aber als eine jedem Pflanzenindividuum zukommende generelle Allgemeinerscheinung. Die Zoologen mögen die Ausdrücke: Metagenesis und Heterogonie gebrauchen, statt vom Generationswechsel zu sprechen. Matouschek (Wien).

Sántha, L., Egyszerű mikropolarizáló készülék. [Ein einfacher Mikropolarisationsapparat]. (Botanikai közlemények. XV. 3/4. p. 96—99. 3 Fig. Budapest, 1916.)

Das Prinzip des Apparates gab P. Metzner in „Mikrokosmos", 1913/14, p. 234 an, wonach polarisiertes Licht durch Spiegelung und durch einfache Brechung erzeugt wird. Der schwarze Spiegel wird so erzeugt: ein grosses Deckglas wird mit Kanadabalsam auf ein schwarzes Papier geklebt und der Rand des Papiers so umgebogen, dass der Spiegel des Mikroskopes damit behangen werden kann. Der ins Mikroskop reflektierte Lichtstrahl bildet mit der Spiegelfläche den Winkel von 34°, was erreicht wird, wenn der Spiegel mit dem Objekttische des Mikroskopes genau den Winkel von 56° bildet. Ein Kartonpapier-Dreieck mit dem Winkel 56° schiebe man zwischen Spiegel- und Objekttisch ein. Bei Anfertigung des Analysators benützt Verf. die Polarisation durch Brechung. Zur Herstellung der hiezu nötigen Glasplattensäule benützt Verf. 20 Stück Deckgläschen (18 × 18 mm), die er ins Okular unter der Augenlinse auf das Diaphragma so schräg einstellt, dass sich ein Winkel von 34° ergibt. Die Deckgläschensäule fasst er in einem entsprechenden Rahmen und bringt sie über dem Okulare an.

Matouschek (Wien).

Aase, H. C., Vascular anatomy of the megasporophylls of conifers. (The Bot. Gazette. LX. p. 277—313. 196 Fig. 1915.)

In the evolution of the ovulate strobilus in members of the *Coniferales,* two general tendencies are apparent: 1) the reduction in number of sporophylls in the strobilus; 2) the modification of a compound sporophyll into an apparently simple sporophyll; the latter appears in diverse disguises, but in general implies loss of one of the sporophyll members or welding of the two.

Strobilus reduction has reached its highest expression in members of the *Cupressineae, Taxineae,* and *Podocarpineae*; one type of strobilus reduction is represented by the general sterilization and reduction of parts in the lower sporophylls of *Pinus.*

Simplification of a compound sporophyll has been attained to fullest extent in *Arthrotaxis selaginoides, Agathis,* and *Saxegothaea,* and possibly others; and extensive reduction of bracts occurs in *Cedrus Libani* and the lower sporophylls of *Pinus maritima*; the scale in *Phyllocladus* is probably reduced so as to be represented

only by a distinct ovular supply; the welding of the two organs is complete in *Juniperus communis* and *Chamaecyparis Lawsoniana*.

Fusion of bract and scale vascular supplies does not directly parallel fusion of bract and scale.

Separate origin of bract and scale vascular supplies occurs most generally in the *Podocarpineae* and *Abietineae*; fusion of bract and scale supplies has reached its highest expression in the *Araucarineae*; both types of bundle origin are represented in the same strobilus in *Cryptomeria japonica, Cupressus Benthamii,* and the lower sporophylls of *Pinus*.

The bract bundle in plants with uninerved vegetative leaves divides only slightly if at all; the extent of the scale bundle system is directly related to the size of the organ supplied.

The scale bundles in the *Abietineae* and *Chamaecyparis Lawsoniana* form in the expanded portion of the organ a straight row or arc; in members of the *Taxodineae* and *Cupressineae* scale bundles swing around so as to lie at each side of the bract bundle.

In *Cryptomeria japonica* and *Cupressus Benthamii* and perhaps *Cunninghamia Davidiana* scale bundles accompany the bract bundle into the free portion of the bract.

A branching bundle in the vegetative leaf in *Araucaria* and *Agathis* probably implies a branching bundle in the bract of the sporophyll; the vascular system in the megasporophyll is probably a complex of bract and scale bundles.

In species of *Podocarpus* the scalerbundles continue in the portion of the scale folded toward the do sal side, forming the epimatium of the ovule. Jongmans.

Arber, A., On the Occurrence of Intrafascicular Cambium in Monocotyledons. (Ann. Bot. XXXI. p. 41—45. 3 textfigs. 1917.)

In this paper the literature on intrafascicular cambium in Monocotyledons is briefly reviewed, and it is recorded that, in addition to the cases already known, cambial activity occurs in the bundles of the young inflorescence axes of *Eremurus himalaicus* and *Nothoscordum fragrans* while an ephemeral cambium occurs in the young shoots of *Asparagus officinalis*. The case of *Eremurus himalaicus* is figured. The fact that cambial activity in Monocotyledons is, actually, more widerspread than is generally assumed, offers a slight additional confirmation of the view, already expressed by Andersson, Quéva, Chrysler and Sargant, that the existence of this vestigial, intrafascicular cambium indicates that Monocotyledons have been derived from a dicotyledonous stock.

Agnes Arber (Cambridge).

Bailey, I. W. and **H. B. Shepard.** Sanio's laws for the variation in size of coniferous tracheids. (The Bot. Gazette. LX. p. 66—71. 1 Fig. 1915.)

The writers had occasion to test the validity of the first two of the laws, deduced by Sanio from his observations and measurements of the tracheids of *Pinus silvestris* L. The results of their measurements, undertaken with five conifers, are not in accord with Sanio's first law, since no constant tracheid length was found in any of the specimens examined. Therefore it is evident that

Sanio's first law cannot be applied to conifers. For a certain period the length of the tracheids increases, at the end of this period there is a marked falling off in the length of the tracheids. Subsequently the tracheids again increase in length. In one case (long leaf-pine) the tracheid length reaches a maximum at 160 years and decreases, with one marked period of recovery, during succeeding rings. Jongmans.

Briquet, J., Sur la structure foliaire et les affinités des *Saxifraga moschata* Wulf. et *exarata* Vill. (Annuaire Cons. et Jard. bot. Genève. XVIII/XIX. p. 207—214. 1915.)

Mit Cavillier ist der Verf. dafür, die genannten zwei Sippen als Unterarten (ssp. *eu exarata* und ssp. *moschata* [Wulf.] Cav.) einer und derselben Art (*S. exarata* s. lat.) unterzuordnen. Denn den morphologischen Unterschieden im Laubblatt entsprechen wohl auch solche im anatomischen Bau, aber nur bei recht typischen Stücken. Sonst herrscht auch da eine intermediäre Ausbildung.
Matouschek (Wien).

Chrysler, M. A., The medullary rays of *Cedrus*. (The Bot. Gazette. LIX. p. 387—396. 7 Fig. 1915.)

The medullary rays of *Cedrus* are provided with a margin which varies greatly in composition, being made up of tracheids and parenchyma in varying proportion, or devoid of marginal cells for considerable stretches.

Marginal parenchyma when present occurs at the limit of annual rings, and may also extend beyond this point so as to be more plentiful than ray tracheids.

The constant occurrence of marginal parenchyma cells at the limit of annual rings, and their close connection with resin cells, indicates that parenchyma has replaced tracheids in connection with secretion of the so-called resin.

The marginal cells in *Cedrus* show distinct evidence of being in a degenerating condition.

The medullary ray structure confirms the view that *Cedrus* stands intermediate between *Pinus* and *Abies*. Jongmans.

Holden, R., On the cuticles of some indian conifers. (The Bot. Gazette. LX. p. 212—227. Pl. 11. 1915.)

A comparative study of living and fossil conifers indicates that epidermal structures are of great value for accurate specific diagnoses, but of relatively little importance for indicating affinities.

On account of the character of its cuticle, the so-called *Palissya indica* of Feistmantel cannot properly be referred to that or any other fossil genus; and to point out its resemblance to the living *Retinospora,* it is suggested that it be called *Retinosporites indica.*

Echinostrobus expansus closely resembles many living members of the *Cupressineae,* both in epidermis and in phyllotaxy; accordingly it would seem better to retain the old name of Lindley and Hutton, *Thuyites expansus.*

Taxites tenerrimus has a type of cuticle common to many extant conifers, and its affinities cannot be decided.

The epidermal structure of *Podozamites lanceolatus* constitutes

another reason for referring that genus to the conifers rather than to the cycads. Jongmans.

Blodgett, F. H., Morphology of the *Lemna* frond. (The Bot. Gazette. LX. p. 383—390. Pl. 14. 1 Fig. 1915.)

In this paper an effort is made to show what structural units contribute to the formation of the frond of *Lemna,* and the part taken by each in the development of the successive vegetative individuals.

The *Lemna* frond is a propagative structure consisting of a terminal leaf; a bud inclosed by a flattened bud scale, the base of which is fused to the base of the leaf and laterally to the stem; and an apical region from which new fronds are developed. Two buds are formed through the splitting of a single bud rudiment by vertical pressure during early stages of growth. The frond meets the conditions of a floating habitat in which the tension of the surface film apparently is an active factor. Through the lack of space for vertical succession, the several outgrowths from the apical region are liberated as a horizontal series, the overlapping of successive individuals forming an element of confusion in an examination of their structure. Jongmans.

Burlingame, L. L., The Morphology of *Araucaria brasiliensis.* III. Fertilization, the embryo, and the seed. (Bot. Gaz. LIX. p. 1—39. Pl. I—III. 1915.)

This paper is divided into two parts. The first part contains the author's own observations on the fertilization, the proembryo, the embryo, the endosperm and seed of *Araucaria brasiliensis.* These researches are summarized as follows:

Pollination occurs on the scale at a distance from the nucellus. The pollen tube is very long and gives rise to many small lateral haustorial branches. It combines features of conifers and cycads to a certain extent. This is probably an extremely primitive form of tube.

The body cell divides in the extra-nucellar part of the tube a month or more before fertilization. The central cell of the archegonium divides very late or perhaps not at all, except in cases of delayed fertilization.

The male cells are very large and unusually active, as well as long-lived. Blepharoplast-like bodies are found in the male cytoplasm. The male cell passes through the neck without injuring the neck-cells. It comes into violent contact with the egg and frequently displaces it.

The free nuclear divisions of the proembryo are restricted to the male cytoplasm that surrounds the fusion nucleus, which persists and grows with the proembryo. The male cytoplasm around the older proembryo may be surrounded by a membrane.

The number of free nuclei in the embryo varies from 32 to 45 or perhaps more. When walls form the free nuclei are arranged concentrically.

The upper peripheral nuclei form the suspensor, the lower ones the cap, and the middle girdle elongates to unite cap and suspensor. The central cells of the proembryo alone take part in forming the embryo. In the growth of the embryonic group the cap is thrust aside and a cylinder of meristematic tissue is organized. The

upper portion of the embryonic cylinder functions as a secondary suspensor.

The definitive embryo is organized out of a portion of the cells arising from the development of the embryo group of the proembryo. It is dicotyledonous, has resin ducts in the cortex but not in the wood, and is stored full of food materials (large proteid granules and smaller starch grains).

The cells of the prothallus become very large and crowded with food.

The nucellus persists and becomes a part of the testa of the seed.

The embryo continues intraseminal growth after the seeds are shed.

The second part of the paper contains an interesting discussion on the pollination and seed structure in the *Araucarians* compared with those in *Saxegotheca,* in the *Cordaitales* and *Cycadofilicales,* the *Cycadales,* the *Coniferales* and the *Lycopodiales.*

The structure and development of the pollen tube, processes of fertilization, and the structure and development of the embryo are such that it seems extremely improbable that they could have derived from the analogous structures as represented in modern *Abietineae.*

The structure of the seed and pollinationapparatus of the *Araucarians* could be readily derived from the type of seeds or ovules represented by such lycopods as *Miadesmia.* Another palaeozoic seed-bearing lycopod, with which they can be compared, is *Lepidocarpon.*

There is some reason to suppose that some of the *Cordaitales* may have had ovules of the same general type as the lycopods just mentioned. If so, they were probably pollinated on the scale and might have given rise to modern conifers.

It would be possible to derive modern conifers from a mesozoic stock which had ovules and pollination apparatus comparable to that now possessed by the *Araucarians.* Jongmans.

Farr, C. H., The origin of the inflorescences of *Xanthium.* (The Bot. Gazette. LIX. p. 136—148. Pl. 10. 1915.)

The pistillate and staminate heads of *Xanthium commune* Britton are associated on the same branch. They may be contrasted with respect to the following characters: position, attachment, subtending structures, number of involucral bracts, number of vascular bundles in the peduncle, number of flowers, and form of receptacle.

The pistillate and staminate flowers differ in degree of development of pistil, corolla, and floral bract. The stamens completely abort in the pistillate flower.

The vascular system in the peduncle of the staminate head has doubtless undergone reduction in the number of bundles.

The number of stamens per staminate flower is probably now undergoing reduction.

The anthers occasionally fuse, indicating relationship to the typical *Compositae.*

The bur is a modified capitulum, differing from the typical head of *Compositae* chiefly in the two depressions in the receptacle. These pits originate through a temporary arrest of development,

which may possibly be attributed to contact with the tips of the recurved involucral bracts. This recurving of the bracts may be the result of limited space due to the subtending structures.

The spines of the bur are probably modified floral bracts.

The beaks seem to be modified portions of the receptacle.

The terminal heads became staminate, because the vascular supply was inadequate to compensate for the excessive transpiration, and hence the pistils have aborted.

The axillary heads became pistillate by the abortion of stamens, owing to the pressure and crowding incident to the formation of the flowers in depressions.

Many of the characters in which the pistillate and staminate flowers of *Xanthium* differ have been causative factors in the origin and development of dicliny in this form. Jongmans.

Bartlett, H. H., Additional evidence in *Oenothera.* (The Bot. Gazette. LIX. p. 81—123. 17 Fig. 1915.)

The principal conclusions of these researches are summarized by the author as follows.

Oenothera pratincola, a recently described small flowered self-pollinating species from Kentucky, is in a mutating condition comparable with that of *O. Lamarckiana.*

The most striking of the mutations, *O. pratincola* mut. *nummularia,* occurred in strains derived from 7 wild mother plants out of 8 selected at random.

In two of these strains the mutation was found in both the F_1 and F_2 generations from the parent plant. In a third strain the mutation was found only in the F_2 generation, but a sufficient number of F_1 plants had not been grown to insure its detection in that generation.

Mut. *nummularia* appears to occur with a frequency of about one individual to each 300—400 seeds planted. The several progenies showed no significant variation in the mutation ratio.

The mutation ratio cannot be explained on Mendelian grounds.

Mut. *nummularia* is better adapted than the parent type to withstand influences unfavorable to germination. In every case where a progeny contained an unexpectedly large number of mutations, the germination was correspondingly poor.

Selective germination and differential mortality among dormant seeds may be important factors in natural selection.

Mutation is a distinct progress from Mendelian segregation, and the phenomena exhibited by *Oenothera Lamarckiana, O. biennis* and *O. pratincola* cannot be attributed to heterozygosis. Jongmans.

Bartlett, H. H., Mass mutation in *Oenothera pratincola.* (The Bot. Gazette. LX. p. 425—456. 15 Fig. 1915.)

Mass mutation consists in the production of unexpectedly large numbers of mutations, in some cases amounting to 100 per cent of the progeny.

The phenomenon is known in two species of *Oenothera*: *O. Reynoldsii,* in which it was first described, and *O. pratincola,* the subject of this paper. Four characteristic mutations have been found: mut. *formosa,* mut. *albicans,* mut *revoluta* and mut. *setacea.* Beside these some other less characteristic mutations were observed.

The phenomenon cannot be explained by Heribert-Nilsson's Mendelian hypothesis.

The mutations of the mass mutant strain of *O. pratincola* are: A) common to other strains of the species; the non-characteristic mutations are not produced in unexpected numbers and show mass mutability superposed upon their ordinary behavior in heredity; B) characteristic of the mass mutant strain.

The characteristic mutations are constant in that they do not throw the type form of the species, but, except in the case of the most reduced member of the group, are themselves highly mutable.

As far as tested, the characteristic mutations adhere to the following scheme of inheritance:

mutation × mutation ——> mutation.
mutant × parent ——> mutation.
parent × mutation ——> parent.

They belong to a group with certain structural characters in common but they do not seem to form a linear reduction series.

They seem to result from the mutative modification in the female gametes of factors which have no counterparts in the male gametes.

Mass mutation is associated with a high degree of sterility, which manifests itself in the production of a greatly reduced number of seeds or in the production of many empty seeds.

Jongmans.

Kormos, T., Postglaziale Holzkohlenreste aus der Felsnische Pilisszántó. (Mitt. Jahrb. kgl. Ungar. geol. Reichsanstalt. XXIII. 6. p. 518—519. Budapest, 1916.)

Die Felsnische (Höhle) liegt im triadischen Dachsteinkalk des Felsrückens am S.O.-Fusse des Pilis-Berges bei Budapest, 423 m hoch gelegen. Die aus dem oberen Diluvium gesammelten Stücke sind sehr klein, bröckelig, die aus dem mittleren und unteren fester. Hollendonner bestimmte die Reste, die durchwegs Aeste waren. Im unteren Diluvium konnte man nachweisen: eine *Conifere, Ulmus, Quercus, Fraxinus,* aus dem mittleren auch eine *Conifere* und *Quercus.* Die Art konnte nicht ermittelt werden.

Matouschek (Wien).

Sinnot, E. and **J. Bailey.** The evolution of herbaceous plants and its bearing on certain problems of geology and climatology. (Journ. Geol. Chicago. XXIII. 4. p. 289—306. 1915.)

Die ältesten fossilen Angiospermen sind Holzpflanzen; die Stauden und Kräuter haben sich später entwickelt, u. zw. während der Tertiärzeit, da sich damals die Jahreszeiten mit warmen Sommer- und kalten Wintertemperaturen ausbildeten. Also sind die Stauden und Kräuter Anpassungen an den Jahreszeitenwechsel. Ungünstige Jahreszeiten können diese wegen der Wurzelstöcke besser überstehen als die holzartigen Gewächse. Die Umbildung soll nach Verf. in der nördl.-gemässigten Zone vor sich gegangen sein, von wo sie auf die Tropen und die südliche Halbkugel sich ausgebreitet haben. Dies geht aus den Mengenverhältnissen hervor. Die Endemismen in den Tropen und Inseln der südlichen Halbkugel sind zumeist Holzpflanzen, Relikte der alten Tertiärflora. Inseln, die an

krautigen Pflanzen arm sind, sind schon seit langer Zeit isoliert; Inseln, die reich an ihnen sind, sind jüngeren Ursprungs.

Matouschek (Wien).

Bruderlein, J., La panification du Maïs. (Univ. Genève. Inst. Bot. Chodat. Sér. 9. f. I. p. 29—31. 1915.)

Chodat bemerkte, dass Maismehl nach Einwirkung von *Mucor Praini* backfähiger wird. Verf. untersuchte die Wirkung von 7 diversen *Mucor*-Arten; die erzielte Alkoholmenge ist für jede Art konstant. Aber dieser Faktor hat keine Beziehung für die günstige Wirkung des Pilzes auf die Mehlbackfähigkeit. Beste Resultate erzielte er bei der Bereitung des Sauerteigs mit einem Gemisch von Hefe, *Bacillus levans* und *Mucor Praini* oder *M. genevensis*.

Matouschek (Wien).

Kursanov, L., Sur les Uredinées à écidies réiterées. (Journ. Soc. bot. Russie. I. N⁰ 1—2. p. 76—91. 1916. Texte russe avec résumé français.)

On connait quelques espèces d'*Uromyces* et de *Puccinia,* qui ne développent après infection par écidiospores non pas directement l'urédo ou le téleuto mais de nouveau les écidies. D'après Dietel ce sont les formes opsis, dont le mycélium ne hiverne pas dans l'hôte. L'auteur a suivi la cytologie de l'évolution de deux de ces formes.

Dans la génération primaire l'*Uromyces Scrophulariae,* résultant d'une infection du *Scrophularia nodosa* par des sporidies, développe d'abord des spermogonies et des écidies ensuite; un peu plus tard des téleutospores. (Il faut remarquer que le développement de ces derniers commence avant que les premières écidies s'ouvrent). Le mycélium de cette génération se compose principalement de hyphes binucléées et en partie de hyphes uninucléées. Les spermogonies sont presque exclusivement composées de ces derniers, tandis que les écidies sont formées de deux espèces d'hyphes; prédominent tantôt les uns, tantôt les autres. La plupart des écidiospores se développe des hyphes binucléées qui croissent d'en bas dans le primordium et forment aux bouts des grappes de courts rameaux qui se transforment directement en cellules basales d'écidiospores. En outre au même endroit et en nombre bien inférieur se développent les cellules basales primaires, résultant de l'union isogamique de deux cellules fertiles voisines et donnant, comme les précédentes, des chaînes d'écidiospores. Enfin les téleutospores sont formés exclusivement par les hyphes binucléées.

On obtient par infection d'écidiospore les génération secondaire, écidies et téleutospores, mais pas de spermogonies. Dans ces cas: toutes les cellules étaient naturellement binucléées.

Des phénomènes analogues ont été observés dans les générations primaires et secondaires de l'*Uromyces Behenis*.

L. Kursanov.

Lange, J. E., *Boletus purpureus* Fr. (Medd. fra Foreningen til Svampekundskaben. Fremme. I. p. 117—118. 1 Fig. Kóbenhavn, 1915.)

The above species, which was found by the author in 1917, is described and figured. Ö. Winge (Copenhagen).

Lange, J. E., Studies in the Agarics of Denmark. Part II. *Amanita. Lepiota. Coprinus.* (Dansk. Bot. Arkiv. II. N⁰ 3. 50 pp. 1 Textfig. 2 Plates. 1915.)

As Part I of this publication contained the authors studies in *Mycena,* so he deals here with the 3 above named genera, giving a series of critical surveys, based on personal observations through many years. The paper, which intends to serve as a letter-press to the authors „Illustrations of the Agarics of Denmark", a collection of more than 700 water-colour drawings, belonging to the Library of the Botanical Garden of Copenhagen, has a key to each of the genera, based on both macro- and microscopical characters. Most of the descriptions are, it is a matter of regret, only additional or critical notes to the descriptions of others, especially concerning the microscopical qualities of the fungi. Full descriptions giving the authors whole interpretation of the species would have been still more valuable.

14 *Amanitas,* 31 *Lepiotas* and 33 *Coprini* are dealt with, and besides several varieties.

New are: *Lepiota gracilis* Quél. v. *laevigata* var. nov. *L. Cortinarius* sp. n., *Coprinus cortinatus* sp. n., *C. Hansenii* sp. n. and *C. bisporus* sp. n.

A very fine coloured plate with 12 species of *Lepiota* and *Coprinus* and another in black complete the paper.

Ö. Winge (Copenhagen).

Lendner, A., Sur le *Pestalozzia viticola* Cavara et une nouvelle espèce de *Lophionema.* (Bull. soc. bot. Genève. VIII. 4/6. 2me sér. p. 181—185. 3 fig. 1916.)

Pestalozzia Briardi n. sp. (identisch mit *P. monochaetoidea* var. *affinis* Sacc. et Briand 1886) verursacht zu Satigny auf der Basis der Weinrebenzweige eine braune Färbung. — *Lophionema Chodati* n. sp. lebt im Zapfen von *Pinus silvestris.* Matouschek (Wien).

Vincens, F., Sur une Verticilliacée à affinités douteuses. (C. R. Ac. Sc. Paris. CLXIII. p. 489—491. 30 octobre 1916.)

Dans la famille des Verticilliacées, la section *Euverticillieae* se distingue de la section *Gloioverticilliae* par les conidies libres, en chapelets dans le genre *Spicaria,* isolées d'après la définition dans le genre *Verticillium.* Dans le genre *Beauveria* Vuillemin, plusieurs conidies se forment successivement suivant le mode sympodique. Sur une moisissure des *Russula* et *Collybia,* l'auteur a reconnu la disposition sympodique; mais les stérigmates sont parfois si courts et si rapprochés que les spores arrivent à former un capitule dense. Il estime que la pluralité des conidies et leur disposition sympodique ne suffisent pas à justifier le démembrement du genre *Verticillium.* P. Vuillemin.

Wakefield, Miss **E. M., G. Massee** und **A. D. Cotton.** Neucaledonische Pilze, in: **Hans Schinz,** Alabastra diversa. (Mitt. bot. Mus. Univ. Zürich. LXXVI. 2, in Vierteljahrsschr. Naturf. Ges. Zürich. LXI. p. 628—631. 31. XII. 1916; als Separatabdruck ausgegeben am 15. XII. 1916.)

Neue Arten aus der botanischen Ausbeute der Expedition der Herren Fritz Sarasin und Jean Roux (Basel) nach Neu-Ca

ledonien und den Loyalty-Inseln: *Amanita pumila* Mass. sp. nov. (aff. *A. cinerea* Bres.; Yaté), *Marasmius sulcatus* Mass. sp. nov. (aff. *M. coracipes* Berk. et Curt.; Houailou Valley, N° 175), *Fa. volus Sarasinii* Wakefield sp. nov. (aff. *F. Sprucei* Berk.; Hienghiene, N° 65), *Stereum* (*Lloydella*) *umbrino-alutaceum* Wakefield sp. nov. (aff. *St. percome* B. et Br.; Gulf on Prony, N° 195), *Clavaria Sarasinii* Cotton sp. nov. (aff. *C. Kunzei* v. *C. stricta*; Lifou (Loyalty Islands, N° 251), *Lachnocladium neglectum* Mass. sp. nov. (aff. *L. semivestitum* Berk.; La Foa, N° 173), *Dacryomitra tenuis* Wakefield sp. nov. (aff. *D. Cudonia* Bres.; Lifou (Loyalty Islands), *Le Ratia coccinea* Mass. et Wakefield sp. nov. (aff. *L. R. similis*; Lifou (Loyalty Islands), N° 248), *Xylaria hirtella* Wakefield sp. nov. (aff. *X. bataanensis* P. Henn.; loc.? N° 144, 221), *Nectria nigro-ostiolata* Wakefield sp. nov. (aff. *N. sanguinea*; Loyalty Islands, N° 146).

A. Thellung (Zürich).

Winge, Ö., Er Stikkelsbaerdraeberen giftig? [Is the Gooseberry-Mildew poisonous?]. (Medd. fra Foreningen til Svampekundskabens Fremme. I. 108—111. København, 1915.)

Against the supposition that gooseberry, attacked by the mildew, *Sphaerotheca mors uvae,* should be dangerously poisonous for man, the author tries to prove the improbability hereof.

Ö. Winge (Copenhagen).

Winge, Ö., Flueskimmelsvampen. [The House-Fly Pest]. (Medd. fra Foreningen til Svampekundskabens Fremme. I. p. 51—57. Kóbenhavn, 1914.)

The house-fly pest (*Empusa muscae*) has been kept in culture on living flies for two months during Nov. and Dec. The time of incubation was 7 days. The author did not succeed in growing the fungus on artificial substrata. It is thought that the pest might be useful in the control of the house-fly, and a scheme is mapped out.

Ö. Winge (Copenhagen).

Winge, Ö., Tre sjaeldne Rórhat-Arter. [Three rare *Boletus*]. (Medd. fra Foreningen til Svampekundskabens Fremme. I. p. 100—002. 3 Fig. Kóbenhavn, 1915.)

The three species, *Boletus viscidus* Fr., *B. appendiculatus* Fr. and *B. castaneus* Fr. are described and figured. The two first named are new for Denmark. Ö. Winge (Copenhagen).

Maire, R., Maladies des végétaux ligneux de l'Afrique du Nord. (Bull. Stat. Recherches forestières du Nord de l'Afrique. I. p. 121—130. Pl. VIII. fig. 1—4. 1916.)

1. Les faux balais de sorcière de l'Arbousier. — Les pousses envahies par *Exobasidium Unedonis* n. sp. forment dès le mois de février, dans les forêts d'Algérie, des touffes d'un vert pâle rougeâtre. Ce n'est pas un vrai balai de sorcière, car les pousses sont en nombre normal et ne se ramifient pas; elles sont seulement déformées et plus précoces que les pousses normales. Les jeunes pousses envahies meurent avant que les pousses saines aient pris leur dimension définitive. Toutefois elles ne tombent qu'au cours de l'hiver suivant.

Certaines touffes plus rabougries portent, outre l'*Exobasidium*, un second parasite, *Gloeosporium Conviva* n. sp. qui gêne le développement de son précurseur.

Les pousses nécrosées et persistantes portent fréquemment un fin pointillé noir produit par les pycnides d'un saprophyte voisin du *Phoma Rhododendri*. Maire le décrit sous le nom de *Phoma Arbuti* n. sp. sans décider s'il représente l'état de maturité de conceptacles aperçus en continuité avec le mycélium du *Gloeosporium*.

2. La rouille du *Rosa sempervirens*. — *Phragmidium Rosae-sempervirentis* n. sp., voisin d'une espèce américaine, *P. speciosum* (Fr.) Cooke, dont il diffère par les téleutospores granuleuses et les coeoma plus petits. Pas d'uredo. P. Vuillemin.

Manganaro, A., Apuntes cecidiológicos. (Anales Mus. Nat. Hist. Natural Buenos Aires. XXVI. p. 145—150. 1915.)

Ein wertvoller Beitrag zur Kenntnis argentinischer Gallen. Folgende Helmintocecidien werden als neu beschrieben: Gallen auf den Blättern von *Plantago myosurus*, auf Blatt und Stengel von *Gnaphalium* sp., auf Zweigen von *Aeschinomene montevideensis* Vog., dann die Galle der Diptere *Austrolanthia Spegazzinii* Breth. auf *Euphorbia serpens* Kth., ein Coleopterocecidium auf *Portulaca oleracea* L., Blatteinrollungen einer Hemiptere auf *Polygonum punctatum* Ell. und verwandter Arten, Hemipterocecidien an *Schinus dependens* Ort, Acarocecidien an den Zweigspitzen von *Jodina rhombifolia* Hk. et Arn. und drei Mycocecidien: von *Ravendia papillosa* Speg. auf den Zweigen von *Albizzia julibrizzin* Dur., von *Ravendia platensis* Speg. auf *Erythrina crista galli* L. und von *Uromyces novissimus* Speg. auf den Kurbisarten *Cayoponia podantha* Cogn. und *C. ficifolia* Cogn. Matouschek (Wien).

Moreillon, M., Seconde contribution ou catalogue des zoocécidies de la Suisse. (Bull. soc. Vaudoise sc. nat. LI. N° 190. p. 143—171. Lausanne, 1916.)

Eine Fortsetzung der vom Verf. im genannten Bulletin 1913, N° 181, p. 251—286 begonnenen Arbeit. Zusammen sind jetzt 358 Zoozecidien aus dem Gebiete bekannt. Neue Gallen sind in vorliegender Arbeit nicht genannt. Auf Houards-Werke wird bei jeder Galle hingewiesen. Tabellen erleichtern das Auffinden der befallenen Pflanzenart und der tierischen Erzeuger.

Matouschek (Wien).

Morton, F., Beiträge zur Kenntnis der Flora von Süddalmatien. (Oesterr. bot. Zeitschr. LXVI. 7/9. p. 263—266. 3 Fig. 1916.)

Die *Matthiola tristis* L. des italisch dalmatinischen Bezirkes gehört zur var. *italica* Conti, die durch graugrüne Färbung, einfachen, nicht verzweigten blattlosen Stamm und durch lineale, in Rosetten angeordnete Blätter gegenüber den übrigen Unterarten gut gekennzeichnet erscheint. (Fig.). *Hyoseris scabra* L. erscheint auf Kalkfelsen von Curzola oft in Zwergexemplare mit nur 1 Blüte und 14 mm Höhe. (Fig.). Matouschek (Wien).

Ostenfeld, C. H., Nogle Bemaerkninger om vore enaarige

Sonchus-Arter. [Some Remarks on our annual Species of *Sonchus*]. (Bot. Tidsskr. XXXIV. p. 343—346. 1917.)

The author has got seeds of *Sonchus oleraceus* L. from many different places and has grown them in the Botanical Gardens of Copenhagen. From his investigations it appears that plants of different origin (Denmark, England, Scotland, Ireland, Italy, Turkey, West-Indies, West-Australia and several botanical gardens) resemble each other very much. But nevertheless there are small differences which show that we have to do with a collective species. These differences are found as regards the leaves, the color of the corolla, the presence or absence of glandular hairs on the upper part of the stem and the peduncles and on the involucral leaves, and they may be combined in different ways; thus an exhaustive analysis would be a very troublesome task. From the different shape of the leaves we may distinguish the common form as var. *triangularis* Wallr., a rare form as var. *lacerus* (Willd.) Wallr. (grown from seeds collected near Queenstown, Ireland, and Lizard, Cornwall). A white-flowered form is var. *albescens* Neum. which is found both in var. *triangularis* and in var. *lacerus*. Intermediates (hybrids) between these forms are common.

As to the other annual species *S. asper* (L.) Hill, it has two much different forms according to the leaves, viz: α, *inermis* Bischoff and β, *pungens* Bischoff, which both breed true.

The many species of this group described from tropical countries in earlier times are all to be included under the two here mentioned collective species and have no doubt come to the Tropics with the colonists. C. H. Ostenfeld.

Ostenfeld, C. H., Skildringer af Vest-Australiens Natur, saerligt dets Plantevaekst. [Descriptions of the Nature of West-Australia, especially of its Plant life]. (Geogr. Tidskr. XXIII. p. 35—46, 132—148. 30 figs. Photos and maps. København, 1915.)

A popular description of the geography and vegetation of West Australia based upon a visit paid by the author in 1914.)

As to the vegetation of the State three regions are admitted: 1. The tropical West-Australia: savanne forest characterized a. o. by *Adansonia Gregorii, Gyrocarpus, Eucalypti* etc.; savannes: mangroves with *Avicennia* and *Rhizophora*'s, etc. 2. The Interior and the north-western corner of the state (*Eremaea*): Mulga scrub with *Acacia*'s etc.; Eremaean *Eucalyptus* forest with *E. salmonophloria* etc.; dune formation; salsolaceous coastal formation, etc. 3. The south-western part of the country: rich forest vegetation of many belts characterized by different *Eucalypti,* as admirably described by L. Diels in 1906. The most luxuriant belt is that in which the giant Karri (*Eucalyptus diversicolor*) dominates; it requires a high annual rainfall. C. H. Ostenfeld.

Petersen, O. G., Traeer og Buske. Diagnoser til dansk Frilands-Traevaekst. [Trees and shrubs. Diagnoses of Danish open land trees]. (1517 pp. 248 figs. København oz Kristiania, 1916.)

The book contains more than 1500 descriptions of trees and

shrubs able to grow in Denmark. They are arranged in systematic order and accompanied by many original figures. A key is given to each genus, and the descriptions are rather broad, so that identifications are not difficult. The author does not conceal shortcomings in our knowledge on many forms, especially hybrids.

Ove Paulsen.

Praeger, R. Lloyd Some new species of *Sedum*. (Journ. Bot. LV. N⁰ 650. p. 38—44. Febr. 1917.)

The following new species have been diagnosed in the course of a revision of the Genus *Sedum*, as found in cultivation: *S. longicaule, S. purpureo-viride, S. pseudospectabile, S. cauticolum, S. Ellacombianum, S. pyramidale, S. griseum, S. amecamecanum.*

E. M. Cotton.

Rendle, A. B., New species of *Urera* from Tropical Africa. (Journ. Bot. LIV. N⁰ 648. p. 368—370. Dec. 1916.)

The following new species have been described in the course of elaborating the *Urticaceae* for the Flora of Tropical Africa: *Urera Batesii, U. Talbotii, U. Elliotti, U. cuneata, U. usambarensis.*

E. M. Cotton.

Salmon, C. E., Notes on *Statice*. XIII. *S. asterotricha*, sp. nov. (Journ. Bot LV. N⁰ 650. p. 33 and 34. Plate 546. Feb. 1917.)

The species here described was formerly included in *S. Gmelini*, from which it may be distinguished by its stellate pubescence and narrow long petioled leaves, — *S. Gmelini* being a glabrous plant with broad short-petioled leaves. There are, besides, the more minute differentiating features of calyx, bracts etc.

E. M. Cotton.

Schmidt, J., Flora of Koh Chang. Contributions to the knowledge of the vegetation in the Gulf of Siam. Part X. (Conclusion. (Bot. Tidsskr. XXXII. p. 309—370. 1916)

This concluding part of Johs. Schmidt's Flora of Koh Chang (Siam) contains the following contributions:

Ochnaceae by G. B. Clarke. — *Loganiaceae* by E. Gilg; new species: *Strychnos Schmidtii* Gilg, *S. myrioneura* Gilg. — *Euphorbiaceae* by F. Pax. — *Sapindaceae* by L. Radlkofer. — *Asclepiadaceae* by R. Schlechter: *Toxocarpus siamensis* Schltr., *Tylophora Schmidtii* Schltr. — Various families by C. H. Ostenfeld. — Various families by O. Warburg. — Various families by W. G. Craib: *Mangifera siamensis* Warb., *Barringtonia Schmidtii* Warb., *Diospyros Schmidtii* Craib. — Various families by various botanists. — *Filices*, revised by Carl Christensen (the ferns were determined by H. Christ in 1900, but a thorough revision was found necessary): *Alsophila kohchangensis* C. Chr., *Leptochilus sculpturatus* (Fée) C. Chr. var. *undulatus* C. Chr., *Asplenium Schmidtii* C. Chr., *Adiantum fragiliforme* C. Chr., *Gleichenia linearis* (Burm.) Clarke var. *subpectinata* (Christ) C. Chr.; *Angiopteris siamensis* C. Chr. — Additamenta: *Erycibe Schmidtii* Craib. — From the editor's concluding remarks it appears that the Flora of Koh Chang contains 512 species of phanerogams (57 new), 72 pteridophyta (6 new), 61

mosses (23 new), 669 algae (38 new), 95 lichens (39 new) and 91 fungi (31 new).

An alphabetical index to families, genera and new species of all ten parts of the Flora of Koh Chang finishes the paper.

C. H. Ostenfeld.

Schulz, A., Die im Saalebezirke wildwachsenden strauchigen Sauerkirschen. [3. Mitt.]. (Mitt. Thüring. bot. Ver. XXXIII. p. 24—28. Weimar, 1916.)

Verf. befasst sich mit den von G. von Beck in dem Werke: Icones florae Germanicae et Helveticae simul terrarum adjac. etc. angegebenen Deutungen über deutsche und andersortige Sauerkirschen und kommt zu dem Schlusse: Die Formen von *Prunus fruticosa* können nicht nach morphologischen Gesichtspunkte sondern nur geographisch angeordnet werden. Die Ostheimer Kirsche wird z.B. als eine strauchige Varietät der *Prunus Cerasus* hingestellt (*frutescens* Neilr. 1846), Verf. hält diese Kirsche aber für eine Kulturformengruppe von *Prunus fruticosa,* wahrscheinlich aus mehreren Varietäten dieser Art gezüchtet! Matouschek (Wien).

Seidelin, A., Vegetationen i nogle Vandhuller i Nordvendsyssel. [The vegetation in some pools in northern Vendsyssel]. (Bot. Tidsskr. XXXIII. 6. p. 372—378. 1 table. Köbenhavn, 1914.)

Description of vegetation and enumeration of species from some small water-pools in northern Jutland. The pools are rather new and originate from turf-cutting; they have no connection with running water. Of the different means of introduction birds seem to have played the greatest rôle.

48 per cent of the species were Hemicryptophytes.

Ove Paulsen.

Sylvén, N., Våra skogars markvegetation och dess samband med markboniteten. I. [Die Bodenvegetation der schwedischen Wälder und ihre Beziehnngen zur Bodenbonität. I.]. (Einleitender Vortrag in der Jahresversamlung des schwedischen Waldpflegevereins am 17. März 1914. — Skogsvårdsföreningens Tidskr. p. 493—517. 15 Textabb. 1914.)

Nach einer übersichtlichen Besprechung einiger für die vorliegende Frage wichtigen schwedischen Arbeiten von A. M. Nilsson, Tiberg und Hesselman erörtert Verf. ausführlich Cajander's im J. 1910 erschienene Abhandlung „Ueber Waldtypen", worin die Bedeutung des Studiums der Bodenvegetation für die Beantwortung der Frage nach der Bonität des Bodens kräftig hervorgehoben wird.

In den durch die Kultur beeinflussten Wäldern wird, wie Cajander bemerkt, die Bodenvegetation am wenigsten verändert und ist daher für den Standort am charakteristischsten, während die Typen des Baumbestandes sehr verschieden sein können.

Die von Cajander dargelegten Verhältnisse der finnischen Wälder sind nach Verf. auch für Schweden zutreffend. So können namentlich innerhalb des moosreichen Nadelwaldtypus je nach den charakteristischen Reisern auch dort drei Untertypen aufge-

stellt werden, von denen nach den vom Verf. in Dalarne gemachten Beobachtungen der *Calluna*-reiche die geringste Holzproduktion des Baumbestandes zeigt, während in den *Vaccinium*-reichen die Produktion grösser und in den *Myrtillus*-reichen am grössten ist. Besser als in den flechtenreichen und den moosreichen Nadelwäldern ist die Holzproduktion in dem kräuterreichen Waldtypus. — Die Fichte stellt bedeutend höhere Forderungen an die Bodenbonität als die Kiefer; die Fichtenwälder zeigen daher den besten Wuchs in dem kalkreichen Waldboden.

Die Verschiedenheiten der Bonität treten vielleicht am deutlichsten in der Bodenvegetation der Laubwäldern, vor allem in den Buchenwäldern hervor. *Aira flexuosa* und *Majanthemum* sind für torfartigen Buchenwaldböden charakteristisch; *Anemone nemorosa* und *Asperula odorata* zeigen eine bessere Bodenbonität an; noch besser ist diese, wenn *Mercurialis perennis* hinzutritt; von einem weiteren Fortschritt zeugen *Corydalis cava* u.a.; Bodenvegetation mit vorwiegender *Oxalis acetosella* deutet auf erstklassigen Buchenwald.

Von der forstlichen Versuchsanstalt Schwedens ist schon seit lange eine nähere Untersuchung der Waldtypen geplant worden. Bezüglich der Bodenbonität sind hierbei, eben auf Grundlage eingehender Studien über die Bodenvegetation der verschiedenen Typen, wichtige Ergebnisse nach Verf. zu erwarten.

Die Abbildungen zeigen verschiedene Typen von Bodenvegetation in schwedischen Nadelwäldern und Laubwäldern.

Grevillius (Kempen a. Rh.).

Wernham, H. F., The genus *Amaralia.* (Journ. Bot. LV. N° 649. p. 1—9. Jan. 1917.)

The author considers that the plant, previously known under the names of *Gardenia* and *Sherbournia* is worthy of separate generic rank, if only on the strength of the calyx-character. The genus *Amaralia* has also been confused with *Randia.* It is confined almost entirely to Western Tropical Africa, Upper and Lower Guinea from Sierra Leone through the various districts along the coast to Angola. The exceptions being provided by *A. heinsioides* from Central Africa and *A. penduliflora* from East Africa.

A systematic account of the species of *Amaralia* is given; prefaced by a key. New species and combinations are as follows: *A penduliflora,* nom. nov. (= *Randia penduliflora,* K. Schum.), *A. Buntingii,* sp. nov., *A. Sherbourniae,* nom. nov. (= *Sherbournia foliosa,* G. Don; pro parte *Amaralia bignoniaeflora,* Welw. ex Hurn; pro parte *A. calycina,* K. Schum.), *A. heinsioides,* sp. nov., *A. Huana,* nom. nov. (= *Sherbournia calycina,* Hua), *H. Millenii,* sp. nov., *A. Zenkeri,* nom. nov. (= *Sherbournia Zenkerii,* Hua, pro parte *Amaralia calycina,* K. Schum.), *A. micrantha,* sp. nov. The paper also includes a description and key of the Amaralioid species of *Randia,* in the course of which the following novelties occur; *Randia amaraliocarpa,* sp. nov., *R. curvipes,* sp. nov., *R. halophylla,* sp. nov.

E. M. Cotton.

Ausgegeben: 30 October 1917.

Verlag von Gustav Fischer in Jena.
Buchdruckerei A. W. Sijthoff in Leiden.