

## ABSTRACTS FROM LITERATURE

Compiled by A. H. G. ALSTON.

Thanks are due to D. E. Allen, E. B. Bangerter, J. G. Dony, K. J. Hodges, D. H. Kent, N. Y. Sandwith, N. D. Simpson, A. E. Wade and D. P. Young for their help.

## SYSTEMATIC, Etc.

32/10×12. *FUMARIA ALBERTI* Rouy & Foucaud f. *Bergerebae* Bouchard. Bouchard, J., 1949, Observations sur un Fumeterre de nature hybride voisin du ×*F. Alberti* Rouy & Foucaud, *Bull. Soc. France. Exch. Plant. Pl. Vasc.*, **3**, 17. A putative hybrid between *F. Vaillantii* var. *Chavini* Reut. and *F. officinalis* f. *Wirtgeni* Hausskn. was found at Bourberain (Côte d'Or).—[A.H.G.A.]

35/1(2). *NASTURTIUM MICROPHYLLUM* Boenn. ex Rehb. Hylander, N., 1950, *Rorippa microphylla* i Sverige och Danmark, *Bot. Notiser*, **1950**, 1-13. The author states that all the Danish material belongs to *R. microphylla* (Boenn.) Hyl. except a single specimen from Varde in Jutland, while in Sweden *R. Nasturtium-aquaticum* (L.) Hayek is the more common species. The hybrid has been found in Gotland, where it is thought to be introduced.—[A.H.G.A.]

54/14. *BRASSICA KABER* (DC.) Wheeler. Shinnars, A. H., 1950, *Brassica Kaber* var. *stricta*, *Rhodora*, **52**, 127-128. *B. Kaber* var. *stricta* (Čelak.) Shinnars is based on *Sinapis arvensis* var. *stricta* Čelak. The variety has adpressed pods as in *B. nigra*, but with a long tetragonally subulate beak and 3-ribbed valves.—[A.H.G.A.]

96. *SILENE*. Haslip, M. B., 1951, Some cytoecological aspects in the evolution of certain species of the plant genus *Silene*, *Ohio Journ. Sci.*, **51**, 62-70. *S. latifolia* and *S. maritima* were cultivated and found to be reciprocally cross-fertile, the resulting F1 hybrids being fertile. These two diploids, however, will not form fertile hybrids with American polyploid species.—[D.E.A.]

96. *SILENE*. Marsden-Jones, E. M., & Turrill, W. B., 1950. Researches on *Silene maritima* and *S. vulgaris*, *Kew Bull.*, **32**, 35-123; **33**, 123-127. In the first paper are described the results of genetical studies on material of *S. glareosa* and *S. alpina* from the French Alps. Stock plants and the results of selfings and intrataxic crossings are described. Crosses were also made between both of these taxa and British *S. maritima* and *S. vulgaris* and Norwegian *S. vulgaris*. In the second paper seedlings representative of a number of the families (selfings and crossings) that have been considered in the series were subjected to comparative study. Two main cotyledon types are distinguishable. Generally speaking the narrow type with more gradual constriction below is characteristic of *S. maritima* and of some stocks of *S. glareosa*.

The broader type with abrupt constriction below is characteristic of *S. vulgaris* and '*S. alpina*.—[K.J.H.]

98. MELANDRIUM. Sandwith, N. Y., 1948-49, The Glabrous White Campion, *The Naturalist*, **1948**, April-June, 45-46; **1949**, April-June, 47. A glabrous variety of *M. album* has been collected on waste ground near London and in Northants. The specimens are completely glabrous in all parts, which are shining as if varnished, and coloured with deep purple anthocyanin, especially on stems, bracts and calyces, which are also sticky owing to the presence of minute white papillae. The colour of the petals is the normal white. In the first article the author gives this plant the name *M. album* var. *glabrum* (De Vries) comb. nov., based on *Lychnis vespertina* var. *glabra* De Vries, a plant which occurred in Holland. In the second article he points out, on the evidence of information received from Dr. N. Hylander, that the earliest name for the British glabrous White Campion is *M. album* (Mill.) Garcke var. *viscosum* (F. Aresch.) Ahlfr., which described a plant found only once at Lund, Sweden. It is suggested, in the first of the two articles, that the correct name for the glabrous Red Campion (*Lychnis Preslii* Sekera of the *British Plant List*) is *Melandrium dioicum* (L.) Coss. et Germ. var. *glaberrimum* (Neilr.) Schinz et Thell.—[N.Y.S.]

100. CERASTIUM. Brett, O. E., 1950, Chromosome numbers of Cerastium species, *Nature*, **166**, 446-447. The following counts are made on root-tips of young seedlings (previously reported figures on continental material are given in parentheses): *C. vulgatum* (Sussex)  $2n=136$  (144, 126), *C. alpinum* (Auchlean, Inverness)  $2n=72$  (72, 108), *C. "alpinum lanatum"* (cult.)  $2n=72$  (108), *C. arvense* (Austria)  $2n=38$  (72), *C. perfoliatum* (cult.)  $2n=38$ . The occasional presence of individuals with  $2n=108$  in *C. alpinum* is ascribed to chromosome doubling from  $2n=72$ . Probably the basic number for this section of the genus is 19, in addition to the previously-known figure of 9.—[D.P.Y.]

100/11. CERASTIUM CERASTOIDES (L.) Britton. Favarger, C., & Söllner, R., 1949, Nombres chromosomiques et Structure du Noyau de quelques Cerastium des Alpes, *Ber. Schweiz. Bot. Ges.*, **59**, 87-90. The number  $2n=38$  was found in material from two different localities in the Alps. Mention is made of the fact that T. W. Böcher with difficulty found  $2n=40$  in Greenland material, and it is suggested that northern material be recounted.—[D.E.A.]

101. STELLARIA. Morton, J. K., 1951, Notes on Some Chickweeds from the North-east, *Vasculum*, **36**, 6-7. *S. apetala* Ucria in Northern England is characteristic of fixed dunes on the coast where rabbits are plentiful. It seems to need soil with a fairly high nitrogen content and stable ground where competition is low. Most herbarium material named "*S. Boracana* Jord." turns out to be merely a small form of *S. media* with reduced flowers, quite distinct from the true *S. apetala* of coastal regions which retains its essential characters when grown from seed. *S. neglecta* Weihe appears to be uncommon in the North-east; it only has half as many chromosomes as *S. media*. Variants of the latter

occur, identical with *S. neglecta* in appearance and only separable from it by having 5 stamens instead of 10 and possibly also by differences in the seed.—[D.E.A.]

103/3. *SAGINA INTERMEDIA* Fenzl. Gams, H., 1951, *Bull. Soc. Bot. France*, **98**, 77; 99; 101. This minute species, hitherto only known from northern Europe, was found in August 1950 in three localities in the Western Alps between 2540 and 3041 metres. The Alpine plant is identical with specimens received from Lapland.—[D.E.A.]

150/1. *SAROTHAMNUS SCOPARIUS* (L.) Wimm. ex Koch. Castro, D., 1949, *Novos Números de Cromosomas para o Género Cytisus L.*, *Agron. Lusit.*, **11**, 85-89. The chromosome number of both the type and its var. *Andreanus* was found to be  $2n=48$ .—[D.E.A.]

153/3. *MEDICAGO SATIVA* L. Bolton, J. L., and Greenshields, J. E. R., 1950, A diploid form of *Medicago sativa* L., *Science*, **112**, 275-277. A sample of *M. sativa* seed from the Botanical Gardens at Erevan, Armenia (U.S.S.R.), and sown at Saskatoon (Canada) in 1949, gave plants with purple flowers and glabrescent pods with 3-4 coils, but in general size and appearance resembling *M. falcata*. Root-tip smears showed  $2n = 16$ ; normal *M. sativa* has  $2n = 32$ , and is considered to be an autotetraploid, so that the present plant is a diploid. It was highly self-sterile and highly cross-sterile when crossed to 32-chromosome forms of *M. sativa* and *falcata*, but showed normal fertility when intercrossed with 16-chromosome forms of *M. falcata*.—[D.P.Y.]

178/6. *LATHYRUS PRATENSIS* L. Crane, M. B. (Ed.), 1951, *Cytology, Report John Innes Hort. Inst.*, **1950**, 12. All species of *Lathyrus* have hitherto been thought to be diploid ( $x = 7$ ) except *L. venosus* ( $4x$ ) and *L. palustris* ( $6x$ ). It has now been found that the British forms of *L. pratensis* are all autotetraploid, though botanic garden material has always been found to be diploid.—[D.E.A.]

185. *RUBUS*. Christen, H. R., 1950, Untersuchungen über die Embryologie pseudogamer und sexueller Rubusarten, *Ber. Schweiz. Bot. Ges.*, **60**, 153-198.

185. *RUBUS*. Beijerinck, W., and ter Pelkwijk, A. J. (1950). De voornaamste Bramen in het Drense district, *De Levende Natuur*, **53**, 191-196, 211-216. The author gives a useful key to the *Rubus* species of his area.—[A.H.G.A.]

185. *RUBUS*. Rilstone, F., 1950, Some Cornish Rubi, *J. Linn. Soc. (Bot.)*, **53**, 354, 413-421. Twelve brambles which occur west of Dartmoor and which appear to be distinct species are described and named. Nine of these have been under continuous observation, and the natural occurrence of seedlings true to type has been confirmed.—[K.J.H.]

[A paper by Mr. Rilstone on these and other Cornish Rubi will appear in *Watsonia* in the near future.—Ed.]

189. *POTENTILLA*. Rutishauser, A., 1949, Untersuchungen über Pseudogamie und Sexualität einiger Potentillen, *Ber. Schweiz. Bot. Ges.*, **59**, 409-419.

194. ROSA. Darlington, C. D. (Ed.), 1951, Rose Species, *Report John Innes Hort. Inst.*, 1950, 19-20. Formerly nearly all species and varieties of this genus were supposed to have multiples of 7 chromosomes, but amongst native British races several plants have been found with the unbalanced numbers of 34, 37 and 39, instead of 35. According to Wolley-Dod's revision, there are five native species which are supposed to have arisen as hybrids between *Caninae* (Section *Villosae*) and the tetraploid *R. spinosissima*. The *Caninae* are mostly pentaploids which produce tetraploid eggs and haploid pollen grains. In reciprocal crosses the results of their hybridization are therefore quite different. *R. Wilsoni* has now been found to have arisen from a cross between a pentaploid member of the *Caninae* complex and an unrelated tetraploid as female and male parents respectively.—[D.E.A.]

194. ROSA. Flora, W. S., 1950, Pollen condition in some species and hybrids of Rosa with a consideration of associated phylogenetic factors, *Virginia Journ. Sci.*, 1, 11-59. 95 species and about 55 variants of roses were analysed for percentage of normal pollen during a five-year period. This percentage decreased with the increase in chromosome number in the diploid, tetraploid, pentaploid and hexaploid groups. The single octoploid species investigated was high in percentage of normal pollen, the triploid forms very low. Broad differences in the percentage of normal pollen according to the geographical origin of the various species was noted. The author thinks that the polyploid species have originated from forms with lower chromosome numbers, contrary to Hurst's theory of the evolution of *Rosa* species by descent from an extinct hypothetical decaploid species by the loss of chromosome sets. The centre of origin of the genus is postulated as Eastern Asia, and the possible distribution and evolution of the genus are outlined.—[D.E.A.]

194. ROSA. Fagerlind, F., 1948, Compatibility, Eu- and pseudo-incompatibility in the genus *Rosa*, *Acta Hort. Berg.*, 15, 1-38. The author analyses the seed-production frequency of the species of *Rosa*, in inter-specific combinations. He is able to arrange the results in tables. It is remarkable that *R. arvensis* (diploid) produced no seeds when pollinated by *R. gallica* (tetraploid).—[A.H.G.A.]

195. MALUS. Lamb, J. G. D., 1951, The Apple in Ireland: its History and Varieties, *Econ. Proc. R. Dublin Soc.*, 4, 1-64.

195(2). SORBUS. Hedlund, T., 1948, Om uppkomsten av nya livstyper inom släktet *Sorbus* (Concerning the rise of new Biotypes within the genus *Sorbus*), *Bot. Not.*, 1948, 381-392. Two different kinds of biotypes exist in respect of seed formation, apomicts and those producing seed normally. In the case of the apomictic biotype pollen deposited on the stigma produces no fertilization, but is in varying degrees conducive to seed formation. In *S. intermedia* (Ehrh.) Pers. no seed may be formed unless pollen is supplied, for example, from *S. aucuparia* L., when the germination of the pollen grains on the stigma stimulates the formation of seed (stimulative parthenocarpy). In the

second kind of biotype seeds are formed as a result of fertilization, e.g. *S. aucuparia* L., *S. aria* (L.) Crantz, *S. torminalis* (L.) Crantz, and closely related species. Sexual formation in the type is evident from the fact that they can form hybrids with other species. The process of hybridization is in some degree dependent upon which of the two kinds of biotypes provides the pollen. If the pollen is derived from a species producing seed after normal fertilisation, and neither of the parents are hybrids, the hybrids produced are identical with one another, and their offspring segregate in the normal mendelian manner.

If the flowers of a biotype with sexual seed-formation are pollinated with pollen from an apomictic biotype, the resulting hybrids resemble each other to greater or lesser degree; this is especially observable in the crossing of *S. aucuparia* L. with pollen from *S. intermedia* (Ehrh.) Pers. An apomictic biotype is, genetically considered, a hybrid. It has been produced, furthermore, by a similar crossing and forms pollen grains which are genotypically unlike each other with respect to the qualities which were unlike in their parents. Their pollen grains also convey a dominant inheritance factor for apomictic seed-formation, for which reason the hybrids produced are themselves newly formed apomictic biotypes. When such biotypes arise in nature it is the environment and especially the character of the soil which determines their survival and spread. It is thus that biotypes with sexual seed-formation have in the genus *Sorbus* rendered possible a large number of new formations of biotypes showing apomixis.—[A.E.W.]

UMBELLIFERAE. Gardé, A. & N. M., 1949, Contribuição para o Estudo Cariológico da Família Umbelliferae, I, *Agron. Lusit.*, **11**, 91-140. All the chromosome numbers so far published for this family are listed, together with a few new counts. The results in the case of *Eryngium campestre* ( $n=14$ ) and *Seseli Libanotis* ( $n=9$ ) do not agree with those of previous workers. The possibility of the initial basic number of the family being  $n = 4$  is discussed. As a result of the new counts now made the possibility of  $n = 11$  being the actual basic number in the sub-family *Apiodeae* is reinforced.—[D.E.A.]

277. HERACLEUM. "ED," 1950, Cow Parsnip, *The Field*, **1950**, 262. A plant growing at Newton Reigny, near Penrith, is referred to as *Heracleum sphondylium*. It was 11 ft. 10 in. tall, the umbel had a diameter of 14 in., and the base of the stem was 10 in. in circumference. The plant has persisted over a number of years. Photo.

An editorial note states that there is a variety of the plant (*H. giganteum*) normally attaining 12 ft. in height.—[N.D.S.]

[Presumably *H. persicum*.—A.H.G.A.]

282/1. DAUCUS CAROTA L. Whitaker, T. W., 1949, A Note on the Cytology and Systematic Relationships of the Carrot, *Proc. Amer. Soc. Hort. Sci.*, **53**, 305-308. The chromosome number of 17 wild and cultivated forms was found to be  $2n = 18$ . Cytological observations suggest that neither polyploidy nor gross structural rearrangement of the chro-

mosomes is associated with the differentiation of the varieties and forms of *D. Carota*.—[D.E.A.]

296/4. GALIUM SAXATILE L. Fernald, M. L., 1950, *Galium hircynium*: a problem in interpreting the International Rules, *Rhodora*, **52**, 222. The spelling should be "hircynium" not "hercynium". The author does not think that Weigel made a typographic error.—[A.H.G.A.]

365. ACHILLEA. Clausen, J., Keck, D. D., and Hiesey, W. H., 1948, Experimental Studies on the Nature of Species. III. Environmental Responses of Climatic Races of Achillea, *Carnegie Inst. Wash. Publ.*, **581**. (Reviewed, 1950, *New Phytol.*, **491**, 424-5). Plants from eighty-one populations were sampled: of these fifteen American and two European were studied intensively. It was concluded that "the climatic race, like other kinds of ecotype, is the basic (but usually neglected) ecological unit."—[K.J.H.]

422. LEONTODON AUTUMNALIS L. Prell, H. H., 1950, Herfstleewentand met ingesneden stengel-bladen: *Leontodon autumnalis* L var. *crepidifolius* nov. var., *Ned. Kruidk. Arch.*, **57**, 277-279. The new variety has a long pinnatifid, dentate or sinuate leaf at the base of the lowest stem branch, similar to the radical leaves. In typical plants the leaf at the base of the stem branch is entire or wanting. The variety persisted in cultivation and was reproduced from seed.—[A.H.G.A.]

423/29. TARAXACUM NORDSTEDTII Dahlst. van Soest, J. L., 1948, Sur quelques *Taraxaca* et *Hieracia* du Portugal, *Agron. Lusit.*, **10**, 6-23. This group of apomictic biotypes is common in western Europe from Sweden to North Portugal, but whilst it is characteristic of marshy plains in northern Europe, it seems to prefer more hilly regions further south. In Holland it belongs to the *Molinion-caeruleae* association and is generally accompanied by species of *Carex* and *Juncus*. It is suggested that the true *T. Nordstedtii* and other closely related forms (including *T. udum* Jordan) form a sub-group of the *Spectabilia* with a distinct range which is less northern than that of the *eu-Spectabilia*.—[D.E.A.]

428. TRAGOPOGON. Ownbey, M., 1950, Natural Hybridization and Amphiploidy in the Genus *Tragopogon*, *Amer. J. Bot.*, **37**, 487-499. *T. dubius* Scop. (*T. major* Jacq.), *T. porrifolius* L. and *T. pratensis* L. are widespread weeds in North America, and hybrids occur wherever any two of these species grow together. These hybrids are not found except in patches including both of their parents, and in most features they are not intermediate but exhibit a recombination of the parents' characters. All the hybrids are extremely sterile, and are often taller, more branched, and more floriferous than the parents. Four small amphiploid populations were discovered, representing apparently recent, independent instances of the doubling of the chromosome sets. They are moderately fertile, but are morphologically like the diploid hybrids except for conspicuous "gigas" features.—[D.E.A.]

440/1. ARBUTUS UNEDO L. Sealy, J. R., 1951, *Arbutus Unedo*, *J. Ecol.*, **37**, 365-388.

478. *CENTAURIUM*. Jonker, F. P., 1950, Revisie van de Nederlandse Gentianaceae. I. *Centaurium Hill*, *Ned. Kruidk. Arch.*, **57**, 169-198. *Centaurium minus* de Gars. is adopted for *C. umbellatum* Gilib. There is a key to the species and forms.—[A.H.G.A.]

480. *GENTIANA*. Favarger, C., 1949, Contribution à l'étude caryologique et biologique des Gentianacées, *Ber. Schweiz. Bot. Ges.*, **59**, 62-86. The chromosomes of twelve species from the Alps and Jura have been counted, including *G. nivalis* ( $2n=14$ ), *G. verna* ( $2n=23$ ) and *G. campestris* subsp. *campestris* ( $2n=36$ ). *G. nivalis* is one of two diploids found in the genus, each of which is a therophyte and has a vast range in the North and in the mountains of Eurasia. In *G. verna* the floral buds develop in autumn, and meiosis takes place at the beginning of spring, at a time when the plants are often still covered with snow.—[D.E.A.]

489/1. *POLEMONIUM CAERULEUM* L. Davidson, J. F., 1950, The Genus *Polemonium* (Tournefort) L., *Univ. Calif. Pub. Bot.*, **23**, 209-282. A British plant is allocated to subsp. *vulgare* (Ledeb.) Brand, distinguished from other subspecies by stamens slightly exceeding the corolla, corolla lobes glabrous, obtuse at the apex, style slightly exceeding the stamens.—[K.J.H.]

511. *CALYSTEGIA*. Hylander, N., 1949, *Calystegia silvestris*, en förbisedd Kulturflyktning i Sveriges och Danmarks flora, *Botaniska Notiser*, **1949**, pp. 148-156. The author considers that the cultivated pink variety of *C. sepium*, which has been called var. *colorata*, is identical with var. *americana* (Sims) Kitag., other plants so named are the pink-flowered garden form of *C. silvestris* (Willd.) R. & S., which is now found as an escape in Sweden.—[A.H.G.A.]

515. *CUSCUTA*. Gaertner, E. E., 1950, Studies of Seed Germination, Seed Identification, and Host Relationship in Dodders, *Cuscuta* spp., *Cornell Univ. Agr. Exp. Sta., Mem.*, **294**, 1-56. *C. Epilinum*, *C. suaveolens*, *C. Epithymum* and *C. europaea* have so far been recorded growing on 8, 19, 147 and 237 different species respectively. Experiments were made to try to induce them to grow on various other species. *C. europaea* failed to grow on 37 species; it lacks the ability to germinate immediately after the harvest. *C. Epithymum* will grow on a large number of aquatics and can thrive even though submerged in water. There are indications that different races of the same species may vary in their susceptibility to certain Dodder species.—[D.E.A.]

515/2. *CUSCUTA EUROPAEA* L. Böcher, T. W., 1949, Naelde-Silkens Naturhistorie, *Naturens Verden*, **33**, 156-161.

532. *LINARIA*. Dillemann, G., 1949, Remarques sur l'hybridation spontanée de *Linaria vulgaris* Mill. et de *L. striata* DC. dans la nature, *Bull. Soc. Bot. France*, **96**, 48-49. In some regions of France, though both parents may be equally abundant, the hybrid between *L. vulgaris* and *L. striata* (*L. repens*) is rare, while in other regions hybrid swarms can be found. The frequency of the hybrid is explained as the result of the isolation of one or other species, both of which are self-incompatible

and may receive pollen from plants of the other species when their own species is under-represented. The pollen of the one species is quite capable of fertilising the flowers of the other, but is apparently not as effective as the latter's own pollen.—[D.E.A.]

532. *LINARIA*. Dillemann, G., 1950, Hérité du principe cyanhydrique dans les croisements interspécifiques expérimentaux de *Linaria*, *Comptes Rendus Soc. Biol.*, **144**, 50-51.

532. *LINARIA*. Dillemann, G., 1949, Hybrides réciproques des *Linaria vulgaris* Mill. et *L. striata* DC. et identification expérimentale de l'hybride  $\times L.$  *intermedia* Babey, *Bull. Soc. Bot. France*, **96**, 171-172. Natural hybrids between *L. vulgaris* and *L. striata* fall into two main types, *L. \times intermedia* Babey with a fairly large corolla and orange palate and close to *L. vulgaris*, and *L. \times ochroleuca* Bréb. with a yellowish smaller corolla and recalling *L. striata*. Plants called *L. \times intermedia* are the product of reciprocal crosses between both parents, but *L. \times ochroleuca* probably represents either backcrosses or plants of the second generation in which recessive characters appear, although attempts to produce this type experimentally have so far failed.—[D.E.A.]

537/1. *MIMULUS GUTTATUS* DC. Campbell, G. R., 1950, *Mimulus guttatus* and Related Species, *El Aliso*, **2**, 319-335. Six varieties of this species are described from western North America, the plant naturalised in Britain being the type. The chromosome number is given as  $n=14$ .—[D.E.A.]

561. *THYMUS*. Hegnauer, R., 1948, Beitrag zur chemischen und morphologischen Kenntnis der schweizerischen Thymus-formen, *Berichte Schweiz. Bot. Ges.*, **58**, 391-461. The writer reviews the systematic and chemical literature. The oil of *T. pulegioides* has a high phenol content but there is a form which is poor in phenol named forma biochimica *citrobigena*. The subspecies of *T. euserpyllum* are mostly poor in phenol.—[A.H.G.A.]

588/5. *PLANTAGO MARITIMA* L. Gregor, J. W., & Lang, J. M. S., 1950, Intra-colonial variation in plant size and habit in sea plantains, *New Phytol.*, **49**, 135-141. Such taxonomically "difficult" characters as plant size and habit are highly variable and this variation is ecotypically distributed along an environmental gradient. It is often useful to know how much internal variation different habitat communities retain under the action of ecotype selection. Within the British region samples from specially isolated local breeding communities (gamodemes) of *Plantago maritima* were little if any less variable than those from gamodemes in relatively close contact with their neighbours. There seems to be less intra-gamodeme variability as conditions improve, but even at the limit of plantain survival only a moderate degree of adaptive fitness is achieved. Variation within the gamodeme does, however, reflect the lack of uniformity of what are in general the most uniform and exacting phytosocial conditions.—[K.J.H.]

593/1. *HERNIARIA GLABRA* L. Kent, D. H., 1950, *Herniaria glabra* L. in Middlesex, *Lon. Nat.*, **29**, 6-7. Records the occurrence in Middle-

sex, gives all the known records for the London Area and the British v.-c. distribution.—[D.H.K.]

611/4. *SALICORNIA EUROPAEA* L. Ludwig, W., 1950, Der Queller (*Salicornia europaea*) in der Wetterau, *Natur und Volk*, **80**, 176-180. There is an inland saline flora in Germany in the region north of Frankfurt, including *Lepidium latifolium*, *Aster Tripolium*, *Cochlearia officinalis*, *Plantago maritima*, *Triglochin maritimum*, *Glaux maritima* and *Juncus Gerardi*. *Salicornia europaea* has also been found there, and its chromosome number is given as  $2n=18$ , "as in all other inland forms so far examined". On the North Sea coast forms with  $2n=36$  are said to predominate.—[D.E.A.]

618. RUMEX. Lousley, J. E., 1951, Docks and Sorrels of Essex, *Essex Nat.*, **28**, 265-271. Records for 15 species and 6 hybrids in Essex are given and the main taxonomic criteria for separating the species discussed. The British species of the subgenus *Acetosella* are separated by the following key:—

- Valves fused to the nut ..... *R. angiocarpus* Murb.
- Valves not fused to the nut :
  - Stems procumbent with erect flowering branches. Leaves all narrow linear up to ten times as long as broad, their edges often revolute. Mature nut 0.9-1.3 mm. × 0.6-0.8 mm. .... *R. tenuifolius* (Wallr.) Löve.
  - Stems erect. Leaves lanceolate or linear-lanceolate, broader than in the previous species, plane. Mature nut 1.3-1.5 mm. long ..... *R. Acetosella* L. em. Löve.

—[D.E.A.]

631/1. *BUXUS SEMPERVIRENS* L. Stoeber, 1949, Sur quelques stations remarquables de *Buxus sempervirens* dans le Haut-Rhin, *Monde des Plantes*, **258**, 20-22; **259**, 26-27. Localities have been found in the Rhine-Moselle area of Germany, far from the main Mediterranean area of this species and possessing different ecological features.—[D.E.A.]

633. *ULMUS*. Ciferri, R., 1949, Qualche dato per una revisione degli ulmi italiani, *Atti Ist. Bot. Univ. Pavia*, Ser. 5, **6**, 89-94. The classification of Italian elms is at present in a state of chaos. The author sets out the basic diagnostic characters as well as Bancroft's key to the English species and hybrids. The main species in Italy seems to be *U. carpiniifolia*, *U. glabra* is also frequent, while *U. minor* is the rarest of the three.—[D.E.A.]

628. *EUPHORBIA*. Kloos, A. W., 1951, Aanwinsten van de Nederlandse Flora in 1948 en 1949, *Ned. Kruidk. Arch.*, **58**, 60-93. Most of the new records are aliens, but *Euphorbia lucida* Waldst. & Kit. is recorded from the dunes near the German frontier. It was previously known from E. and S.E. Germany, Austria and the western Balkans. *E. lucida* is near *E. Esula* from which it differs as follows:—

- Leaves broadest above the middle, linear-lanceolate to orbicular-ovate, narrower towards the base, margin slightly sinuate ..... *E. Esula*.
- Leaves broadest below the middle, linear, lanceolate or ovate, narrowed towards the apex; margin not sinuate :
  - Leaves shining, lanceolate to ovate, cordate or rounded at base; lateral nerves making an angle of 60° or more with the costa ..... *E. lucida*.

Leaves not shining, linear-lanceolate, abruptly narrowed into a short stalk at base; lateral nerves making a much smaller angle with the costa .....

*E. virgata*.

—[A.H.G.A.]

AMENTIFERAE. Hjelmquist, H., 1948, Studies on the Floral Morphology of the Amentiferae, *Bot. Notiser Suppl.*, 2, pt. 1: 5-171. The author concludes that the *Amentiferae* constitute one of the most primitive types of Angiosperms, with the genus *Rhoiptelea* showing some transition to the *Urticales*. There seems also to be some relationship with the *Proteales*.—[A.H.G.A.]

642. BETULA. Johnsson, M., 1949, Studies on Birch species hybrids, *Hereditas*, 35, 115-135. The writer finds *B. verrucosa* ( $2n=28$ ) and *B. pubescens* ( $2n=56$ ) intersterile. *B. pubescens* is thought to be an allopolyploid. *B. tortuosa* Ledeb. is contained in the variation sphere of *B. pubescens*.—[A.H.G.A.]

642/1. BETULA PENDULA Roth. Jentys-Szaferowa, 1950, Analysis of the Collective Species *Betula alba* L. on the Basis of Leaf Measurements. I. Aim and Method of the Work on the Example of *Betula verrucosa* Ehrh., *Bull. Acad. Polon. Sci. Lett.*, Ser. B., 1, 175-214. Samples of *B. verrucosa* (*B. pendula*) from various parts of Europe have been subjected to biometrical analysis, attention being confined to the leaves of the vegetative short shoots, which are the least variable of the four separate leaf types to be found in birches. The species was found to display characteristic local variability of leaf shape, but the cause of this was not discovered. The leaf shape of *B. verrucosa* is further compared in detail with that of *B. pubescens*. The author considers that Lindquist's division of the whole *B. verrucosa* population into a southern and a northern variety is premature and insufficiently substantiated. Local population differences must be subjected to biometrical study.—[D.E.A.]

663/1. LISTERA OVATA (L.) R. Br. Downie, D. G., 1950, The Germination of *Listera ovata* (L.) R. Br., *Trans. Bot. Soc. Edinb.*, 35, 126-130. The seed of this species will not germinate in water nor in nutrient salt solution in the absence of a symbiotic fungus. Two species of endophytic fungus form mycorrhizal associations with the roots of adult plants.—[D.E.A.]

669. ORCHIS. Heslop Harrison, J., 1949, Field Studies in Orchis L. I. The Structure of Dactylorhynchid Populations on certain Islands of the Inner and Outer Hebrides, *Trans. Bot. Soc. Edinb.*, 35, 26-66. The distribution of Dactylorhynchid populations on various Hebridean islands shows that a close correlation exists between edaphic factors and the form occurring. Biometrical analysis of certain taxonomic features has been extensively utilised in studying such populations, and one result is the revelation that there is a slight divergence between the populations of *O. Fuchsii* var. *hebridensis* (Wilm.) H.-Harr. of the Inner Hebrides and those of the Outer Isles. No such race divergence is apparent in *O. ericetorum* or in the *O. latifolia* forms

within the area so far investigated. An anomalous form of the *O. maculata* complex was first noticed on Rhum in 1937 and is now described as *O. Fuchsii* subsp. *rhoumensis*. Its chromosome number ( $2n=40$ ) is the same as in *O. Fuchsii*, but it exhibits many morphological and physiological characters intermediate between that species and *O. ericetorum*. It is undecided whether the plant is the stabilised product of ancient hybridity between isolated strains of these two species, or whether it is of an earlier origin than either. The significance of the excessive variability of many foliar and floral characters in the Dactylorchids is discussed, and a basis for the interpretation of the range of labellum patterning occurring in the *O. maculata* complex is proposed. In view of the extreme interfertility existing between Dactylorchid forms, and the degree to which the maintenance of their taxonomic independence depends on ecological isolation, the author suggests that the subgenus should be regarded as a single coenospecies, its component "species" as different ecospecies, and certain of the subspecific units as morphologically marked ecotypes.—[D.E.A.]

669. ORCHIS. Heslop Harrison, J. W. & J., 1950, A Contribution to our Knowledge of the Flora of the Isles of Lewis, Harris, Killegray and Ensay, *Trans. Bot. Soc. Edinb.*, **35**, 149. *O. Fuchsii* var. *hebridensis* is locally abundant in the Outer Isles in Lewis and Harris, but very strange gaps exist in its distribution. Its extraordinary tendency to develop highly fertile hybrid swarms with *O. purpurella* seems remarkable in view of the fact that the two have chromosome numbers of 40 and 80 respectively. Some form of double fertilization is believed responsible for this. On the other hand, var. *hebridensis* only crosses with *O. latifolia* ( $2n=40$ ) with extreme difficulty, even when the two grow intermingled in enormous quantities. *O. ericetorum* ( $2n=80$ ) likewise produces hybrid swarms with *O. purpurella* with great facility and to a limited extent also with *O. latifolia*, despite the disparity in chromosome numbers in the latter case.—[D.E.A.]

672. OPHRYS L. Kullenberg, B., 1950, Investigations on the pollination of Ophrys species, *Oikos*, **2**, 1-19, (in English); 1950, Bidrag till kännedomen om Ophrys-arternas blombiologi, *Svensk Bot. Tidskr.*, **44**, 446-464; 1950, Pollinationsbiologien hos några orkideer, *Medlemsbl. för Biologilärarnas Fören.*, **1**, 19-35, (in Swedish). These three papers are substantially the same. Statistics are given for insect visitors to flowers of *Ophrys insectifera* L. in Sweden, *O. apifera* Huds. and three non-British spp. in Lebanon, and five non-British spp. in Morocco. These are fertilized by attracting the males of various Hymenoptera (mainly Apidae), which alight on the labellum and execute characteristic movements thereon. Previous observers have assumed that this behaviour is sexual activity, the labellum acting as a dummy female, but the movements are actually often not like those leading to copulation. The attraction of the flowers for insects is possibly fourfold: (1) scent, which may resemble that of the female insect; (2) "Täuschobdach", the illusion of shelter being available in the dark stigmatic cavity; (3) the false pro-

mise of food given by light-coloured sepals, e.g. in *O. tenthredinifera* Willd.; (4) the form and dull metallic colourings of the labellum, which do simulate a female insect. The activities of the insect on the labellum after landing are stimulated by the hairs on its surface. The same behaviour can be induced by means of an artificial flower consisting of a piece of velvet over a source of *Ophrys* perfume. The origin of the insect's behaviour is discussed; it appears to be instinctive and at least connected with sexual impulses. It has no discernable advantage for the insect. How this relationship, whereby insects are induced to visit the flowers and transfer the pollinia without any gain on their part, has evolved is questionable.—[D.P.Y.]

674/1. GYMNADENIA CONOPSEA (L.) R.Br. Bean, R. C., Knowlton, C. H., & Hill, A. F., 1951, Tenth Report of the Committee on Plant Distribution, *Rhodora*, **53**, 79-89. There is a specimen of this species collected about 1930 at Littlecut, Connecticut, in the herbarium of the Torrey Botanical Club. No one has ever been able to refind the station, which is the only one known in North America.—[D.E.A.]

678/1. CROCUS NUDIFLORUS Sm. Crump, W. B., & Sledge, W. A., 1950, History and Distribution of the Autumn Crocus in England, *The Naturalist*, No. 835, 133-141. It is suggested that the origin of *C. nudiflorus* in its English localities is due to its being grown as a substitute for the Saffron Crocus (*C. sativus* L.). Details of all the recorded localities which the authors have been able to trace are given. The British v.-c. distribution is given as 13, 37-40, 54, 56-60, 63, 69, 72. G. A. Nelson, Saffron of commerce and *Crocus nudiflorus* Sm., *ibid.*, 141-142. The author shows that the product from the stigmas of *C. nudiflorus* does not materially differ from that obtained from the genuine Saffron.—[A.E.W. & D.H.K.]

684. NARCISSUS. Janaki-Ammal, E. K., & Wylie, A., 1949, Chromosome Numbers of Cultivated Narcissi, *The Daffodil and Tulip Year Book*, **15**, 33-40. The chromosome numbers are given of 210 cultivated varieties, of which 22 are diploid, 33 triploid and the rest tetraploid.—[D.E.A.]

691/2. POLYGONATUM MULTIFLORUM (L.) All. Eigsti, O. J., 1950, Chromosomes of triploid *Polygonatum multiflorum*, *Amer. J. Bot.*, **37**, 661-662. The low percentage of pollen germination among triploid forms of this species proves that they are hybrids between diploid and tetraploid forms and not auto-triploid in origin.—[D.E.A.]

713/1. COLCHICUM AUTUMNALE L. Takenaka, Y., 1950, Notes on Cytological Observations in *Colchicum*, with Reference to Autotoxicosis and Sterility, *Cytologia*, **16**, 95-99. This species is known as a sterile plant in middle and southern Japan. The author concludes that the influence of the colchicine contained in the plant itself has produced abnormal meiotic divisions which are the cause of this sterility. The chromosome number was found to be  $2n=38$ , as in counts by previous workers.—[D.E.A.]

718. *JUNCUS*. Richards, P. W., 1949, Rushes in East Anglia, *New Nat.*, **6**, 41-44. Fifteen species occurring in East Anglia are discussed in turn. The habit among rushes of flowering in 'pulses' and the complete dependence of some species on light for germination are mentioned.—[D.E.A.]

718/17. *JUNCUS BUFONIUS* L. Böcher, T. W., 1950, Contributions to the Flora and Plant Geography of West Greenland, II, *Medd. om Grönl.*, **147**, 4-39. This species is, if anything, cosmopolitan and follows man. Its behaviour in Greenland, however, is very strange, for it occurs in three or four localities far from any dwelling, where it seems indigenous. Although common in Iceland, it has not been recorded from the Canadian Eastern Arctic. It is suggested that, along with other southern species, it survived the last glaciation in Greenland more or less *in situ*.—[D.E.A.]

719. *LUZULA*. Böcher, T. W., 1950, Contributions to the Flora and Plant Geography of West Greenland, II, *Medd. om Grönl.*, **147**, 4-39. Culture experiments and chromosome counts were made, mostly on Greenland material, and the conclusion reached that the somatic numbers 12, 24, 36 and 48 present in the *L. multiflora* complex represent different species. *L. pallescens* ( $2n=12$ ) has medium, shortly rod-shaped chromosomes and very short seeds, while *L. multiflora* ( $2n=36$ ) and its arctic subspecies *frigida* (Buch.) Krecz. have rather small, rod-shaped chromosomes and larger seeds. The subspecies is not very well marked off from *L. multiflora*, but it has a different range and ecological preferences; it is widely distributed in the Scandinavian mountains and also occurs in Newfoundland, though unrecorded from Iceland. The two are separated as follows:—

Perianth longer than fruit; heads brown, rarely blackish brown; seeds big, 1.4-1.7 mm.; leaves rather broad ..... *L. multiflora*.

Perianth mostly the same length as fruit; heads blackish brown; seeds 1.1-1.4 mm. (very rarely 1.0 or 1.5 mm.); leaves somewhat narrower .....  
subsp. *frigida*.

(Var. *contracta* Samuelss. differs from the several-headed typical subsp. *frigida* in having one big sessile head, sometimes also one or very few smaller, short-stalked heads).

—[D.E.A.]

719. *LUZULA*. Nordenskiöld, H., 1949, The Somatic Chromosomes of some *Luzula* species, *Bot. Notiser*, **1949**, 81-92. The nos. given for British species are *L. multiflora* ( $2n=36$ ), *L. campestris* ( $2n=12$ ), *L. pallescens* ( $2n=48$ ), *L. silvatica*, *luzuloides* and *nivea* (all  $2n=12$ ), *L. Forsteri* ( $2n=24$ ), and *L. pilosa* ( $2n=72$ ). Their chromosomes form a polyploid series with three as the basic number.—[A.H.G.A.]

729/1. *ALISMA PLANTAGO-AQUATICA* L. Wulff, H. D., 1950, Chromosomenstudien an der schleswig-holsteinischen Angiospermen-Flora, V, *Ber. Deutschen Bot. Ges.*, **62**, 64-70. The occurrence in this species of both hyperdiploid ( $n=8$ ) and tetraploid ( $n=14$ ) plants is recorded.—[D.E.A.]

730. *BALDELLIA RANUNCULOIDES* (L.) Parl. Kern, J., & Reichgelt, T., 1950, Over eenige kritische planten van onze Flora, *Ned. Kruidk. Arch.*,

57, 244-261. The plant which has been known as *Echinodorus ranunculoides* var. *repens* is raised to specific rank and the following characters are given:

<i>E. ranunculoides</i> (L.) Engelm.	<i>E. repens</i> (Lam.) Kern & Reichg.
<i>Plant</i> up to $\pm$ 5 dm. high, almost always erect, rarely with prostrate inflorescence (and then very rarely rooting) with usually robust stems, up to 3 mm. thick.	<i>Plant</i> weak (but not always), creeping, rooting at the nodes of the inflorescence, with leaf-rosettes, up to 2 dm. high, with thin stems up to 1 mm. thick.
<i>Flowers</i> small ( $\pm$ 15 mm. in diameter, rarely up to 18 mm.).	<i>Flowers</i> much larger (up to 22 mm. in diameter).
<i>Whorls of inflorescence</i> many flowered (15-20-flowered).	<i>Whorls of inflorescence</i> few (up to 5-) flowered.
<i>Fruit peduncles</i> erect or arcuately ascending.	<i>Fruit peduncles</i> straight, arising at angle with the apex deflexed.
<i>Fruiting heads</i> large, up to 8 mm. in diameter.	<i>Fruiting heads</i> smaller, about 5 mm. in diameter.
<i>Number of fruits</i> per head up to 45.	<i>Number of fruits</i> per head up to 15 (-20).
<i>Fruit</i> 2½ mm. long without papillae.	<i>Fruit</i> 2 mm. long with numerous papillae.

[This variety has been recorded from N. Wales and Ireland. The Scottish plant from Beaully R., E. Inverness, which has been called var. *zosterifolius* Fries is similar.]—[A.H.G.A.]

737. POTAMOGETON. Heslop Harrison, J. W., 1949, Potamogetons in the Scottish Western Isles, with Some Remarks on the General Natural History of the Species, *Trans. Bot. Soc. Edinb.*, 35, 1-25. The machair lochs of the Outer Isles are prolific both in species and in individuals, but the moorland lochs, with rocky beds and more acid conditions, have a much poorer flora. *P. polygonifolius* is much the most abundant species, being found in every island; it seems to prefer moorland slacks and hollows. The variety *cancellatus* Fryer, hitherto only known from the Shetlands, was found in Rhum. Protracted field studies suggest that some of the wide variation in this species is genetically controlled. Detailed notes are given on various other species and their hybrids together with remarks on their distribution, ecology and seed germination. *P. × Heslop-Harrisonii* W. A. Clark is a hybrid between *P. gramineus* or *P. alpinus* and *P. Millardii* (*P. Berchtoldii*). The North American *P. epihydrus* Raf. var. *Nuttallii* (Cham. & Schlecht.) has been detected in two lochs in South Uist.—[D.E.A.]

737. POTAMOGETON. Harrison, J. W. Heslop, 1950, A Pondweed new to the European Flora, from the Scottish Western Isles, with some remarks on the phytogeography of the island group, *Phyton*, 2, 104. The author discusses the presence of *Potamogeton epihydrus* Raf. in South Uist.—[A.H.G.A.]

741/2. NAJAS FLEXILIS (Willd.) Rostk. & Schmidt. Backman, 1948, *Najas flexilis* in Europa während der Quartärzeit, *Acta Bot. Fenn.*, 43, 1-44. The author maps the distribution (p. 6) and gives British records (p. 4). Postglacial finds are reported from Tregaron, Cardigan, and localities in Ireland.—[A.H.G.A.]

743. *ERIOCAULON SEPTANGULARE* With. Hare, C. L., 1950, The structure and development of *Eriocaulon septangulare* With, *J. Linn. Soc. (Bot.)*, **53**, 422-448, with figures and one plate. This species belongs to the small group of less than a dozen plants that together constitute the North American element in the British flora. In order to examine afresh the problems raised by the peculiar geographical distribution of the species, and more especially to arrive at a clearer understanding of its restricted range within the British Isles, field studies have been carried on over a number of years, in Ireland and in the Hebrides. At the same time the plant has been grown in culture on a considerable scale and the life history has been worked out, with details of the plant's climatic and edaphic preferences. A second paper is to follow which will include a re-examination of the geographical distribution of the species in the light of the facts which have emerged as the work proceeded.—[K.J.H.]

753/70(2). *CAREX CAPITATA* L. Böcher, T. W., 1950, Contributions to the Flora and Plant Geography of West Greenland, II, *Medd. om Grönl.*, **147**, 4-39. This species is a subcontinental meadow plant exclusive to lime with a subalpine-boreal distribution in Scandinavia, where it is associated with the conifer and subalpine zones, extremely rarely going above the birch limit. In Greenland it is almost replaced by the more Arctic *C. arctogena* Sm., but the author thinks that it may have survived the last glacialian more or less *in situ* there.—[D.E.A.]

GRAMINEAE. Litardière, R. de, 1950, Nombres chromosomiques de diverses graminées, *Bol. Soc. Brot.*, Ser. 2, **24**, 79-87. *Desmazeria loliacea* (Huds.) Nym. ( $2n=14$ ), *Vulpia membranacea* (L.) Link ( $2n=14$ ), *Festuca ovina* L. ssp. *laevis* Hack. ( $2n=14$ ), *F. rubra* L. ssp. *heterophylla* (Lam.) Hack. ( $2n=28$ ), *Bromus commutatus* Schrad. ( $2n=28$ ).—[A.H.G.A.]

758/3. *SPARTINA TOWNSENDII* H. & J. Groves. Higgs, C., 1950, A Farmer's Ruminations. *The Countryman*, **41**, 390-394. This plant prefers a clay sub-soil and likes to be submerged by the tide each day. In Northumberland newly-planted seedlings were frozen into the ice in the severe winter of 1929-30, and later floated away. Plants that did survive did not spread, until in 1939, an exceptionally warm summer, small plants began to sprout over a considerable area, since when it has spread widely. The plant seems to require an abnormally warm summer for setting good seed in higher latitudes.—[D.E.A.]

777/3. *PHLEUM PHLEOIDES* (L.) Simonk. Böcher, T. W., 1950, Chromosome behaviour and syncyte formation in *Phleum phleoides* (L.) Karst., *Bot. Notiser*, **1950**, 353-368. 14 types referable to the species were studied; of these 7 had  $2n=14$ , 2 had  $2n=28$ , and in 6 (1 tetraploid and 5 diploids) there were different numbers of B. chromosomes. None of the material examined was British; the tetraploid was from Armenia and should perhaps be regarded as a species (*P. montanum* C. Koch).—[A.H.G.A.]

791. DESCHAMPSIA. Nygren, A., 1950, Studies on vivipary in the genus Deschampsia, *Hereditas*, **35**, 27-32. The influence of short day treatment was investigated in relation to certain viviparous grasses and vivipary was induced in *D. caespitosa* from Lapland. In species with an already fixed vivipary it was not affected by the treatment.—[A.H.G.A.]

792/1. HOLCUS MOLLIS L. Fenton, E. Wyllie, 1948, Some Notes on *Holcus mollis* L., *Ann. Appl. Biol.*, **35**, 290-292. The natural woodland habitat of this species and its ability to survive after the removal of the tree cover are discussed, together with its occurrence as a weed and the effect on it of grazing and cultivation.—[D.E.A.]

824. POA. Nygren, A., 1950, Cytological and embryological studies in Arctic Poae, *Symbolae Bot. Upsal.*, **10**, 4. *Poa laxa* ssp. *flexuosa* (Sm.) Hyl., which is recorded from Scotland, has a chromosome number  $2n=42$  in Scandinavia. *Poa jemtlandica* (Almq.) Richt is regarded as a hybrid (*P. alpina* var. *vivipara* L.  $\times$  *P. laxa* Hke. ssp. *flexuosa* (Sm.) Hyl.) and no mention is made of the British plant which has been given this name.—[A.H.G.A.]

826. FESTUCA. Markgraf-Dannenberg, I., 1950, Die Gattung Festuca in der Bayerischen Alpen, *Ber. Bayer. Bot. Ges.*, **28**, 195-211. The writer gives a key to the species and varieties.—[A.H.G.A.]

830. AGROPYRON. Simpson, F. W., 1949, Plants of 1949, *Trans. Suffolk Nat. Soc.*, **7**, 23-24. A series of hybrids between *A. junceum* and *A. pungens* was found at Bawdsey in Suffolk. Many of the described varieties of these two species are considered to be obvious hybrids; the two cross freely and produce plants which might easily be mistaken for varieties if not growing near both parents.—[D.E.A.]

841/1. PINUS SYLVESTRIS L. Hustich, I., 1948, The Scotch Pine in Northernmost Finland and its dependence on the climate in the last decades, *Acta Bot. Fenn.*, **42**, 1-71. The author considers that changes in climate are particularly noticeable at the timber-line. The climate has improved in recent decades and trees are more fruitful. Years in which many cones ripen are to some extent correlated with the annual rings. If it is a favourable year, then the year  $n+1$  is richer in female flowers than normal years and  $n+2$  produces cones which consume some reserve nourishment and hence a narrow annual ring is produced.  $N+3$  is the seed year, but the annual ring is wider than  $n+2$ .—[A.H.G.A.]

PTERIDOPHYTA. Parrot, A. G., 1949, Liste des Fougères du Pays basque français, *Bull. Soc. bot. France*, **96**, 208-211. 52 species of ferns growing in the Basque country are listed, together with their floristic types and ecological preferences.—[D.E.A.]

847/1. PTERIDIUM AQUILINUM (L.) Kuhn. Poel, L. W., 1951, Soil aeration in relation to *Pteridium aquilinum* (L.) Kuhn, *J. Ecol.*, **39**, 182-191.

847/1. PTERIDIUM AQUILINUM (L.) Kuhn. Watt, A. S., 1950, Contribution to the ecology of Bracken (*Pteridium aquilinum*) V. Bracken and frost, *New Phytol.*, **49**, 308-327. The susceptibility of bracken to

frost is shown to be correlated with the severity of spring frosts. Winter frosts have less general importance.

854/4. *POLYSTICUM LONCHITIS* (L.) Roth. Quézel, P., & Rioux, J. A., 1949, Un curieux mode de survivance d'*Aspidium Lonchitis* (L.) Sw. sur les Cauves des Cévennes, *Bull. Soc. Bot. France*, **96**, 175-177. Many Atlantic species have gradually been disappearing from the Massif Central of France. *P. Lonchitis* has, however, been rediscovered growing in a narrow crevice more than two metres below the surface along with other ferns, including the Atlantic *Phyllitis Scolopendrium*. Here it appears to find a microclimate to its liking, the surface conditions being too arid for its successful development.—[D.E.A.]

856/1(2). *DRYOPTERIS BORRERI* Newm. Döpp, W., 1950, Zur Problematik von *Dryopteris paleacea* (Sw.) C. Chr. und ihres Formen und Verwandtschaftskreises, *Ber. Deutschen Bot. Ges.*, **62**, 61-68.

872/6. *NITELLA MUCRONATA* Miq. Olsen, S., 1949, Illegitimate Names in *Nitella mucronata* (Braun) Miquel, *Bot. Notiser*, **1949**, 269-276. The varietal names *leiopyrena*, *pachygyra*, *robustior* and *tenuis*, which were adopted by R. D. Wood in 1948, are considered illegitimate.—[A.H.G.A.]

#### TOPOGRAPHICAL

8, S. WILTS. Barton, A. O., 1950, A new plant colony on barren greensand; *Wilts. Arch. & N.H. Mag.*, **53**, 363-366. An account of the re-colonisation of a site on the main Salisbury Road at West Lavington which was cleared in 1948 by mechanical excavator. The whole area was cut away, leaving the bare greensand exposed. 54 species are enumerated.—[A.E.W.]

17, SURREY. Bangarter, E. B., and Castell, C. P., 1949, Notes on the Vegetation of Gun-pits and Trenches on Eastern Plain, Bookham Common, *Lond. Nat.*, **28**, 52-56.—[D.H.K.]

18-19, ESSEX. Ward, Bernard T., 1950, The Man Orchis in Essex, *Essex Nat.*, **28**, 193-194. Records the rediscovery of *Aceras anthropophorum* (L.) R. Br. in v.c. 18, and gives all known records for the county.—[D.H.K.]

21, MIDDLESEX. Ager, J. A. M., 1949, Flora of St. Thomas's Hospital and Bombed Sites, *St. Thomas's Hospital Gazette*, **47**, no. 1. Gives short accounts of the localities, which are areas within the grounds of St. Thomas's and bombed sites within half a mile range of the hospital, followed by a systematic list of the vascular plants.—[E.B.B.]

21, MIDDLESEX. Wrighton, F. E., 1949 and 1950, Plant Ecology at Cripplegate, *Lond. Nat.*, **28**, 39-44; **29**, 85-88.

21, MIDDLESEX. Kent, D. H., Tothill Fields, Westminster: A Lost Botanical Area, *Lond. Nat.*, **29**, 3-6. Gives a brief history of the district and the species formerly found there.—[D.H.K.]

24, BUCKS, etc. Weevers, I., 1950, Some woodland plant associations of the Chiltern Hills, *Ned. Kruidk. Ark.*, **57**, 417-420.

25, 26, SUFFOLK. Simpson, F. W., 1950, Our Changing Suffolk Countryside and its Endemic Flora, *Trans. Suffolk Nat. Soc.*, **7**, 49-57. The author deprecates the destruction of the native vegetation by urbanization, agricultural expansion, vandalism, water pollution and misguided local authorities, and stresses the urgent need of Nature Reserves.

25, E. SUFFOLK. Batchelor, S. J., 1949, Wild Plants growing on Waste Ground in Ipswich, *Trans. Suffolk Nat. Soc.*, **7**, 9-10

27, E. NORFOLK. Jennings, J. N., & Lambert, J. M., 1951, Alluvial stratigraphy and vegetational succession in the region of the Bure Valley Broads, *J. Ecol.*, **39**, 106-170.

29, CAMBS. Kassar, M., 1951, Studies in the Ecology of Chippenham Fen, *J. Ecol.*, **39**, 1-32.

33, E. GLOS. Sprague, T. A., 1950, The Wild Flora of Cheltenham, *Proc. Cotteswold N.F.C.*, **30**, 20-28. An account of the flowering plants, ferns and fern allies found growing spontaneously within the Borough of Cheltenham. A list of well over 200 species is enumerated in an appendix.—[A.E.W.]

59, S. LANCS. Allen, D. E., 1951, The Flora of the Liverpool Bombed Sites, *Report Merseyside Nat. Assoc.*, **1**, 25-27; Hardy, E., The Pre-War Flora of Inner Liverpool, *ibid.*, 28-29. The flora of bombed sites in general is discussed with special reference to Liverpool. *Sisymbrium orientale* is relatively more plentiful than in other bombed English cities and *Senecio viscosus* is also common. *Senecio squalidus* and *Erigeron canadensis* appear to be absent. The fact is stressed that several characteristic marsh plants are becoming increasingly common on dry waste ground, and it is suggested that freedom from competition in such a habitat outweighs edaphic preferences. The Liverpool sites are considered to be poorer both in number (60) and abundance of species than most cities further south, probably chiefly due to topographical differences. The second author compares the post-War flora with that found on waste ground in the city in 1939. The two show several similarities, but *Pteridium aquilinum* was then much rarer and *Senecio squalidus* has not reappeared.—[D.E.A.]

102-104, 110, INNER & OUTER HEBRIDES. Heslop Harrison, J., 1948, Recent Researches on the Flora and Fauna of the Western Isles of Scotland and their Biogeographical Significance, *Proc. Belfast N.H. & Phil. Soc.*, Ser. 2, **3**, 87-96. A comprehensive summary is given of the results of work on the biogeography of the Hebrides. The climate is of the extreme oceanic type and the islands receive the full force of the Atlantic gales, which prohibit the growth of continuous tree cover. Miniature woodlands, however, do occur in sheltered gorges and on cliff faces facing east and north; in such habitats well-grown hollies, aspens, birches, willows, roses, and even oaks can be found, but the associated woodland flora often flourishes in the absence of any tree-cover. The character of the flora of Rhum is discussed and mention made of the remarkable number of arctic-alpine species, including *Thlaspi calam-*

*inare*, *Arenaria norvegica*, *Saxifraga nivalis* and *Ajuga pyramidalis*, to be found on the island's mountain system, which is the most extensive in the Western Isles outside of Skye. The Outer Isles are a great deal less varied in geological structure than the Inner, and in general the higher ground in their case tends to be in the east, where the land descends precipitously to the sea; the western shores are composed of great linked series of shell sand beaches, backed by machair. Between the machair and the eastern hills lies the area of lochs and moorland, favoured by *Najas flexilis*, *Nymphaea occidentalis* and many unusual species and hybrids of *Potamogeton*. Most of the Western Isles are covered with barren and monotonous blanket bog, and the interesting plant communities are almost all confined to somewhat specialised habitats, e.g. calcareous dune sand of the machair zone and mountain screes, cliffs and gorges protected from the wind. The habitats act as refuges for species that must be regarded as relicts.

The extinction of the Hebridean woodlands must be attributed to the climatic deterioration of the Sub-Atlantic period, beginning c. 700 B.C., as a result of which many woodland species have sought refuge on cliffs and in gorges. Geological evidence shows that the Hebrides were islands in pre-glacial times, and during the Ice Age the ice-sheets passed over all parts of the islands. Total extermination of the biota within the limits of the ice-sheet holds true in general, but the distribution of three groups of species in the Hebrides cannot be reconciled with the thesis of a post-glacial continental origin *via* Britain. These groups coincide with similar anomalous ones recognised among Irish biota, namely, the arctic-alpine, the Lusitanian, and the American elements. In the case of the arctic-alpine element, it is interesting to note that certain species, such as *Silene acaulis* and *Polygonum viviparum*, occur at sea-level in the Outer Isles, a phenomenon well-known in Ireland. The opinion of Scandinavian botanists is supported in supposing that some of these species survived one or more glaciations on ice-free "nunataks". Survival of a remnant of the flora from the last interglacial period, or even the Aurignacian interstadial, is envisaged as a definite possibility. The American element is represented in the Hebrides by several species, one of them the orchid *Spiranthes stricta*, which grows on Coll and Colonsay, though it has disappeared for the moment on the latter island. An American species of sponge and *Najas flexilis*, on the other hand, have quite a wide range. Theories of random dispersal from North America are untenable, and the author stresses the fact that orchid species would have to be capable of finding their associated symbiotic fungi in any new ground that they colonized. The recent discovery of *Eriocaulon septangulare* in inter-glacial beds in the West of Ireland supports the view that this American element must have survived from the Tertiary Period in Western Europe. The Lusitanian-Hibernian element includes *Trifolium Bocconi* on Coll, *Rubus iricus* in the Outer Isles and the Macaronesian moss *Myurium hebridarum* in Rhum, Coll, Tiree and nearly all the Outer Isles (it fails to fruit and so

cannot be dispersed at random over long distances). Endemic races of bees, moths and field-mice also occur.

This last element, together with the American species, must represent the descendants of very ancient survivals; but they are hardly organisms which might be expected to have persisted on "nunataks" within the ice-sheet, subject to a rigorous frost climate, although *Myurium* often accompanies the groups of arctic-alpine relicts [and *Eriocaulon* flourishes after being frozen in winter in a solid block of ice.—D.E.A.]. Many of the land areas also, such as Coll, now occupied by these relict species, must have been submerged by post-glacial rises in sea-level. It is therefore suggested that the relict biota survived on low ice-free land, since submerged, to the west of Ireland and the Hebrides. The climate of such marginal zones bordering on the Atlantic may, even during the height of glaciation, have been a great deal milder than is commonly supposed. Organisms surviving in this hypothetical western strip of land would be isolated genetically from the main European stocks, and, indeed, evidence of racial divergence is coming to light in a great many species. Many plants, like the mountain form of *Epilobium angustifolium* and the Irish *Juncus tenuis*, appear to differ ecotypically from the more widespread, biotypically-rich, "plastic" races of the same species. Cytogenetical evidence for such racial differentiation will doubtless be analysed in the near future, and further work on pollen analysis in the Hebrides promises good results in clarifying the complex history of this region.—[D.E.A.]

110. OUTER HEBRIDES. Heslop Harrison, J. W. & J., 1950, A Contribution to our Knowledge of the Flora of the Isles of Lewis, Harris, Killegray and Ensay, *Trans. Bot. Soc. Edinb.*, **35**, 132-156. A large number of new locality records made in 1948 and 1949 are given for the rarer plants. Though *Nasturtium officinale* was common, *N. microphyllum* was not encountered. The name *Rosa dumalis* Bechst. is employed instead of *R. Afzeliana* Fr., which it is said to antedate. *R. mollis* is exceedingly rare in the Outer Isles, being replaced by *R. Sherardi*. *Antennaria hyperborea* is common in one area in South Harris, even down to sea-level. *Erica Tetralix* is very variable in Harris and forms occur which are reminiscent of Donegal forms suspected of ancient hybridity with *E. Mackaiana*. *Betula tortuosa* Ledeb. occurs in Harris and South Uist. *Salix nigricans* var. *hebridensis* Wilmott is rejected as a form of *S. phylicifolia*, and is said to be mainly planted in the Outer Isles. A new form of *Orchis latifolia*, bearing some relationship with *O. majalis*, was found on coastal flats in Lewis and is being subjected to statistical analysis. Huge forms of *O. purpurella* also occur in Lewis in great numbers, nearer *O. majalis* than the Durham plant.—[D.E.A.]

H.39, ANTRIM. Chase, C. D., The Natural History of Campbell College and Cabin Hill, Belfast, 1941, reprinted from *The Campbellian* and *The Junior Campbellian*, 1943-48. The work deals with the 130 acres which comprise the grounds of Campbell College. 570 species, animals and plants are recorded.—[A.H.G.A.]

## MISCELLANEOUS

ALLEN, D. E., 1951, A Survey of Recent Work on the British Flora (Flowering Plants), *Bull. Liverpool Bot. Soc.*, no. 3.

BAKER, H. J., 1951, A palynological treasure-house, *Nature*, **167**, 457-460. Attention is drawn to an unpublished volume, now at the British Museum (Natural History), of paintings by F. Bauer of leaf-hairs and epidermes and, more particularly, pollen-grains. Contrary to Wodehouse (1935, *Pollen grains: their structure, etc.*, London), many of these paintings are dated and were made between 1798 and 1836 and the majority in 1820-36. They are of considerable interest as accurately depicting details, the significance of which has not been realised until much later, e.g. the growth of pollen-tubes and abortive pollen in hybrids.—[D.P.Y.]

BÖCHER, T. W., and LARSEN, K., 1950, Chromosome numbers of some arctic and boreal flowering plants, *Medd. om Grönland*, **147**, no. 6, 1-32. *Roegneria Doniana* (White) Melderis var. *virescens* (Lge.) Melderis  $2n=28$  (*Agropyron* of British authors). *Elymus arenarius* L.  $2n=56$ , *E. mollis* Trin.  $2n=28$ , *Arenaria norvegica* Gunn.  $2n=80$ .—[A.H.G.A.]

CAIN, S. A., 1950, Life-forms and Phytoclimate, *Bot. Rev.*, **16**, 1-32. The author considers that when life-forms are selected and handled statistically without *a priori* assumption of their adaptive value, they can reflect both general and micro-climatic conditions; also that life-forms are important in vegetation study. Pre-Linnean taxonomy had a large element of life-form description for its basis. After Linnaeus, vegetative structures were relegated to a minor rôle, but in modern times, notably in the flowering plant classification of Hutchinson, form appears to be regaining some of its former importance.—[K.J.H.]

CAMP, W. A., 1950, Francis Bacon Lunches with the Torrey Botanical Club, *Bull. Torrey Bot. Club*, **77**, 146-150. Taxonomic methods are examined in the light of the writings of Bacon, who would approve modern experimentation, and is apparently on the side of the "splitters".—(K.J.H.)

EDWIN, G., 1951, A Quicker More Satisfactory Method for Soaking and Re-pressing Dried Plant Specimens, *Rhodora*, **53**, 113-114. Poorly-pressed plant specimens may be saved for mounting on herbarium sheets by an extension of the method of Fassett. The specimens to be soaked are placed separately between metal corrugates, as used in drying fresh plants, and completely submerged for 20-35 minutes (depending on succulence) in a very dilute solution—about 1 tablespoon per gallon of water—of any household detergent. The stack of material should be weighted down to prevent the floating of particles or the intermingling of different specimens. After soaking the specimens are removed from the solution, excess water being allowed to drain away, and are placed in dry collection sheets, blotting paper, etc., and dried in the usual manner.—[D.E.A.].

EMEIS, W., 1950, Über die Bedeutung des Atlantischen Klimakeils für das Verbreitungsbild unserer Flora und Fauna, *Schriften des naturw. Ver. Schleswig-Holstein*, **24**, 1-7. The effect of an Atlantic climate on plant distribution in a region such as Schleswig-Holstein is discussed.—[D.E.A.]

HASKELL, G., 1951, Plant chromosome-races and their ecology in Great Britain, *Nature*, **167**, 628-629. The reported ecological and geographical differences between members of polyploid and aneuploid series in the following groups is reviewed: *Galium palustre*, *Erophila verna*, *Cardamine pratensis*, *Aphanes*, *Ranunculus Ficaria*, *Valeriana officinalis*, *Nasturtium*, *Arum*, *Glyceria*, and *Polypodium vulgare*. Generally, forms with lower chromosome multiples prefer drier habitats, and there is a progressive trend through intermediates to the highest polyploids, which prefer moist habitats. The reason for this is not known.—[D.P.Y.]

HULTÉN, E., 1949, On the races in the Scandinavian Flora, *Svensk Bot. Tidskr.*, **43**, 383. Deals with the following:—*Lycopodium annotinum* and its montane representative var. *alpestre* Hartm. (*L. pungens* La Pylaie). *L. clavatum* and its montane representative var. *lagopus* (*monostachya* Grev. & Hook.). *L. complanatum* and its lowland representative ssp. *chamaecyparissus* (R.Br.) Asch. & Graebn. *Picea Abies* (L.) Karst., its northern representative var. *obovata* (Ledeb.) Hultén. The tetraploid, northern representative of *Phleum alpinum*, which is ssp. *commutatum* (Gaud.) Hultén. *Caltha palustris* and its radican form from N. Scandinavia. *Ranunculus sceleratus* and var. *reptabundus* (Rupr.) Hult. with long-beaked achenes. *R. peltatus* and var. *septentrionalis* with thicker stem and more dissected leaves. Races of *Sedum Rosea*, *Parnassia palustris*, *Prunus Padus* and var. *borealis* Schüb. with pubescent leaves and erect racemes. *Sorbus aucuparia* and *S. glabrata* Hedl. *Dryas octopetala* and ssp. *punctata* (Juz.) Hult. *Astragalus alpinus* and ssp. *arcticus* (Bunge) Hult. with darker flowers. *Oxytropis campestris* and ssp. *sordida* (Willd.) Pers. *Pyrola rotundifolia* and *P. norvegica* Knaben. The author considers the latter a southern form of *P. grandiflora*, which is distinguished from *P. rotundifolia* by smaller leaves with petiole longer than the blade, blunt denticulate calyx-lobes, and fleshy collar at base of calyx. *Vaccinium uliginosum* and its small-leaved northern race. *Veronica serpyllifolia* and var. *humifusa* (Dicks.) Vahl. *Pedicularis palustris* and ssp. *borealis* with simple stem, fewer and smaller flowers with galea exceeding lip.—[A.H.G.A.]

JALAS, I., 1950, Zur Kausalanalyse der Verbreitung einiger nordischen Os- und Sandpflanzen, *Ann. Bot. Soc. Zool.-Bot. Fenn.* 'Vanamo,' **24**, No. 1, 1-362. The article contains descriptions of a large number of arenicolous varieties. The treatment of the varieties of *Anthyllis Vulneraria* L. (pp. 27-46), *Lotus corniculatus* L. (pp. 46-54) are of special interest to British botanists. *Oxytropis campestris* (L.) DC. ssp. *scotica* Jalas (p. 59) from Glen Fee is new.—[A.H.G.A.]

JANCHEN, E., 1950, Beiträge zur Benennung, Verbreitung und Anordnung der Farn- und Blütenpflanzen Österreich II, *Phyton*, **2**, 302. *Armoracia lapathifolia* **Usteri** not **Gilib.** *Barbarea iberica* (Willd.) DC. for *B. arcuata* (Opiz) Reichenb.—[A.H.G.A.]

KLOOS, A. W., 1950, Aanwinsten van de Nederlandse Flora in 1945, 1946 en 1947, *Ned. Kruidk. Arch.*, **57**, 199-243. The local species of *Claytonia* are put under *Limnia* as *L. sibirica* (L.) Haw., *L. alsinoides* (L.) Haw., and *L. perfoliata* (L.) Haw.; the two former are distinguished as follows:

Leaves rather fleshy, strongly 3-5 ribbed; petals rose ... *L. sibirica*.

Leaves thin, faintly nerved; petals white ..... *L. alsinoides*.

*Alisma* × *rhinocarpum* Schotsm. is adopted for *A. lanceolatum* × *Plantago-aquatica*. Several other plants are recorded from the Netherlands, mainly aliens and varieties.—[A.H.G.A.]

LÖVE, A. & D., 1949, The Geobotanical Significance of Polyploidy. I. Polyploidy and Latitude, *Portugal. Acta Biol.*, Ser. A., 273-352. The frequency of polyploids in various floras is found to increase relative to the higher latitude or to the severity of the Pleistocene and post-glacial climate, thus confirming Hagerup's hypothesis that polyploid frequency increases with an increase in climatic rigour. The percentage of polyploids found in the British Isles is given as 56.7, compared with 53.5 in Denmark, 57.6 in Norway, 61.3 in the Faeröes and 63.8 in Iceland. Polyploid frequency is significantly higher in monocotyledons than in dicotyledons. In northern regions some connection between polyploidy and the perennial habit seems to exist, though this is not apparent in more temperate regions. Hardiness increases in probably the majority of hardy and subhardy genera with an increase in chromosome number, though it decreases in a few cases of strict autopolyploidy. The increased adaptability of polyploids to extreme conditions can be explained only on the base of genetical interpretations. The differences between autopolyploids and allopolyploids are discussed, and the authors propose dividing them into pan- and hemiautopolyploids and pan- and hemiallopolyploids on the basis of differences in their cytogenetical behaviour. The panautopolyploid state implies considerably less advanced evolutionary status than the other subgroups. The species reacts to an extreme condition by forming new ecotypes, not by production of polyploids, which are only formed haphazardly, but which, if advantageous, will survive and be able to invade areas or ecological conditions closed to their diploid parental types.—[D.E.A.]

OSVALD, H., 1949, Notes on the Vegetation of British and Irish Mosses, *Acta Phytog. Suecica*, **26**. The paper describes and classifies some of the peat lands of the British Isles. It is based on field observations made between 1921 and 1937. A map on p. 16 shows the places mentioned.—[A.H.G.A.]

PICHON, M., 1949, Au sujet des "nomina specifica conservanda," *Bull. Soc. Bot. France*, **96**, 216-218; 229-230. The various problems connected with the conservation of specific names are discussed. The

writer fears even worse abuses than in the case of conserved generic names, if such a system is adopted, unless special care is taken in observing the rules with the greatest strictness. Only the names of species which are distributed over a very wide area would be fit for conservation. Three categories of names which might be conserved are distinguished and lists added of specific names which the author proposes should be proscribed. Most of the *nomina rejicienda* in these lists are now in general use in Britain.—[D.E.A.]

SCHUEERMANN, R. H., 1948, Zur Einteilung der Adventiv- und Ruderalflora, *Berichte Schweiz. Bot. Ges.*, **58**, 268-276. The writer classifies the adventive and weed flora as follows:—

A. Escapes.

- a. Ephemeral imported species (Vorübergehend eingeschleppte Arten).
  1. Corn weeds.
  2. Wool plants.
  3. Oil plants.
  4. Bird seed plants.
  5. Plants brought in with southern fruits.
  6. Plants, whose seeds come in with other commodities, or escapes an unknown way.
- b. Denizens (Eingebürgerte Arten).

B. Non-imported species.

- a. Cultivated plants.
- b. Native crop and garden plants.
  - b1. Weeds of all kinds in large towns.
  - b2. Weeds of agricultural land and garden ground.
- c. Native waste ground plants.

[A.H.G.A.]

SHIELDS, L. M., 1950, Leaf Xeromorphy as Related to Physiological and Structural Influences, *Bot. Rev.*, **16**, 399-447. It is concluded that no direct correlation exists between drought resistance and water requirements of plants, xeromorphic leaves commonly showing high transpiration rates. Resistance to desiccation is explained on the basis of changes within the cells such as increase in osmotic pressure, decrease in cell permeability and modifications in the protoplasm which increase its waterholding capacity.—[K.J.H.]

SKALINSKA, M., 1950, Studies in chromosome numbers of Polish Angiosperms, *Acta Bot. Polon.*, **20**, 45-. Strains of *Cardamine pratensis* L. were found with  $2n=30, 32, 44, 50, 76$  &  $78$ . These seem to be connected to some extent with their habitat. Two numbers,  $2n=42$  and  $2n=35$ , are given for *Potentilla argentea*. *Valeriana officinalis* L. diploid ( $2n=14$ ), tetraploid ( $2n=28$ ) and *sambucifolia* Mik. ( $2n=56$ ) are well defined morphologically in Poland and lack the intergrading forms found in Britain. The diploid is the most widely distributed; the tetraploid from only one locality. *V. sambucifolia* is a montane species com-

mon in southern Poland. Several other numbers relating to British species are listed.—[A.H.G.A.]

STEARN, W. T., 1949, The use of the term "clone", *J. Roy. Hort. Soc.*, **74**, 41-46. Several equivalent definitions of "clone", e.g. the vegetatively produced progeny of a single individual, are cited. The spelling "clon", which is the original and more literal rendering of the Greek κλών, is preferable for the formal designation of plants, but for general usage the spelling "clone" is adopted to preserve the correct pronunciation. The term is a genetical rather than a taxonomic one, and has no nomenclatural standing under the International rules; thus a clone, although actually equivalent to an *individuum*, may be given any higher nomenclatural category. *Salix caerulea* and *Populus serotina* are both single clones; *Elodea canadensis* is also represented over a very large area by one clone. Large clones may not be absolutely homogeneous, but where a vegetative mutation (bud-sport) occurs in a ramet of a clone and gives rise to a diverging race, although that race is by rigid definition part of the original clone it is more logically regarded as the starting-point of a fresh one. A race of plants propagated by apomixis forms a special kind of clone. The longevity of single clones is discussed; the only impediment to an indefinite life appears to be infection by virus disease, and whereas certain horticultural clones have died out completely from this cause, some apomicts (e.g. of *Alchemilla*) may date back to before the last glaciation.—[D.P.Y.]

TAYLOR, GEOFFREY, 1951, *Some Nineteenth Century Gardeners* (Skeffington & Sons). Informative accounts of the work, character and influence of three famous gardeners, J. C. Loudon, William Robinson and Reginald Farrer, of interest to gardeners and botanists.—[E.B.B.]

ZENARIA, S., 1948, Piante critiche delle alpi Venete, *Nuovo Giorn. Bot. Ital.*, **55**, 68-81; 1949, *op. cit.*, **56**, 198-222. The writer deals mainly with varieties and gives, among others, definitions of 5 varieties of *Cardamine amara* L. and a large number of varieties and forms of *Lotus corniculatus* L.—[A.H.G.A.]