Flowers and Insects in Great Britain.

PART IV.¹

Observations on the less Specialized Flowers of the Clova Mountains.

BY

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THIS part of our paper contains all our unpublished observations upon Clova flowers ; it will be followed shortly by a concluding part, wherein our results will be reviewed.

CLASS B, § 29. LARGE CRUCIFER TYPE.

148. *Cheiranthus Cheiri*, Linn. [Lit. *Brit.* 23, 29 ; *N.C.E.* 3 a, 14 a, 33, 34 ; *Alps* 34.] A garden-plant with homogamous flowers needing insect aid for fertilization, visited in Britain and Germany by *Apis* and *Bombus*. Knuth, quoting Schletterer, names a number of other Hymenoptera seen on its flowers in the Tyrol.

Visitors. Hymenoptera. Aculeata: *Apidae*: (1) *Apis mellifica* L., sh. 23. V. 97, 800 ft.

149. *Cardamine pratensis*, Linn. [Lit. *Brit.* 23 ; *N.C.E.* 1, 3 a, 14, 18, 24, 25, 34, 40, Hildebrand 1065, de Vries 2460, Warnstorf 2507 ; *Arct.* 7, 37 a, 38.] Müller, MacLeod, Knuth, de Vries, and Alfken record bees as visiting this plant in North Central Europe ; our observations are in singular contrast ; for out of 115 insects seen in spring and summer on the flowers,

¹ Part I. *Annals of Botany*, ix. 1895, p. 227 ; Part II. xvii. 1903, p. 313 ; Part III. xvii. 1903, p. 539.

102 were short-tongued flies; and there was not a single bee. The range of the plant extends far north, and its reproduction in Greenland is chiefly asexual by bulbils. The flower is variable in the relative lengths of stamens and pistil, and the probability of spontaneous self-pollination is considerable, Warming thinks very likely in Greenland, but Hildebrand considers the plant in Germany self-sterile.

Visitors. **Lepidoptera.** Rhopalocera: (1) *Pieris napi* L., 11–15. VI. 99, 800 ft. Heterocera: *Eriocephalidae*: (2) *Eriocephala calthella* L., 1–2. VII. 95, 8–1,100 ft. **Diptera.** *Syrphidae*: (3) *Melanostoma dubium* Ztt., fp. 22. V. 96, 19–2,000 ft. *Empidae*: (4) *Empis bilineata* Lw., sh. 21. V. 96, 800 ft. *Anthomyiidae*: (5) *Trichophthicus* sp., fp. 29. VI. 96, 1,300 ft. (6) *Anthomyia sulciventris* Ztt., fp. 22. V. 96, 19–2,100 ft.; 22–25. V. 97, 7–800 ft. (7 and 8) *A. spp.*, sh. by base in withering flowers and fp. 14–22. V. 96; 19. V. 97; 14. V. 98; 10–15. VI. 99, 8–2,100 ft. *Helomyzidae*: (9) *Tephrochlamys* sp., fp. 9. V. 98, 800 ft. **Coleoptera.** (10) *Meligethes viridescens* F., 21. V. 96, 800 ft. (11) *Anthobium minutum* F., fp. 2. VII. 95, 800 ft.

150. *Arabis caucasica*, Willd. [Lit. *Brit.* 29.] In cultivation. *Apis* visits it much.

Visitors. **Lepidoptera.** Rhopalocera: (1) *Vanessa urticae* L., sh. 15–17. IV. 95; 23. V. 97. **Hymenoptera.** Aculeata: *Apidae*: (2) *Apis mellifica* L., sh. 2–17. IV. 95; 7–15. V. 98. freq. (3) *Bombus terrestris* L., sh. 15–17. IV. 95. (4) *B. lapponicus* F., sh. 20. V. 97. **Diptera.** *Muscidae*: (5) *Lucilia cornicina* F., sh. 16. IV. 95. (6) *Pollenia rudis* F., sh. 2. IV. 95. *Anthomyiidae*: (7) *Anthomyia sulciventris* Ztt., 23–24. V. 97. (8) *A. sp.*, fp. 15. V. 98. *Cordyluridae*: (9) *Scatophaga* sp., sh. 16. IV. 95. All at 800 ft.

151. *Raphanus Raphanistrum*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 11, 14, 18, 32, 34, 40, Warnstorf, 2507.] Knuth's autumn observations at Kiel correspond rather closely with Müller's, making it to be visited in Germany by higher insects than at Clova.

Visitors. **Lepidoptera.** Rhopalocera: (1) *Pieris brassicae* L., 16. VI. 95. (2) *P. napi* L., 18. VI. 99. **Hymenoptera.** Aculeata: *Apidae*: (3) *Bombus terrestris* L., sh. 22. IX. 95. **Diptera.** *Syrphidae*: (4) *Eristalis pertinax* Scop., 22 IX. 95. (5) *Ascia podagrica* F., 22. IX. 95. *Muscidae*: (6) *Pollenia rudis* F., sh. 17–22. IX. 95. *Anthomyiidae*: (7) *Anthomyia* sp., 17. IX. 95. **Coleoptera.** (8) *Meligethes viridescens* F., fp. and seeking h. 15–22. IX. 95; 18. VI. 99, very ab. All at 800 ft.

CLASS B, § 30. SYRINGA TYPE.

152. *Syringa vulgaris*, Linn. [Lit. *N.C.E.* 1, 3 c, 14, 34.] In cultivation. *Macroglossa bombyliiformis* shows a great preference for its flowers and was recorded as abundant on them in South Scotland in 1899 (*Entomologist*, 1900, p. 45.)

Visitors. **Lepidoptera.** Rhopalocera: (1) *Pieris napi* L., sh. 12–13. VI. 99.

Heterocera: *Sphingidae*: (2) *Macroglossa bombylifformis* Esp., sh. a regular visitor, 13-16. VI. 99. *Noctuidae*: (3) *Habrostola tripartita* Hufn., sh. 12-15. VI. 99. (4) *Xylocampa areola* Esp., sh. 12-15. VI. 99. (5) *Anarta melanopa* Thunb., sh. 13. VI. 99. *Diptera*. *Syrphidae*: (6) *Syrphus vitripennis* Mg., 13. VI. 99. (7) *Rhingia campestris* Mg., sh. 13. VI. 99. *Empidae*: (8) *Empis bilineata* Lw., 13. VI. 99. *Anthomyiidae*: (9) *Drymia hamata* Deg., sp. 13. VI. 99. (10) *Hylemyia nigrescens* Rnd., 13. VI. 99. (11) *Anthomyia sulciventris* Ztt., sp. 13-14. VI. 99. *Coleoptera*. (12) *Meligethes viridescens* F., fairly ab. sp. 10-12. VI. 99. All at 8-900 ft.

CLASS B, § 31. MENTHA TYPE.

153. *Thymus Serpyllum*, Linn. [Lit. *Brit.* 23, Marquand 1513; *N.C.E.* 1, 3 c, 12, 14, 14 a, 16, 18, 30, 32, 34, 40; *Arct.* 38; *Alps* 2, 16, 34; *Pyren.* 17.] Gynodioecious. It is well visited by high types of insects.

Visitors. *Lepidoptera*. *Rhopalocera*: (1) *Argynnis aglaia* L., sh. 25. VI.-4. VII. 95; 27. VI.-1. VII. 96, 8-1,700 ft. (2) *A. selene* Schiff., sh. 27. VI. 95, 1,000 ft. (3) *Coenonympha pamphilus* L., sh. 20. VI-6. VII. 95; 2. VII. 96; 8-1,800 ft. (4) *Polyommatus phloas* L., 25. VI. 95, 800 ft. (5) *Vanessa urticae* L., sh. 6-8. VII. 95; 6-10. VII. 96, 800 ft. (6) *Lycaena icarus* Rott., sh. 6. VII. 95; 27. VI.-10. VII. 96, 8-1,000 ft. (7) *Erebia epiphron* Kn., sh. 25. VI. 95, 18-2,000 ft. (8) *Pieris napi* L., 19. VI. 96, 800 ft. *Heterocera*: *Geometridae*: (9) *Xanthorhoe salicata* Hüb., sh. 25. VI. 95; 24. VI. 96, 8-900 ft. (10) *Psodos trepidaria* Tr., sh. 25. VI. 95, 10-1,500 ft. *Crambidae*: (11) *Pyrausta alpinalis* Schiff., sh. 5. VII. 95, 800 ft. *Tineidae*: (12) *Glyphipteryx fuscoviridella* Haw., sh. 1. VII. 95, 800 ft. *Pterophoridae*: (13) *Pterophorus tetradactylus* L., sh. 28. VI. 95, 1,500 ft. *Hymenoptera*. *Aculeata*: *Apidae*: (14) *Apis mellifica* L., sh. 11. VII. 96, 800 ft. (15) *Bombus terrestris* L., sh. 25. VI.-6. VII. 95, 800 ft. (16) *B. lapponicus* F., sh. 25. VI.-2. VII. 95; 22. VI.-10. VII. 96, 8-2,300 ft. (17) *B. pratorum* L., sh. 26. VI.-1. VII. 95, 8-900 ft. (18) *B. agrorum* F., 26. VI. 95, 800 ft. *Vespidae*: (19) *Vespa norvegica* F., sh. 23. VII. 95, 800 ft. *Petiolata tubulifera*: *Chrysididae*: (20) *Odynerus pictus* Curt., sh. 25. VI. 95, 800 ft. *Petiolata parasitica*: *Ichneumonidae*: (21) *Alomyia debellator* (Fabr.)? 1. VII. 95, 800 ft. *Diptera*. *Syrphidae*: (22) *Platychirus manicatus* Mg., sh. 25. VI.-5. VII. 95; 35. VI. 96, 7-800 ft. (23) *Melanostoma mellinum* L., 25. VI. 95, 800 ft. (24) *Sericomyia lappona* L., sh. 1-4. VII. 95; 6. VII. 96, 8-1,700 ft. (25) *Volucella bombylans* L., sh. 5. VII. 95, 800 ft. (26) *Eristalis arbustorum* L., sh. 1-6. VII. 95, 800 ft. (27) *Syritta pipiens* L., sp. 23. VII. 95, 800 ft. *Empidae*: (28) *Empis tessellata* F., sh. 4. VII. 94; 25. VI.-6. VII. 95; 8-1,000 ft. *Sarcophagidae*: (29) *Cynomyia mortuorum* L., sh. 11. VII. 96, 800 ft. *Muscidae*: (30) *Lucilia cornicina* F., sh. and sp. 21. VI.-5. VII. 95; 10. VII. 96, 800 ft. (31) *Calliphora erythrocephala* Mg., sh. 8-17. VII. 95; 25. VI.-11. VII. 96, 8-1,000 ft. (32) *C. vomitoria* L., sh. 1-21. VII. 95, 8-900 ft. (33) *Polenia rudis* F., sh. 25. VI. 96, 700 ft. *Anthomyiidae*: (34) *Hyetodesia incana* W. ? sh. 22-25. VI. 95; 2. VII. 96, 8-1,300 ft. (35 and 36) *H. spp.*, sh. 4. VII. 94; 25. VI. 95; 4. VII. 95, 18-2,000 ft. (37) *Coenosia* sp., 1. VII. 95, 800 ft. (38) *Spilogaster quadrum* F., sp. 23. VII. 95, 800 ft.

154. *Mentha retundifolia*, Linn. [Lit. *N.C.E.* 21 b.] An escape from cultivation.

Visitors. **Hymenoptera.** Aculeata: *Apidae*: (1) *Bombus terrestris* L., ? sh. **Diptera.** *Sarcophagidae*: (2) *Cynomyia mortuorum* L., sh. *Muscidae*: (3) *Lucilia cornicina* F., sh. (4) *Calliphora erythrocephala* Mg. (5) *Pollenia rudis* F., fp. *Cordyluridae*. (6) *Scatophaga stercoraria* L., fp. **Coleoptera.** (7) *Meligethes viridescens* F. All 20. IX. 95, 900 ft.

CLASS B, § 32. LINNAEA TYPE.

155. *Linnaea borealis*, Linn. [Lit. *Brit.* 23, 39; *N.C.E.* 1, 3 c, 8, 14, 14 a, 16, 18, 31, 34; *Arct.* 36; *Alps* 2, 9.] The mouth of the bell is 5 mm. in diameter, the length of the bell is 8 mm. The stigma stands 1 mm. beyond the longer stamens and is curved downwards so as to rub on the back of a visiting insect struggling to penetrate the forest of hairs which guard the honey.

Visitors. **Diptera.** *Anthomyiidae*: (1) *Trichophthicus hirsutulus* Ztt., fp. **Coleoptera.** (2) *Meligethes viridescens* F. Both at 1,800 ft. 6. VII. 96.

CLASS B, § 33. HABENARIA VIRIDIS TYPE.

156. *Habenaria viridis*, R. Br. [Lit. *Brit.* Darwin 483; *Alps* 2.]

Visitor. **Coleoptera.** (1) *Anthophagus alpinus* Payk., sh. 1. VII. 96, 2,400 ft

CLASS B, § 34. CALLUNA TYPE.

157. *Calluna vulgaris*, Salisb. [Lit. *Brit.* 23, 34, 39; *N.C.E.* 1, 3 c, 4, 9, 11, 14, 14 a, 16, 18, 24, 25, 33, 34, 40; *Arct.* 36; *Alps* 2; *Pyren.* 17.] The first heath to flower is generally on some wind-swept point high up, where the plant lies twisted close to the ground; then it bursts into blossom all over the district. As we have shown (Lit. 39) it is probably somewhat anemophilous. We have found plants at Clova upwards of thirty years old (Graebner, in Engler's *Bot. Jahrbücher*, xx. 1895, p. 500, says that it ceases to flower after fifteen years and dies out in about twenty-four years).

Visitors. **Lepidoptera.** Rhopalocera: (1) *Lycaena icarus* Rott., sh. 22 VII. 95, 800 ft. Heterocera: *Noctuidae*: (2) *Hydroecia nictitans* Bkh., sh. 17. IX. 95, 700 ft. **Hymenoptera.** Aculeata: *Apidae*: (3) *Bombus terrestris* L., sh. 14-23. IX. 95, 7-2,900 ft. (4) *B. lapponicus* F., sh. 30. VI.-8. VII. 96, 20-2,200 ft. (5) *B. scrimshirani* Kirby, 14. IX. 95, 2,000 ft. *Formicidae*: (6) *Formica fusca* Latr., sh. 17. IX. 95, 700 ft. Petiolata parasitica: *Ichneumonidae*: (7) 1 sp., sh. 19. IX. 95, 2,400 ft. **Diptera.** *Syrphidae*: (8) *Platychirus* sp., sh. 22. VI. 95, 1,000 ft. *Empidae*: (9) *Empis* ? *vernalis* Mg., sh. 19. IX. 95, 2,400 ft. *Muscidae*: (10) *Lucilia cornicina* F., sh. and fp. 14-19. IX. 95, 20-2,400 ft. (11) *Pollenia rudis* F., sh. and fp. 14-21. IX. 95, 9-2,400 ft. *Anthomyiidae*: (12) *Hyetodesia variabilis* Flin. 30. VI.

96, 2,300 ft. (13) *Trichophthicus* sp., sp. 8. VII. 96, 1,400 ft. (14) *Anthomyia* sp., sh. 21. IX. 95, 1,100 ft. *Cordyluridae*: (15) *Scatophaga stercoraria* L., sh. 20-21. IX. 95, 11-2,500 ft. **Coleoptera**. (16) *Meligethes viridiscens* F., sp. 17-21. IX. 95, 7-1,000 ft. **Thysanoptera**. (17) *Thrips* sp., 19. IX. 95, 2,400 ft.

CLASS B, § 35. VALERIAN TYPE.

158. *Valeriana officinalis*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 c, 18, 32, 33, 34; *Arct.* 36; *Alps*, 2, 9, 16; *Pyren.* 17.] We have referred this flower to Class B, not following those who place it in B'. In Germany, Flanders, and the Pyrenees it has been shown to be rather a Syrphid flower. In the Alps butterflies visit it freely.

Visitors. Lepidoptera. Rhopalocera: (1) *Pieris brassicae* L., sh. 22. VII. 95, 800 ft. Heterocera: *Noctuidae*: (2) *Dianthecia cucubali* Fues., sh. 26. VI. 96, 800 ft. (3) *Noctua brunnea* Schiff., 23. VII. 95, 800 ft. (4) *N. baja* F., 22. VI. 95, 800 ft. (5) *N. C-nigrum* L., sh. 2. VI. 95, 800 ft. (6) *Celaena haworthii* Cuc., sh. 6. VII. 95, 800 ft. (7) *Charaeas graminis* L., sh. 20-23. VII. 95, 800 ft. *Geometridae*: (8) *Thera variata* Schiff., sh. 6. VII. 95, 800 ft. *Crambidae*: (9) *Pyrausta alpinalis* Schiff., sh. 6. VII. 95, 800 ft. **Hymenoptera.** Aculeata: *Apidae*: (10) *Apis mellifica* L., sh. 15-22. VII. 95; 3-11. VII. 96, 800 ft. (11) *Bombus pratorum* L., sh. 12-23. VII. 95, 7-800 ft. (12) *B. terrestris* L., sh. 11. VII. 96, 800 ft. Sessiliventre: *Tenthredinidae*: (13) *Allantus arcuatus* Forst., eating petals 10. VII. 95, 800 ft. Petiolata parasitica: *Ichneumonidae*: (14) *Polyrrhembia tenebricosa* Grav., 2. VII. 95, 800 ft. (15) 1 sp., 3. VII. 96, 800 ft. **Diptera.** *Syrphidae*: (16) *Leucozonia lucorum* L., sh. 15. VII. 95, 800 ft. (17) *Platychirus manicatus* Mg., sh. and fp. 6-20. VII. 95; 3-11. VII. 96, 800 ft. (18) *P. peltatus* Mg., sh. 22. VII. 95, 800 ft. (19) *Syrphus compositarum* Verrall, sh. 17. VII. 95, 800 ft. (20) *S. ribesii* L., sp. 11-20. VII. 95, 800 ft. (21) *S. ? balteatus* Deg., sh. 15. VII. 95, 800 ft. (22) *Volucella bombylans* L., sh. 10-22. VII. 95, 800 ft. (23) *Eristalis arbustorum* L., sh. 4-22. VII. 95; 24. VI.-11. VII. 96, 800 ft. (24) *E. rupium* sh. and fp. 2-22. VII. 95, 800 ft. (25) *Heliophilus pendulus* L., sh. 11. VII. 96, 800 ft. (26) *Syrpitta pipiens* L., sh. 17. VII. 95, 800 ft. *Empidae*: (27) *Empis tessellata* F., sh. 4-20. VII. 95; 24. VI.-11. VII. 96, 800 ft. (28) *E. bilineata* Lw., 30. VI. 95, 700 ft. (29) *E. punctata* Mg., sh. 17. VII. 95, 800 ft. *Tipulidae*: (30) *Tipula paludosa* Mg., 22. VII. 95, 800 ft. *Tachinidae*: (31) *Siphona geniculata* Deg., sh. 10. VII. 95, 800 ft. *Muscidae*: (32) *Calliphora vomitoria* L., sh. and fp., 17-22. VII. 95, 800 ft. (33) *C. erythrocephala* Mg., sh. and fp. 20. VII. 95; 11. VII. 96, 800 ft. (34) *Pollenia rudis* F., sh. and fp. 4-12. VII. 95, 7-800 ft. *Anthomyiidae*: (35) *Hyetodesia incana* W., sh. and fp. 2-17. VII. 95; 24. VI. 96, 800 ft. (36) *H. basalis* Ztt., sh. and fp. 2-4. VII. 95, 800 ft. (37) *Spilogaster nigrivenis* Ztt., fp. 3. VII. 96, 800 ft. (38) *Trichophthicus* sp., sh. and fp. 17. VII.-95; 24. VI. 96, 800 ft. *Cordyluridae*: (39) *Scatophaga stercoraria* L., sh. and fp. 20-22. VII. 95, 800 ft. **Coleoptera**: (40) *Meligethes viridescens* F., sh. 2. VII. 95; 20. VI.-6. VII. 96, 7-1,700 ft. (41) *Epuraea aestiva* L., sh. 2-6. VII. 95, 800 ft. **Trichoptera**: (42) 1 sp., 22. VII. 95, 800 ft.

CLASS B, § 36. POLYGONUM VIVIPARUM TYPE.

159. Polygonum viviparum, Linn. [Lit. *Arct.* 7, 34, 36, 38; *Alps* 2, 9, 16, 21 a, 21 b.] Reproduction is very largely by bulbils.

Visitors. Lepidoptera. Heterocera: *Noctuidae*: (1) *Eupithecia nanata* Hb., ? sh. 27. VI. 95, 800 ft. *Crambidae*: (2) *Pyrausta alpinalis* Schiff., 4. VII. 95, 2,700 ft. *Tortricidae*: (3) *Tortrix* sp., sh. 5. VII. 95, 800 ft. (4) *Gelechia* sp., sh. 24. VI. 95, 800 ft. *Hymenoptera.* Sessiliventre. *Tenthredinidae*: (5) *Allantus arcuatus* Forst., 1. VII. 95, 800 ft. *Diptera.* *Syrphidae*: (6) *Platychirus manicatus* Mg., 4. VII. 95, 900 ft. (7) *Syrphus tricinctus* Fln., sh. 27. VI. 95, 800 ft. (8) *Eristalis rupium* F., sh. 27. VI. 95, 800 ft. (9) *Syritta pipiens* L., sh. 17. VI. 95, 800 ft. *Empidae*: (10) *Empis tessellata* F., 4. VII. 94, 800 ft. *Bibionidae*: (11) *Dilophus albipennis* Mg., 10. VII. 96, 2,000 ft. *Muscidae*: (12) *Pollenia rudis* F., 4. VII. 94, 800 ft. *Anthomyiidae*: (13) *Hyetodesia incana* W., sh. 27. VI.-4. VII. 95, 8-1,800 ft. (14) *H. lucorum* Fln., 29. VI. 95, 800 ft. (15) *H. basalis* Ztt., 29. VI. 95, 800 ft. (16) *Spilogaster nigrivenis* Ztt., fp. 2. VII. 96, 2,300 ft. (17) *Drymia hamata* Fln., sh. 4. VII. 95, 1,800 ft. (18) *Hylemyia nigrescens* Rnd., 24. VII. 95, 800 ft. (19) *Homalomyia incisurata* Ztt., 4. VII. 94, 800 ft. (20 and 21) *Anthomyia* spp., sh. 22. VI. 95, 1,700 ft.; 6. VII. 96, 2,000 ft. *Cordyluridae*: (22) *Scatophaga* sp., sh. 4. VII. 95, 1,800 ft. *Sapromyzidae*: (23) *Lauxania cylindricornis* F., 4. VII. 94, 800 ft. *Hemiptera.* (24) *Nabis flavimarginatus*, D. & S., 1. VII. 95, 900 ft.

CLASS B, § 37. INTERMEDIATE ROSACEOUS TYPE.

160. Prunus Padus, Linn. [Lit. *N.C.E.* 1, 3 b, 33; *Alps* 34.]

Visitors. Hymenoptera. Aculeata: *Apidae*: (1) *Apis mellifica* L., sh. 21-22. V. 97, 6-800 ft. *Diptera.* *Syrphidae*: (2) *Syrphus punctulatus* Verrall, sh. 21-22. V. 97, 6-800 ft. *Anthomyiidae*: (3) *Anthomyia sulciventris* Ztt., 21-22. V. 97, 6-800 ft. *Coleoptera.* (4) *Meligethes* ? *viridescens* F., 21. V. 97, 800 ft.

161. Rubus Chamaemorus, Linn. [Lit. *Brit.* 23; *N.C.E.* 21 a, 21 b; *Arct.* 36, 38; *Alps* 34.] About 20 per cent. of the flowers get fully fertilized and set large fruits, the rest get fertilized in various degrees of completeness: frequently only one carpel may form a drupelet. Flies, which visit it, go by preference to the male flowers.

Visitors. Hymenoptera. Petiolata parasitica: *Ichneumonidae*: (1) *Hemiteles* ? 16. VI. 95, 2,000 ft. *Diptera.* *Syrphidae*: (2) *Melanostoma dubium* Ztt., 19. VI. 95, 2,000 ft. (3) *Syrphus vitripennis* Mg., 13. VI. 99, 2,300 ft. *Empidae*: (4) *Empis lucida* Ztt., sh. 16. VI. 95; 17. VI. 99, 9-2,800 ft. (5) *E. vernalis* Mg., 17. VI. 99, 2,800 ft. (6 and 7) *E. spp.*, sh. 11-17. VI. 99, 15-2,800 ft. *Bibionidae*: (8) *Scatopse* sp., 11. VI. 99, 1,500 ft. *Anthomyiidae*: (9) *Hyetodesia incana* W., 19. VI. 95, 2,000 ft. (10) *Drymia hamata* Fln., 19. VI. 95, 2,000 ft. (11) *Hylemyia nigrescens* Rnd., 11-12. VI. 99, 15-2,500 ft. (12) *Trichophthicus* sp., 16-19. VI. 95, 18-2,000 ft. (13) *Anthomyia radicum* L., 19. VI. 95; 16. VI. 99, 20-2,700 ft. (14) *A. sulciventris* Ztt., 11. VI. 99, 1,500 ft. (15) *Azelia triquetra* W., 13. VI. 99, 2,300 ft. *Coleo-*

ptera. (16) *Meligethes viridescens* F., 16-19. VI. 95, 2,000 ft.; 9-11. VI. 99, 15-2,000 ft. (17) *M. aeneus* F., 19. VI. 95, 2,000 ft. (18) *Anthobium torquatum* Marsh., 19. VI. 95, 2,000 ft. (19) *Anthophagus alpinus* Payk., sh. 19. VI. 96, 3,000 ft. **Thysanoptera.** (20) *Thrips* sp., 11. VI. 99, 1,500 ft.

162. *Rubus suberectus*, Anders. [Lit. *Brit.* 34, 39; Marquand 1513; *N.C.E.* 1, 3 b, 4, 11, 16, 32, 33, 34, 40; *Alps* 16; *Pyren.* 17.] In *R. suberectus* we would include any or all the *Rubi suberecti*, were there more than one at Clova: for, following Sir Joseph Hooker, it is our endeavour, in *Rubus*, in *Hieracia* and elsewhere, to equalize our species and, as far as possible, neither to give a fictitious value to small variations nor to shirk the difficulty of drawing distinctions by lumping. But in the literature list above given we have quoted all citations of *R. fruticosus*, sensu amplissimo.

Visitors. Lepidoptera. Rhopalocera: (1) *Pieris brassicae* L., sh. 22. VI. 95. Heterocera: *Eriocephalidae*: (2) *Eriocephala calthella* L., sh. 30. VI. 95. **Hymenoptera.** Aculeata: *Apidae*: (3) *Apis mellifica* L., sh. 22-30. VI. 95. (4) *Andrena analis* Panz., sh. 30. VI. 95. *Vespidae*: (5) *Vespa sylvestris* Scop., sh. 30. VI. 95. Sessiliventre: *Tenthredinidae*: (6) *Allantus arcuatus* Forst., sh. 23. VI. 95. **Diptera.** *Syrphidae*: (7) *Platychirus manicatus* Mg., sh. 22. VI. 95; 22. VI. 96. (8) *Syritta pipiens* L., 22. VI. 95. *Empidae*: (9) *Empis tessellata* F., sh. 30. VI. 95. (10) *E. punctata* Mg., 22. VI. 96. *Anthomyiidae*: (11) *Hyetodesia incana* W., sh. 22-30. VI. 95; 22. VI. 96. (12) *Trichophthicus* sp., sh. 30. VI.-5. VII. 95. *Sepsidae*: (13) *Sepsis cynipsea* L., sh. 22. VI. 96. **Coleoptera.** (14) *Byturus tomentosus* F., sh. and in cop. 30. VI. 95. **Thysanoptera.** (15) *Thrips* sp., 30. VI. 95. All at 800 ft.

163. *Cotoneaster microphylla*, Wall. In cultivation.

Visitors. Hymenoptera. Aculeata: *Vespidae*: (1) *Vespa norvegica* F., sh. 1. VII. 96, 900 ft. freq. **Diptera.** *Syrphidae*: (2) *Platychirus manicatus* Mg., 18. VI. 99, 900 ft. (3) *Syrphus vitripennis* Mg., 15. VI. 99, 900 ft. (4) *Heliophilus* sp., 15. VI. 99, 900 ft. (5) *Syritta pipiens* L., 15. VI. 99, 900 ft. *Tachinidae*: (6) *Siphona geniculata* Deg., 18. VI. 99, 800 ft. *Muscidae*: (7) *Calliphora erythrocephala* Mg., 18. VI. 99, 900 ft. freq. *Anthomyiidae*: (8) *Anthomyia sulciventris* Ztt., 18. VI. 99, 800 ft.

164. *Saxifraga oppositifolia*, Linn. [Lit. *N.C.E.* 21 a; *Arct.* 7, 34, 36, 37 b, 38; *Alps* 2, 21 b.] Protogynous, with self-pollination when the stamens dehisce. The brilliant patches of flowers in early April attract flies, but bees do not visit them. Plenty of fruit is ripened. The flowers of a handsome Pyrenean variety cultivated at Kew show no self-pollination.

Visitors. Diptera. *Bibionidae*: (1) *Scatopse* sp., 21. V. 97, 1,700 ft. *Muscidae*: (2) *Lucilia cornicina* F., sh. 14. IV. 95, 10-1,200 ft. (3) *Pollenia rudis* F., sh. 14. IX. 95, 10-1,200 ft. *Anthomyiidae*: (4) *Anthomyia sulciventris* Ztt., sh. and fp. 21. V. 97, 2,300 ft. (5) *A.* sp., sh. and fp. 21. V. 97, 17-2,200 ft. *Helomyzidae*: (6) *Tephrochlamys* sp., sh. 9. V. 98, 2,300 ft. *Sepsidae*: (7) *Sepsis* ? *cynipsea* L.,

sh. 14. IV. 95, 10–1,200 ft. *Phoridae*: (8) *Phora* sp., sh. 21. V. 97, 2,300 ft. **Coleoptera**. (9) *Anthophagus alpinus* Payk., sh. 1. VII. 96, 1,900 ft.

165. *Ribes nigrum*, Linn. [Lit. *N.C.E.* 1, 34; MacLeod, 1472.] In cultivation and as an escape from cultivation.

Visitors. **Hymenoptera**. Aculeata: *Apidae*: (1) *Bombus terrestris* L., sh. 13. V. 98. (2) *B. lapponicus* F., 16. V. 98. Both at 800 ft.

166. *Menyanthes trifoliata*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 8, 9, 14, 18, 34, Warnstorf, 2507; *Arct.* 38.]

Visitors. **Lepidoptera**. Rhopalocera: (1) *Pieris napi* L. **Diptera**. *Empidae*: (2) *Rhamphomyia sulcata* Fln. **Coleoptera**. (3) *Meligethes viridescens* F., ? sh. All 18. VI. 99, 800 ft.

CLASS B, § 38. LARGE GERANIUM TYPE.

167. *Geranium sylvaticum*, Linn. [Lit. *Brit.* 23, *N.C.E.* 3 b, 21 a, 21 b, 34; *Arct.* 34, 36; *Alps* 2, 21 a, 21 b.] The flowers sleep at night.

Visitors. **Lepidoptera**. Rhopalocera: (1) *Pieris brassicae* L., sh. 24. VI. 95, 900 ft. (2) *Lycaena icarus* Rott., sh. 24. VI. 95, 900 ft. **Hymenoptera**. Aculeata: *Apidae*: (3) *Bombus terrestris* L., sh. 5. VII. 95, 700 ft. (4) *B. lapponicus* F., sh. 24. VI. 95, 900 ft. and 6. VII. 96, 2,300 ft. (5) *B. agrorum* F., sh. 8. VII. 95, 800 ft., and 6. VII. 96, 2,000 ft. (6) *Andrena analis* Panz., 11. VII. 96, 700 ft. (7) *A. coitana* Kirby, sh. 5. VII. 95, 700 ft. Petiolata parasitica: *Chalcididae*: (8) 1 sp., sh. 11. VII. 96, 800 ft. **Diptera**. *Syrphidae*: (9) *Platychirus manicatus* Mg., sh. 2–8. VII. 95; 25. VI.–11. VII. 96, 7–800 ft. (10) *P. peltatus* Mg., sh. 22. VI. 96, 2,300 ft. (11) *P. clypeatus* Mg., fp. 2. VII. 95, 800 ft. (12) *Syrphus* sp., sh. 25. VI. 95, 800 ft. (13) *Rhingia campestris* Mg., sh. 24. VI.–8. VII. 95, 8–900 ft. (14) *Eristalis arbustorum* L., 25. VI. 96, 700 ft. *Empidae*: (15) *Empis tessellata* F., sh. 5. VII. 95; 29. VI. 96, 7–900 ft. (16) *E. punctata* Mg., 5. VII. 95, 700 ft. (17) *E. bilineata* Lw., sh. 16. VI. 99, 800 ft. (18) *E. ? vernalis* Mg., 8. VII. 95, 800 ft. (19) *E. sp.*, sh. 29. VI. 96, 900 ft. *Bibionidae*: (20) *Scatopse* ?, 5. VII. 95, 700 ft. *Muscidae*: (21) *Stomoxys calcitrans* L., sh. 25. VI. 95, 800 ft. *Anthomyiidae*: (22) *Hyetodesia incana* W., sh. 2. VII. 96, 2,000 ft. (23) *H. lucorum* Fln., sh. 24. VI. 95, 900 ft. (24) *H. basalis* Ztt., sh. 24. VI. 95, 900 ft. (25) *Limnophora solitaria* Ztt., 26. VI. 96, 2,300 ft. (26) *Drymia hamata* Fln., sh. 26. VI.–2. VII. 96, 20–2,400 ft. (27) *Hylemyia nigrescens* Rnd., sh. 15–19. VI. 99, 7–900 ft. (28) *Anthomyia* sp., sh. 4–5. VII. 95, 700 and 2,300 ft.

CLASS B, § 39. VERONICA TYPE.

168. *Veronica Chamaedrys*, Linn. [Lit. *Brit.* 23, 34; *N.C.E.* 1, 3 c, 4, 11, 14, 16, 18, 33, 34, 40; *Alps* 2; *Pyren.* 17.]

Visitors. **Lepidoptera**. Heterocera: *Eriocephalidae*: (1) *Eriocephala calthella* L., 24. VI. 95, 800 ft. **Hymenoptera**. Aculeata: *Apidae*: (2) *Andrena analis* Panz., sh. 22–23. VI. 95, 8–900 ft. Petiolata parasitica: *Chalcididae*: (3) 1 sp., 15.

VI.-2. VII. 95, 8-1,000 ft. **Diptera.** *Syrphidae*: (4) *Platychirus manicatus* Mg., sh. and fp. 20. VI.-20. VII. 95, 8-900 ft. fairly freq. (5) *Chrysogaster ? hirtella*, Loew, sh. 22. VI. 95, 800 ft. (6) *Syrphus luniger* Mg., sh. 23-26. VI. 95, 8-900 ft. (7) *Ascia podagrica* F., 20. VI. 95, 800 ft. (8) *Rhingia campestris* Mg., 28. VI. 95, 800 ft. *Empidae*: (9) *Empis tessellata* F., sh. 20. VII. 95, 800 ft. *Tachinidae*: (10) *Siphona geniculata* Deg., sh. 22. VI. 95; 22. VI. 96, 8-900 ft. *Muscidae*: (11) *Pollenia rudis* F., 5. VII. 95, 700 ft. *Anthomyiidae*: (12) *Hyetodesia incana* W., 23. VI. 95, 800 ft. (13) *Anthomyia sulciventris* Ztt., sh. and fp. 25. VI.-12. VII. 95; 27. V. 97, 7-800 ft. (14) *A. sp.*, fp. 12. VII. 95; 10. VI. 99, 7-800 ft. (15) *Coenosia sp.*, sh. 1-6. VII. 95, 800 ft. *Opomyzidae*: (16) *Opomyza germinationis* L., 20. VI. 95; 800 ft.

169. Veronica serpyllifolia, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 14, 34, Warnstorf 2507.] Abundant, but very little visited.

Visitor. **Thysanoptera.** (1) *Thrips sp.*, 16. IX. 95, 800 ft.

170. Veronica alpina, Linn. [Lit. *N.C.E.* 21 b; *Arct.* 36, 37 c; *Alps* 2, 9, 21 b.] The flower is 6 mm. broad; its tube 1.5 mm. long. Ultimate self-pollination and apparently fertilization occurs. Abundance of seed is set.

Visitor. **Diptera.** (1) A small fly, sh. 22. VI. 95, 2,600 ft.

171. Veronica officinalis, Linn. [Lit. *Brit.* 23, 34; *N.C.E.* 1, 4, 14, 16, 18, 30, 34; *Alps* 2, 9, 16, 21 a, 21 b, 34.]

Visitors. **Hymenoptera.** *Aculeata*: *Apidae*: (1) *Andrena coitana* Kirby, 26. VI. 95. **Diptera.** *Syrphidae*: (2) *Platychirus manicatus* Mg., 26. VI. 95. *Anthomyiidae*: (3) *Hylemyia nigrescens* Rnd., sh. 21. VI. 95. All at 800 ft.

172. Veronica scutellata, Linn. [Lit. *N.C.E.* 14.]

Visitors. **Hymenoptera.** *Petiolata parasitica*: *Chalcididae*: (1) 1 sp. sh. 6. VII. 95. **Diptera.** *Empidae*: (2) *Clinoceira bipunctata* Hal., 6. VII. 95. *Anthomyiidae*: (3) *Hyetodesia variabilis* Fln., 1. VII. 95. All at 800 ft.

173. Veronica Beccatunga, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 c, 33, 34, 40.]

Visitor. **Diptera.** *Anthomyiidae*: (1) 1 sp., 17. VI. 9, 800 ft.

CLASS B, § 40. MYOSOTIS TYPE.

174. Myosotis arvensis, Hoffm. [Lit. *Brit.* 23.]

Visitors. **Diptera.** *Syrphidae*: (1) *Melanostoma mellinum* L., sh. 22. IX. 95, 800 ft. *Anthomyiidae*: (2) *Limnophora sp.*, sh. and fp. 1. VII. 95; 11. VII. 96, 7-800 ft. **Thysanoptera.** (3) *Thrips sp.*, 11. IX. 95, 800 ft.

175. Myosotis versicolor, Reichb. [Lit. *Brit.* 23; *N.C.E.* 1, 3 c, 18, 34.]

Visitors. **Diptera.** *Syrphidae*: (1) *Platychirus manicatus* Mg., 15. VI. 99.

(2) *P. albimanus* F., 16. IX. 95. *Tachinidae*: (3) *Siphona geniculata* Deg., fp. 16. IX. 95. All at 800 ft.

176. *Myosotis repens*, D. Don. [Lit. *Brit.* 23; *N.C.E.* 1, 14, 18, 30, 33.]

Visitors. Diptera. Empididae: (1) *Empis tessellata* F., sh. 1. VII. 95; 29. VI. 96, 8–1,300 ft. (2) *E. stercorea* L., sh. 1. VII. 95, 800 ft. *Dolichopodidae*: (3) *Dolichopus* sp., fp. 29. VI. 96, 1,800 ft. *Anthomyiidae*: (4) *Hyetodesia incana* W., sh. 1. VII. 95, 800 ft. (5) *H. variabilis* Fln., 1. VII. 95, 800 ft. (6) *Limnophora* sp., 6. VII. 95, 800 ft. (7) *Drymia hamata* Fln., fp. 6. VII. 95, 800 ft. (8) *Trichophthicus* sp., sh. 29. VI.–6. VII. 96, 8–1,300 ft. *Chloropidae*: (9) *Chlorops* sp., 29. VI. 96, 1,300 ft. *Coleoptera.* (10) *Meligethes viridescens* F., fp. 29. VI. 96, 1,300 ft.

177. *Anchusa sempervirens*, Linn. [Lit. *N.C.E.* 4.]

Visitor. Hymenoptera. Aculeata: Apidae: (1) *Bombus agrorum* F., sh. going from flower to flower, 10. VI. 99, 500 ft.

CLASS B, § 41. EPILOBIUM TYPE.

178. *Epilobium alsinifolium*, Vill. [Lit. *N.C.E.* 21 a; *Arct.* 36; *Alps* 2, 21 a.]

Visitor. Diptera. Ephydriidae: (1) *Hydrellia griseola* Fln., fp. 6. VI. 95, 900 ft.

179. *Epilobium montanum*, Linn. [Lit. *Brit.* 23; *N.C.E.* 3 b; 9, 14, 18, 21 a; *Alps* 34.]

Visitor. Diptera. Syrphidae: (1) *Platychirus* ? *manicatus* Mg., 5. VII. 96, 1,400 ft.

180. *Epilobium angustifolium*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 11, 16, 18, 25, 33, 34, 40; *Arct.* 36, 38; *Alps* 2, 9, 21 b, 34.] One of the Class B which most nearly is a Bee flower. *Bombi* visit it freely and *Apis* abundantly in most places. Our Clova observations want amplifying. In Arctic regions self-pollination occurs.

Visitors. Lepidoptera. Heterocera: Noctuidae: (1) *Miana fasciuncula* Haw., sh. 30. VI. 96. *Hymenoptera. Aculeata: Apidae*: (2) *Bombus terrestris* L., sh. 11. VII. 96. *Diptera. Anthomyiidae*: (3) *Hyetodesia basalis* Ztt., sh. 30. VI. 96. (4) *Anthomyia radicum* L., sh. 11. VII. 96. (5 and 6) *A. sp.*, sh. 21. VI.–11. VII. 96. *Sepsidae*: (7) *Sepsis cynipsea* L., sh. 11. VII. 96. All at 800 ft.

TABLE XXXIII.

Actual number of individuals visiting the flowers of Class B.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenhr.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
148. Cheiranthus Cheiri . . .	1	—	—	—	—	—	—	—	—	—	—	—	—	—	1
149. Cardamine pratensis . . .	—	—	—	—	—	—	—	6	—	2	2	102	5	—	117
150. Arabis caucasica . . .	3	1	—	—	—	—	—	1	—	—	—	9	—	—	14
151. Raphanus Raphanistrum . . .	—	3	—	—	—	—	—	2	—	—	2	5	163	—	175
152. Syringa vulgaris . . .	—	—	—	—	—	—	—	25	—	—	5	17	17	—	64
153. Thymus Serpyllum . . .	1	22	1	—	1	—	1	44	3	—	24	92	—	—	189
154. Mentha rotundifolia . . .	—	1	—	—	—	—	—	—	—	—	—	19	2	—	22
155. Linnaea borealis . . .	—	—	—	—	—	—	—	—	—	—	—	3	1	—	4
156. Habenaria viridis . . .	—	—	—	—	—	—	—	—	—	—	—	—	4	—	4
157. Calluna vulgaris . . .	—	24	—	—	1	5	—	2	—	—	2	21	2	1	58
158. Valeriana officinalis . . .	28	6	—	1	2	—	—	12	1	—	76	127	5	7	265
159. Polygonum viviparum . . .	—	—	—	1	—	—	—	1	6	—	5	29	—	1	43
160. Prunus Padus . . .	2	—	—	—	—	—	—	—	—	—	3	2	1	—	8
161. Rubus Chamaemorus . . .	—	—	—	—	1	—	—	—	—	—	28	59	11	2	101
162. Rubus suberectus . . .	9	—	1	1	—	—	1	1	—	1	6	18	8	1	47
163. Cotoneaster microphylla . . .	—	—	—	—	—	—	6	—	—	—	4	11	—	—	21
164. Saxifraga oppositifolia . . .	—	—	—	—	—	—	—	—	—	—	—	19	1	—	20
165. Ribes nigrum . . .	—	3	—	—	—	—	—	—	—	—	—	—	—	—	3
166. Menyanthes trifoliata . . .	—	—	—	—	—	—	—	2	—	—	—	1	21	—	24
167. Geranium sylvaticum . . .	—	7	2	—	1	—	—	2	—	—	42	31	—	—	85
168. Veronica Chamaedrys . . .	—	—	2	—	30	—	—	—	—	1	20	35	—	—	88
169. Veronica serpyllifolia . . .	—	—	—	—	—	—	—	—	—	—	—	—	—	1	1
170. Veronica alpina . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
171. Veronica officinalis . . .	—	—	1	—	—	—	—	—	—	—	1	1	—	—	3
172. Veronica scutellata . . .	—	—	—	—	1	—	—	—	—	—	—	2	—	—	3
173. Veronica Beccabunga . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
174. Myosotis arvensis . . .	—	—	—	—	—	—	—	—	—	—	1	2	—	—	6
175. Myosotis versicolor . . .	—	—	—	—	—	—	—	—	—	—	2	1	—	3	3
176. Myosotis repens . . .	—	—	—	—	—	—	—	—	—	—	5	12	1	—	18
177. Anchusa sempervirens . . .	—	1	—	—	—	—	—	—	—	—	—	—	—	—	1
178. Epilobium alsinifolium . . .	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
179. Epilobium montanum . . .	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
180. Epilobium angustifolium . . .	—	1	—	—	—	—	—	1	—	—	—	34	—	—	36
Total	44	69	7	3	37	5	8	99	10	4	229	656	242	16	1429
Percentage	3.08	4.83	.49	.21	2.59	.35	.56	6.93	.70	.29	15.95	45.91	16.93	1.12	

TABLE XXXIV.

Showing that Class B draws more than its share of distinctly desirable insects, and much more than its share of desirable insects.

	<i>Available.</i>		<i>To Class B.</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Distinctly desirable	1,763	10.19	212	14.84
Desirable . . .	1,277	7.37	246	17.21
Indifferent . . .	12,993	75.08	910	63.68
Injurious . . .	1,273	7.36	61	4.26

Out of the whole available anthophilous fauna of (for the time of our observations) 17,306 individuals, 1,429 went to Class B. The species obtained attention as in Table XXXIII. In summer among the visitors were more long-tongued Lepidoptera than the class's share, and more Syrphidae (see Table XXXVI); in autumn among the visitors were more Bombi and more Coleoptera because *Bombus* went very freely to *Thymus* and *Calluna*, and *Meligethes* to *Raphanus Raphanistrum*. As shown in Table XXXIV, the summer visitors were of a higher type than the spring and autumn visitors.

In Tables XXXVII and XXXVIII the flowers of this class are divided according to their colour, and it is easily seen that the long-tongued Lepidoptera showed a distinct preference for flowers with a certain amount of blue in them, and the Bombi for rose-purple, and *Apis* for white and rose-purple. One yellow flower, viz. *Raphanus Raphanistrum*, drew so many individuals of *Meligethes* that the percentages for yellow are biased and the percentages for green are founded on too small figures for discussion of them to be possible.

We do not find Class B, by visitors, breaking into two halves as Class B' did, yellow and white on one side, blue-lilac-purple and rose on the other, nor do we find the visitors visiting the colours as we found them visiting Classes H and F.

Class B was found to attract nine species of the butterflies, sixteen large moths, six small moths including *Eriocephala*; of Hymenoptera, *Apis*, five species of Bombi, two of *Andrena*, two of *Vespa*, of *Formica*, of *Odynerus*, of *Allantus*, of four species of Parasitic Hymenoptera; among Diptera, in the Syrphidae of *Rhingia campestris*, *Volucella bombylans*, *Leucozonia lucorum*, *Helophilus*, three species of *Eristalis*, one *Chrysogaster*, seven species of *Syrphus*, *Syritta*, *Ascia*, four species of *Platychirus*, and two of *Melanostoma*; in Empidae of seven species of *Empis* including *E. tessellata*, of one *Rhamphomyia* and of one *Clinoceira*; *Siphona geniculata* was the only Tachinid attracted; among Muscids the class attracted two Calliphorae, one *Lucilia*, one *Pollenia* and one *Stomoxys*, of Cynomyiidae one species, of Anthomyiids eighteen species including *Drymia hamata*, of Scatophagids one species, and of other orders of flies eleven species; of Coleoptera six species, one of Hemiptera, one of Trichoptera, and of Thysanoptera one.

CLASS PO. B, § 42. PENDANT B-LIKE TYPE.

181. *Anemone nemorosa*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 a, 4, 18, 33, 34, Warnstorf 2507.]

Visitors. **Hymenoptera.** Aculeata: *Apidae*: (1) *Apis mellifica* L., cp. 18. V. 97; 7-15. V. 96, 800 ft. (2) *Bombus lapponicus* F., seeking h. and cp. 18-20. V. 97; 15. V. 98, 800 ft. **Diptera.** *Syrphidae*: (3) *Platychirus discimanus* Lw., fp. 18-20. V. 97; 7. V. 98, 6-800 ft. *Mycetophilidae*: (4) *Sciara* sp., 16. V. 98,

700 ft. (5) *Dilophus* sp., 18. V. 97, 800 ft. (6) *Scatopse*?, 21. V. 97, 1,600 ft. ? seeking h. 23. V. 96, 2,400 ft. *Muscidae*: (7) *Lucilia cornicina* F., 20. V. 97, 800 ft. *Anthomyiidae*: (8) *Anthomyia sulciventris* Ztt., fp. 20-22. V. 97; 7-9. V. 98, 7-1,600 ft. (9) *Anthomyia* sp., 21. VI. 96; 18-21. V. 97; 15. V. 98; 10. VI. 99, 7-1,500 ft. *Cordyluridae*: (10) *Scatophaga stercoraria* L., fp. 21. V. 97. 7. V. 98; 8-2,100 ft.

182. *Pyrola media*, Sw. [Lit. *Alps* 9.] All flowers set seed. Style not decurved as Kerner describes it.

Visitor. Hymenoptera. Petiolata parasitica: *Chalcididae*: (1) 1 sp. 11. VII. 96, 700 ft.

183. *Pyrola rotundifolia*, Linn. [Lit. *N.C.E.* 1, 4, 14, 24, 25, Warnstorf 2507; *Arct.* 36, 37 a; *Alps* 2.] The style is strongly decurved and the stigma 4-8 mm. from the anthers. All flowers set fruit. Protogyny very slight.

Visitors. Coleoptera. (1) *Meligethes viridescens* F., fp. *Thysanoptera.* (2) *Thrips* sp. Both 2. VII. 96, 2,000 ft.

TABLE XXXIX.

Individuals visiting the different flowers of Class B-like Po.

<i>Class Po (B)</i>	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
181. <i>Anemone nemorosa</i>	8	4	—	—	—	—	—	—	—	—	3	202	—	—	217
182. <i>Pyrola media</i> . . .	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
183. <i>Pyrola rotundifolia</i>	—	—	—	—	—	—	—	—	—	—	—	—	2	2	4
Total.	8	4	—	—	1	—	—	—	—	—	3	202	2	2	222
Percentage	3.60	1.80	—	—	.45	—	—	—	—	—	1.35	90.99	.90	.90	

CLASS AB, § 43. LISTERA TYPE.

184. *Listera cordata*, R. Br. [Lit. *Brit. Darwin* 483; *Alps* 2.] The plant has a considerable amount of vegetative reproduction (see J. A. Z. Brundin in *Bihang till K. Svenska Vetensk. Akad. Handlingar*. XXI. 1875, No. 12). Self-pollination does not occur.

Visitors. Hymenoptera. Petiolata parasitica: *Chalcididae*: (1) 1 sp., 13. VI. 99, 1,500 ft. *Diptera. Tipulidae*: (2) *Limnophila* ? *luteolella* Verrall, with pollinia adhering to its head and going from flower to flower, sh. 13. VI. 99, 1,800 ft. *Anthomyiidae*: (3) 1 sp., ? seeking h. 19. VI. 96, 1,500 ft. *Coleoptera.* (4) *Malthodes* sp., three individuals crawling from flower to flower, 27. VI. 96, 1,500 ft.

185. *Malaxis paludosa*, Sw. [Lit. *Brit. Darwin* 483; *N.C.E.* 14.] This little plant, only 6 cm. high, is very easily overlooked. Its flowers are uniformly green except for the slightly different colours of the lines on

the labellum. All the flowers of one raceme twist so as to face nearly in one direction. The only visitor seen, adhered to the pollinia, but did not pull them out.

Visitors. **Hymenoptera.** Petiolata parasitica: *Chalcididae*: (1) One sp., seeking h. 5. VII. 96, 800 ft.

CLASS AB, § 44. OXALIS TYPE.

186. *Oxalis Acetosella*, Linn. [Lit. *Brit.* 23. 29; *N.C.E.* 1, 11, 18, 34, 40; *Alps* 2.] In 96 per cent. of the flowers examined the stigmas and stamens were remote from one another, but in 4 per cent. they were near enough to make self-pollination by contact possible.

Visitors. **Lepidoptera.** Heterocera: *Tineidae*: (1) 1 sp., sh. 15. VI. 99, 1,900 ft. **Diptera.** *Empididae*: (2) *Empis lucida* Ztt., sh. 12-15. VI. 99, 20-2,200 ft. (3) *Empis* sp., sh. 20. V. 97, 1,200 ft. *Bibionidae*: (4) *Scatopse* sp., sh. 12. VI. 99, 1,700 ft. *Anthomyiidae*: (5) *Hylemyia nigrescens* Rnd., sh. 12. VI. 99, 2,500 ft. (6) *Anthomyia* sp. sh. 23. V. 96; 20-21. V. 97, 12-2,600 ft.

187. *Linum catharticum*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 14, 16, Warnstorf 2507; *Pyren.* 17.] The flowers remain closed in bad weather.

Visitors. **Lepidoptera.** Rhopalocera: (1) *Coenonympha pamphilus* L., 4. VII. 94, about 2,000 ft. **Diptera.** *Tachinidae*: (2) *Siphona geniculata* Deg., sh. 22. VI. 95, 800 ft. *Anthomyiidae*: (3) 1 sp., 10. VII. 96, 2,200 ft.

CLASS AB, § 45. SMALL RIBES TYPE.

188. *Ribes Grossularia*, Linn. [Lit. *Brit.* 29, Marquand 1513; *N.C.E.* 1, 3 a, 21 b, 33, 34, 40.] In cultivation and as an escape from it.

Visitors. **Hymenoptera.** Aculeata: *Apidae*: (1) *Apis mellifica* L., sh. 18-22. V. 97; 7-16. V. 98, 7-800 ft. (2) *Bombus terrestris* L., sh. 19. V. 97, 8-900 ft. (3) *B. lapponicus* F., 20. V. 97, 800 ft. *Vespidae*: (4) *Vespa* ? *sylvestris* Scop., 20. V. 97, 800 ft. **Diptera.** *Empididae*: (5) *Empis lucida* Ztt., sh. 13. V. 98, 800 ft. *Bibionidae*: (6) *Dilophus* sp., sh. and fp. 19-22. V. 97, 800 ft. *Muscidae*: (7) *Lucilia cornicina* F., 18. V. 97, 800 ft. (8) *Pollenia vespillo* F., sh. 7. V. 98, 800 ft. *Anthomyiidae*: (9) *Anthomyia sulciventris* Ztt., fp. 22. V. 97, 800 ft. **Hemiptera.** (10) *Anthocoris* sp., sh. 19. V. 97, 800 ft.

189. *Ribes rubrum*, Linn. [Lit. *N.C.E.* 1, 3 a, 16, 40; *Alps* 34.] In cultivation and as an escape from it.

Visitors. **Diptera.** *Mycetophilidae*: (1) *Sciara* sp., sh. 20. V. 97. *Chironomidae*: (2) *Diamesa* ? *tonsa* Hal., sh. 13. V. 98. (3) 1 sp., sh. 20. V. 97. *Muscidae*: (4) *Lucilia cornicina* F., sh. 18. V. 97. *Anthomyiidae*: (5) *Anthomyia sulciventris* Ztt., sh. and fp. 24. V. 97; 13. V. 98. **Thysanoptera.** (6) *Thrips* sp., 18. V. 97. All at 800 ft.

CLASS AB, § 46. BERBERIS TYPE.

190. *Berberis Aquifolium*, Pursh. [Lit. *N.C.E.* 34.] In cultivation.

Visitors. **Hymenoptera.** Aculeata: *Apidae*: (1) *Bombus terrestris* L., sh. (2) *B. lapponicus* F., sh. Both 14. V. 98. 800 ft.

CLASS AB, § 47. ACER TYPE.

191. *Acer Pseudo-platanus*, Linn. [Lit. *N.C.E.* 3 b, 14, 18, 21 b, 34, Warnstorf 2507.]

Visitors. **Lepidoptera.** Heterocera: *Noctuidae*: (1) 1 sp., 15. VI. 99, 800 ft. **Hymenoptera.** Aculeata: *Apidae*: (2) *Apis mellifica* L., sh. 21–24. V. 96; 24. V. 97, 7–800 ft. (3) *Bombus terrestris* L., sh. 21. V. 96; 19–26. V. 97, 7–800 ft. *Vespidae*: (4) *Vespa* sp., 15. VI. 99, 900 ft. Petiolata parasitica: *Ichneumonidae*: (5) 1 sp. 15. VI. 99, 900 ft. **Diptera.** *Bibionidae*: (6) *Bibio nigriventris* Hal., 15. VI. 99, 900 ft. *Anthomyiidae*: (7) *Trichophthicus* sp., sh. 15. VI. 99, 8–900 ft. **Coleoptera.** (8) *Meligethes viridescens* F., 15. VI. 99, 900 ft. (9) *Rhagonica limbata* Thoms., 15. VI. 99, 900 ft.

CLASS AB, § 48. CALTHA TYPE.

192. *Caltha palustris*, Linn. [Lit. *Brit.* 23, 29, Darwin 485; *N.C.E.* 1, 3 a, 14, 16, 18, 34; *Arct.* 36; *Alps* 2, 21 b; *Pyren.* 17.] Above 1,800 feet we get the variety *minor*; it flowers later than the type. As a result of counting the organs of twenty-eight flowers from 2,600 feet we found the stamens to average nearly 57, and the carpels 4.5 (Cf. Burkill in *Journ. Linn. Soc. Bot.* xxxi. pp. 233–4).

Visitors. **Hymenoptera.** Petiolata parasitica: *Chalcididae*: (1 and 2) 2 spp., 22. VI. 95, 2,200 ft. and 15. V. 98, 800 ft. **Diptera.** *Syrphidae*: (3) *Chilosia fraterna* Mg., sh. 24–26. VI. 95, 8–900 ft. *Empidae*: (4) *Empis lucida* Ztt., sh. 12. VI. 99, 2,500 ft. (5) *E. ? borealis* L., 27. V. 97, 800 ft. (6) *Rhamphomyia sulcata* Fln., ? sh. 10. VI. 99, 700 ft. (7) *Clinoceira stagnalis* Hal., 19. VI. 95, 2,600 ft. *Bibionidae*: (8) *Dilophus albipennis* Mg., sh. 22. VI. 95, 2,400 ft. *Chironomidae*: (9) 1 sp., sh. 15. V. 98, 800 ft. *Tachinidae*: (10) *Siphona geniculata* Deg., 21. V. 96, 800 ft. *Muscidae*: (11) *Pollenia vespillo* F., 10–12. VI. 99, 700 and 2,500 ft. *Anthomyiidae*: (12) *Hyetodesia incana* W., 19. VI.–1. VII. 95; 23. V. 96, 8–2,700 ft. (13) *Trichophthicus* sp., sh. 24. VI. 95, 2,000 ft. (14) *Hylemyia nigrescens* Rnd., sp. 12. VI. 99, 2,500 ft. ab. (15) *Anthomyia sulciventris* Ztt., 19. VI. 95, 2,600 ft.; 22. V. 96, 2,400 ft.; 18–27. V. 97, 6–800 ft. (16 and 17) *Anthomyia* spp. fp. and seeking h. 19–25. VI. 95; 22–23. V. 96; 20. V. 97; 13–16. V. 98; 10–14. VI. 99, 7–2,600 ft. (18) *Azelia aterrima* Mg., 26. VI. 95, 800 ft. *Phoridae*: (19) *Phora rufipes* Mg., fp. and seeking h. 22. V. 96, 2,400 ft. **Coleoptera.** (20) *Meligethes viridescens* F., sh. 22–24. VI. 95, 16–2,200 ft. (21) *M. aeneus* F., fp. and sh. 21. V. 96; 20. V. 97; 10. VI. 99, 7–900 ft. (22) *Anthobium lapponicum* Mann., fp. 21. V. 96, 800 ft. **Hemiptera.** (23) *Lygus*?, 10. VI. 99, 700 ft. **Neuroptera.**

(24) *Chloroperla* sp., 1. VII. 95, 800 ft. (25) *Nemoura* sp., 22. VI. 95, 2,000 ft. **Araneida.** (26) *Oligolophus* sp. pushing itself amongst the stamens, 12. VI. 99, 700 ft. (27) A spider lying in wait, 20. VI. 97, 8-900 ft. twice.

CLASS AB, § 49. OXYCOCCOS TYPE.

193. *Vaccinium Oxycoccus*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 c, 14, 34, 35, Warnstorff 2507; *Arct.* 36, 37 b; *Alps* 2, 9.]

Visitors. **Hymenoptera.** *Petiolata parasitica*: (1) 1 small sp. **Diptera.** *Bibionidae*: (2) *Scatopse* sp. Both seeking h. 10. VI. 99, 700 ft.

CLASS AB, § 50. SMALL CRUCIFER TYPE.

194. *Barbarea vulgaris*, R. Br. [Lit. *Brit.* 23; *N.C.E.* 1, 3 a, 18, 33, 34.]

Visitor. **Coleoptera.** (1) *Meligethes viridescens* F., fp. and sh. on old and half-withered flowers, 10. VI. 99, 700 ft.

195. *Cochlearia officinalis*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 14, 25, 31, 35, Hildebrandt 1051.] There are two types (with intermediates) at Clova. The larger form, which grows in very wet places on the crags, has the anthers and stigma remote from one another by 1 mm. but on the same level: in the closing of the flower, on withering, self-pollination invariably occurs, fertilization resulting. In the smaller form, which is the plant from Little Kilrannoch, figured in the *Journal of Botany*, xxx, Plate 326, the anthers and stigma are only $\frac{1}{2}$ mm. apart and the flower is smaller—the diameter from tip of petal to tip of petal being 6-8 mm. Self-fertilization invariably occurs in the withering of the flower. It is noteworthy how variable are the flowers of this smaller type, five petals as figured in the *Journal of Botany* having been seen by us as well as six. Once seven stamens were found, the normally paired ones on one side being three in number.

Visitors. **Lepidoptera.** *Heterocera*: *Geometridae*: (1) *Larentia salicata* Hüb., sh. 22. VI. 95, 2,000 ft. **Diptera.** *Mycetophilidae*: (2) *Sciara* sp., 16. VI. 99, and ? sh. 22. VI. 95, 2,800 ft. *Bibionidae*: (3) *Scatopse* sp., sh. 16. VI. 99, 2,800 ft. *Anthomyiidae*: (4) *Drymia hamata* Fln., sh. 1. VII. 96, 2,000 ft. (5) *Trichophthicus* sp., sh. 2. VII. 96, 2,800 ft. (6 and 7) *Anthomyia* spp., sh. 22. VI. 95; 16. VI. 99, 25-2,800 ft. **Coleoptera.** (8) *Anthophagus alpinus* Payk., sh. 1. VII. 96, 2,000 ft. (9) *Ceuthorrhynchius contractus* Marsh., sh. 1. VII. 96, 2,000 ft. **Neuroptera.** (10) 1 sp., sh. 1. VII. 96, 2,200 ft.

196. *Brassica Sinapis*, Visiani. [Lit. *N.C.E.* 1, 3 b, 8, 11, 14, 18, 31, 32, 33, 34, 40; de Vries 2460.]

Visitors. **Lepidoptera.** *Rhopalocera*: (1) *Pieris brassicae* L., 22-30. VI. 95.

Diptera. *Empidæ*: (2) *Empis tessellata* F., sh. 30. VI. 95. **Coleoptera.** (3) *Meligethes viridescens* F., ? sh. 5. VII. 95. All at 800 ft.

197. Capsella Bursa-pastoris, Moench. [Lit. *Brit.* 23, 29, A. Bateson 151; *N.C.E.* 1, 3 b, 11, 14, 18, 25, 31, 33, 34, 40; *Alps* 34; *Pyren.* 17.] Flowers were found to have been—all of them—♀ in the early part of 1897 up to May 20th, when some began to perfect stamens.

Visitors. **Diptera.** *Tachinidæ*: (1) *Siphona geniculata* Deg., sh. 18. IX. 95. *Anthomyiidae*: (2) 1 sp. 21. VI. 96. Both at 800 ft.

198. Iberis amara, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 40; *Alps* 9; *Pyren.* 17.] In cultivation.

Visitors. **Lepidoptera.** *Rhopalocera*: (1) *Pieris napi* L., sh. 11. VI. 99. *Heterocera.* *Geometridæ*: (2) *Fidonia atomaria* L., sh. 11. VI. 99. **Diptera.** *Syrphidæ*: (3) *Syrphus vitripennis* Mg., fp. and sh. 11–13. VI. 99. freq. (4) *Eristalis arbustorum* L., sh. 11–12. VI. 99. (5) *E. ? pertinax* L., sh. 23. V. 97. *Empidæ*: (6) *Empis opaca* F., 12. VI. 99, 800 ft. *Tachinidæ*: (7) *Siphona geniculata* Deg., 11. VI. 99. *Muscidæ*: (8) *Lucilia* sp. 13. VI. 99. *Anthomyiidae*: (9) *Hylemyia nigrescens* Rnd., 13. VI. 99. (10) *Anthomyia radicum* L., 11–12. VI. 99. (11) *A. sulciventris* Ztt., fp. 23. V. 97. **Coleoptera.** (12) *Meligethes viridescens* F., fp. 10. VI. 99. (13) *Psylliodes napi* Koch, fp. 10. VI. 99. All at 800 ft.

CLASS AB, § 51. TROLLIUS TYPE.

199. Trollius europaeus, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 11, 21 b, 34; *Arct.* 7, Feilden and Geldart in Trans. Norfolk and Norwich Nat. Soc. VI. p. 162; *Alps* 2, 9, 21 b.] *Trollius* is *par excellence* a shelter-flower. It closes in bad weather, and then there are generally many insects harbouring inside. Colonel Feilden used it in Russian Lapland as a means of collecting insects: 'when a sudden change took place, the globe-flower closed its petals into a tight ball but not before the flies, beetles, and many other kinds of insects had fled for refuge to its sheltering bowers'. At Clova self-fertilization may be common; setting of seed is invariable.

Visitors. **Hymenoptera.** *Petiolata parasitica.* *Proctotrypidæ*: (1) 1 sp., 15. VI. 99, 1,900 ft. **Diptera.** *Syrphidæ*: (2) *Chilosia sparsa* Lw., 22. V. 97, 500 ft. *Anthomyiidae*: (3) *Hyetodesia incana* W., 20. VI. 95, 2,600 ft. (4) *Drymia hamata* Fln., 20. VI. 95, 2,100 ft. (5) *Trichophthicus* sp. 20. VI. 96, 2,300 ft. (6) *Anthomyia sulciventris* Ztt., 22. V. 97; 15. VI. 99, 500 and 1,900 ft. **Coleoptera.** (7) *Meligethes aeneus* F., 22. VII. 97; 15. VI. 99; 500 and 1,900 ft. (8) *Anthophagus alpinus* Payk., fp. 22. VI. 96, 2,400 ft. (9) *Anthobium torquatum* Marsh., 22. VI. 97, 15. VI. 99, 500 and 1,900 ft. All these insects were taken from the interior of flowers, where by reason of the structure of the perianth it is rarely possible to ascertain what they may be doing.

CLASS AB, § 52. PHILADELPHUS TYPE.

200. *Philadelphus coronarius*, Linn. [Lit. *N.C.E.* 1, 3 b, 18, 32, 34.]
In cultivation.

Visitors. **Lepidoptera.** Heterocera: *Noctuidae*: (1) *Noctua*?, sh. 2. VII. 96, 800 ft.

CLASS AB, § 53. RHODIOLA TYPE.

201. *Sedum Rhodiola*, DC. [Lit. *Brit.* 23; *N.C.E.* 21 b; *Arct.* 7, 36, 38; *Alps* 2, 34.] This alpine was found to be visited by flies in Novaya Zembya, and by flies and ants in the Alps.

Visitors. **Hymenoptera.** Petiolata parasitica. *Proctotripidae*: (1) 1 sp., 15. VI. 99, 1,900 ft. **Diptera.** *Syrphidae*: (2) *Platychirus manicatus* Mg., fp. 23. V. 96, 2,400 ft. *Empidae*: (3) *Empis lucida* Ztt., 22. VI. 96, 2,400 ft. (4) *Rhamphomyia* sp., sh. 22. VI. 95, 25–2,600 ft. (5) *Hilara canescens* Ztt., fp. 23. VI. 96, 2,400 ft. *Bibionidae*: (6) *Scatopse* sp., 15. VI. 99, 1,900 ft. *Anthomyiidae*: (7) *Hyetodesia incana* W., 20. VI. 95; 15. VI. 99, 19–2,600 ft. (8) *Hylemyia nigrescens* Rnd., 15. VI. 99, 1,900 ft. (9) *Anthomyia sulciventris* Ztt., fp. 23. V. 96, 2,400 ft. (10) *Anthomyia* sp., ? fp. 22. VI. 96; 17. VI. 99, 2,400 ft. *Psilidae*: (11) *Psila fimetaria* L., sh. 22. VI. 95, 2,000 ft. **Coleoptera.** (12) *Meligethes viridescens* F., 20. VI. 96, 2,400 ft. (13) *M. aeneus* F., sh. 22. VI. 95; 15. VI. 99, 19–2,000 ft.

CLASS AB, § 54. MALUS TYPE.

202. *Pyrus intermedia*, Ehrh. Planted.

Visitors. **Hymenoptera.** Petiolata parasitica. *Proctotrypidae*: (1) 1 sp., sh. 19. VI. 99. **Diptera.** *Empidae*: (2) *Empis tessellata* F., sh. 18. VI. 99. (3) *Rhamphomyia sulcata* Fln., 18–19. VI. 99. *Bibionidae*: (4) *Bibio nigriventris* Hal., 18. VI. 99. *Muscidae*: (5) *Calliphora erythrocephala* Mg., sh. 19. VI. 99. *Anthomyiidae*: (6) *Anthomyia radicum* L., sh. 19. VI. 99. (7) *Anthomyia* sp., 18. VI. 99. **Coleoptera.** (8) *Meligethes viridescens* F., 18. VI. 99. (9) *Phyllobius pyri* L., 18. VI. 99. All at 800 ft.

203. *Pyrus Malus*, Linn. [Lit. *Brit.* 34; *N.C.E.* 1, 40, Plateau, 2002 *N. Am.* Waite 2469.] In cultivation.

Visitors. **Diptera.** *Empidae*: (1) *Rhamphomyia sulcata* Fln., 12. VI. 99. *Bibionidae*: (2) *Bibio nigriventris* Hal., seeking h. 10. VI. 99. *Simuliidae*: (3) *Simulium* sp., sh. 10. VI. 99. *Anthomyiidae*: (4) *Anthomyia* sp., fp. 10–12. VI. 99. *Sepsidae*: (5) *Sepsis* sp., 10. VI. 99. **Coleoptera**: (6) *Meligethes aeneus* F., fp. 10–12. VI. 99, abundant. All at 800 ft.

CLASS AB, § 55. RANUNCULUS TYPE.

204. *Ranunculus Auricomus*, Linn. [Lit. *Brit.* 23, Winter in Journ. Bot. 1897, p. 406; *N.C.E.* 1, 3 a, 18, 33, 34, Warnstorf 2507; *Arct.* 36.]

One observer—Jungner (in Bot. Notiser, 1894, p. 156)—says that it is slightly anemophilous in Sweden.

Visitor. Diptera. Anthomyiidae: (1) *Anthomyia sulciventris* Ztt., 20. V. 97, 800 ft.

205. *Ranunculus Flammula*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 a, 14, 18, 21 b, 25, 34.]

Visitors. Lepidoptera. Heterocera: Geometridae: (1) *Larentia salicata* Hb., sh. 10. VII. 96, 1,500 ft. *Eriocephalidae:* (2) *Eriocephala calthella* L., 25. VI. 95, 900 ft. *Diptera. Syrphidae:* (3) *Chilosia fraterna* Mg., sh. 25–26. VI. 95; 18. VI. 96, 800 ft. (4) *Chrysogaster hirtella* Lw., sh. 1. VII. 95, 800 ft. *Empidae:* (5) *Empis tessellata* F., 1. VII. 95, 800 ft. *Bibionidae:* (6) *Dilophus albipennis* Mg., sh. 1. VII. 95, 900 ft. *Anthomyiidae:* (7) *Hyetodesia incana* W., 26. VI.–2. VII. 95; 18. VI. 96, 800 ft. (8) *Spilogaster nigrivenis* Ztt., 19. VI. 96, 1,500 ft. (9) *Drymia hamata* Fln., 21. VI. 95, 900 ft. (10) *Hylemyia nigrescens* Rnd., sh. 25. VI. 95; 13. VI. 99, 800 ft. (11) *Trichophthicus* sp., sh. and fp. 25. VI.–6. VII. 95; 16. IX. 95, 8–1,200 ft. (12, 13, and 14) *Anthomyia* 3 spp., sh. and fp. 21. VI.–6. VII. 95; 13–21. IX. 95; 18. VI.–11. VII. 96, 7–2,300 ft. *Sciomyzidae:* (15) *Tetanocera ferruginea* Fln., 1. VII. 95, 800 ft. *Coleoptera.* (16) *Meligethes viridescens* F., sh. and fp. 21–26. VI. 95; 16. IX. 95; 16. VI. 96, 7–900 ft. (17) *Donacia discolor* Panz., sh. 21. VI.–6. VII. 95, 5–900 ft.

206. *Ranunculus bulbosus*, Linn. [Lit. *Brit.* 23, 34; *N.C.E.* 1, 3 a, 14, 16, 21 b, 33, 34; *Alps* 2; *Pyren.* 17.]

Visitor. Diptera. Anthomyiidae: (1) *Drymia hamata* Fln., 20. V. 96, 1,400 ft.

207. *Ranunculus acris*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 a, 11, 14, 14 a, 16, 18, 21 b, 25, 30, 32, 40; *Arct.* 7, 36; *Alps* 2, 16; *Pyren.* 17.] No one has found such great variety of flies on this plant as we have. It is to be remarked that they are allotropous chiefly. This buttercup is very common and of wide range, and its flowers vary considerably in size; we have also found them with contabescent anthers. Müller observed eleven species of *Lepidoptera* on it in the Alps. The flowers hang in heavy rain, then serving as a shelter to *Anthomyiids*, e. g. *Anthomyia sulciventris*.

Visitors. Lepidoptera. Rhopalocera: (1) *Pieris brassicae* L., 15. VI. 99, 800 ft. (2) *Lycaena icarus* Rott., sh. 26. VI. 95, 800 ft. *Heterocera: Eriocephalidae:* (3) *Eriocephala calthella* L., sh. 24. VI.–3. VII. 95, 9–1,000 ft. *Hymenoptera. Aculeata: Apidae:* (4) *Bombus terrestris* L., sh. 15. VI. 99, 900 ft. (5) *Andrena coitana* Kirby, 5. VII. 95, 800 ft. *Sessiliventre: Tenthredinidae:* (6) *Allantus arcuatus* Forst., devouring the flower, 14. VI.–21. VII. 95; 29. VI.–6. VII. 96; 19. VI. 99, very freq. *Petiolata parasitica: Ichneumonidae:* (7) 1 sp., sh. 4. VII. 95; 11. VII. 96, 800 ft. *Proctotrypidae:* (8) *Proctotrype* ? sh. 21. IX. 95, 800 ft. *Chalcididae:* (9 and 10) 2 spp., 27. VI.–6. VII. 95, 8–1,000 ft. (also 11) 1 sp., 26. VI. 95, 21–2,200 ft. *Diptera. Syrphidae:* (12) *Chrysogaster hirtella* Lw., sh. 8.

VII. 95, 800 ft. (13) *Chilosia fraterna* Mg., sh. 22-24. VI. 95; 18-29. VI. 96; 15-16. VI. 99, 8-1,500 ft. (14) *Platychirus manicatus* Mg., sh. 17. VII. 95; 29. VI. 96; 10. VI. 99, 7-1,500 ft. (15) *P. albimanus* F., sh. and fp. 22-24. IX. 95, 8-1,000 ft. (16) *P. peltatus* Mg., sh. 21. VI.-3. VII. 95, 900 ft. (17) *P. clypeatus* Mg., 29. VI.-2. VII. 95, 8-1,000 ft. (18) *Melanostoma mellinum* L., sh. and fp. 1. VII. 95, 13-21. IX. 95, 7-800 ft. (19) *Syrphus luniger* Mg., 15-16. VI. 99, 800 ft. (20) *S. ? ribesii* L. 16. VI.-3. VII. 96. 7-800 ft. (21) *Eristalis arbustorum* L., sh. 22. VI. 95, 800 ft. *Empididae*: (22) *Empis punctata* Mg., sh. 15-20. VII. 95, 800 ft. (23) *E. aestiva* Lw., sh. 21. IX. 95, 800 ft. (24) *Rhamphomyia spinipes* Fln., ? sh. 16. IX. 95, 800 ft. (25) *R. albosegmentata* Ztt., sh. 22. VI. 95, 1,400 ft. (26) *Hilara matrona* Hal., sh. 17. VII. 95, 800 ft. *Mycetophilidae*: (27) *Sciara* sp., 20. VI. 95, 1,700 ft. *Bibionidae*: (28) *Dilophus albipennis* Mg., sh. and fp. 15-16. VI. 95, 900 ft., and 25. VI. 96, 2,200 ft. *Tachinidae*: (29) *Siphona geniculata* Deg., sh. 4. VII. 95; 17. IX. 95, 800 ft. *Sarcophagidae*: (30) *Sarcophaga* sp., 10. VII. 96. 800 ft. *Muscidae*: (31) *Lucilia cornicina* F., sh. 24. IX. 95, 1,600 ft. (32) *Pollenia rudis* F., fp. 22. IX. 95, 800 ft. *Anthomyiidae*: (33) *Hyetodesia incana* W., sh. 17. VI.-15. VII. 95; 16. IX. 95; 18. VI.-11. VII. 96, 8-2,500 ft. ab. (34) *H. lucorum* Fln., 25. VI. 95, 1,000 ft. (35) *H. basalis* Ztt., sh. 20. VII. 95, 800 ft. (36) *H. sp.*, 15-25. VI. 95, 8-1,400 ft. (37) *Spilogaster nigrivenis* Ztt., 27. VI. 96, 1,400 ft. (38) *Limnophora solitaria* Ztt., 28. VI. 95, 2,200 ft. (39) *Limnophora* sp., sh. 1. VII. 95; 19. VI. 96, 11-1,200 ft. (40) *Drymia hamata* Fln., sh. and fp. 20. VI.-10. VII. 95; 16. IX. 95; 20. VI.-1. VII. 96, 8-2,400 ft. (41) *Trichophthicus hirsutulus* Ztt., sh. 6. VII. 96, 2,000 ft. (42) *Trichophthicus* sp., sh. 16. VI.-15. VII. 95; 20. VI.-1. VII. 96, 8-2,400 ft. (43) *Hylemyia variata* Fln., sh. 21. VI. 95, 900 ft. (44) *H. nigrescens* Rnd., 13. VI. 99, 800 ft. (45) *Anthomyia sulciventris* Ztt., sh. 28. VI. 95; 27. V. 97, 700 and 2,200 ft. (46) *A. radicum* L., fp. 11-16. VI. 99, 8-2,000 ft. (47 and 48) *Anthomyia* spp., sh. and fp. 15. VI.-22. VII. 95; 13-24. IX. 95; 16. VI.-10. VII. 96; 10-19. VI. 99, 7-2,600 ft. (49) *Homalomyia* sp., sheltering 18. VI. 95, 900 ft. (50) *Azelia aterrima* Mg., 29. VI. 96, 900 ft. (51) *Coenosia infantula* Rnd., sh. 21. VI.-6. VII. 95, 8-1,700 ft. *Cordyluridae*: (52) *Scatophaga stercoraria* L., 19. VI.-4. VII. 95; 14-24. IX. 95, 8-2,700 ft. (53) *S. maculipes* Ztt., sh. 21. VI. 95, 900 ft. (54) *S. squalida* Mg., 4. VII. 95, 2,300 ft. *Psilidae*: (55) *Psila* sp., sh. 12. VII. 95, 700 ft. *Sepsidae*: (56) *Sepsis cynipsea* L. sh. 19. VI. 95; 25. VI. 96, 800 ft. *Ephydriidae*: (57) *Hydrellia griseola* Fln., 4. VII. 95, 800 ft. *Chloropidae*: (58) *Oscinis* sp. 4. VII. 95; 26. VI. 96, 800 and 2,100 ft. *Agromyzidae*: (59) *Agromyza* sp., sh. 19. VI. 95, 800 ft. **Coleoptera.** (60) *Meligethes viridescens* F., sh. and fp. 19. VI.-4. VII. 95; 17-24. IX. 95; 16-27. VI. 96; 19. VI. 99, 7-2,700 ft. ab. (61) *M. aeneus* F., sh. 21. VI.-6. VII. 95; 19. VI. 99, 8-1,600 ft. (62) *Anthophagus alpinus* Payk., sh. 4. VII. 95; 27. VI.-2. VII. 96, 19-2,600 ft. (63) *Anthobium minutum* F., 24. VI. 95, 1,500 ft. (64) *A. lapponicum* Mann., 1. VII. 96, 1,600 ft. (65) *Tachyporus ? hypnorum* F., 19. VI. 99, 800 ft. (66) *Chrysomela staphylea* L., devouring the flowers, 3. VII. 96, 2,500 ft. (67) *Dascillus cervinus* L., 1-4. VII. 95, 800 ft. **Hemiptera.** (68) *Acocephalus* sp. 25. VI. 95, 1,700 ft. (69) *Leptopterna dolabrata* L., 4 VII. 95, 800 ft. **Thysanoptera.** (70) *Thrips* sp., 15. IX. 95, 800 ft.

208. *Ranunculus repens*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 a, 14, 16, 21 b, 25, 31, 34, 40; *Arct.* 7, 36; *Alps* 16, 21 a.] Freely visited by Anthomyiids.

Visitors. Hymenoptera. Sessiliventre: *Tenthredinidae*: (1) *Allantus arcuatus* Forst., lounging in flowers, 19. VI. 95, 800 ft. *Diptera. Syrphidae*: (2) 1 sp. 14. VI. 95, 700 ft. *Tachinidae*: (3) *Siphona cristata* F., 22. VI. 95, 800 ft. *Anthomyiidae*: (4) *Hyetodesia incana* W., sh. 17–22. VI. 95; 18. VI.–4. VII. 96, 800 ft. (5) *Trichophthicus* sp., fp. 20. VI. 96, 2,300 ft. (6) *Anthomyia sulciventris* Ztt., sh. and fp. 15. VI. 95; 27. V. 97, 7–800 ft. (7) *Anthomyia* sp., 22. VI. 95, 800 ft. *Sepsidae*: (8) *Sepsis cynipsea* L., sh. 19. VI. 95, 800 ft. *Coleoptera.* (9) *Meligethes viridescens* F., sh. 29. VI. 96, 800 ft.

209. *Ranunculus Ficaria*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 a, 3 b, 3 c, 4, 8, 9, 10, 11, 12, 18, 21 b, 33, 34, 40, Warnstorf 2507, Hennings in *Verhandl. bot. Ver. Brandenburg xxxvii.*, p. xxii, Delpino in *Bull. Orto bot. Univ. Napoli*, i. 1899, p. 24.]

Visitors. Diptera. Muscidae: (1) *Lucilia cornicina* F., sh. 7. V. 98, 800 ft. *Anthomyiidae*: (2) *Anthomyia sulciventris* Ztt., 22. V. 97, 800 ft. (3) *Anthomyia* sp., sh. and fp. 20–22. V. 97; 16. V. 98, 6–900 ft. *Araneida.* (4) *Xysticus* sp., lying in wait, 20. V. 97, 900 ft.

CLASS AB, § 56. POTENTILLA TYPE.

210. *Fragaria vesca*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 18, 21 b, 33, 34, 40; *Alps* 2; *Pyren* 17.]

Visitor. Diptera. Anthomyiidae: 1 sp., 2. VII. 96, 2,100 ft.

211. *Potentilla Fragariastrum*, Ehrh. [Lit. *Brit.* 29; *N.C.E.* 18; *Pyren*. 17.]

Visitors. Hymenoptera. Petiolata parasitica. (1) 1 sp. *Diptera. Chironomidae*: (2) 1 sp. *Anthomyiidae*: (3) *Anthomyia* sp., sh. fairly freq. All. 14. V. 98, 1,400 ft.

212. *Potentilla Tormentilla*, Neck. [Lit. *Brit.* 23, 39; *N.C.E.* 1, 3 b, 4, 14 a, 18, 21 a, 40; *Alps* 2; *Pyren*. 17.] The very abundance of this secured for it a great deal of observation and a consequently long list of visitors.

Visitors. Lepidoptera. Rhopalocera: (1) *Coenonympha pamphilus* L., sh. 15–20. VI. 95; 1. VII. 96, 9–1,400 ft. (2) *Lycaena icarus* Rott., sh. 25. VI. 95, 800 ft. Heterocera: *Tineidae*: (3) *Glyphypteryx fuscoviridella* Haw., 20. VI. 95, 1,300 ft. *Eriocephalidae*: (4) *Eriocephala calthella* L., sh. and fp. 2–21. VII. 95, 8–1,700 ft. *Hymenoptera.* Aculeata: *Apidae*: (5) *Bombus terrestris* L., sh. 14. IX. 95, 800 ft. (6) *Andrena analis* Panz., sh. 6. VII. 95; 22. VI.–6. VII. 96, 9–1,500 ft. (7) *A. coitana* Kirby, sh. 6. VII. 95, 800 ft. *Formicidae*: (8) *Formica fusca* Latr., sh. 25. VI.–17. VII. 95; 19–26. VI. 96; 15–17. VI. 99, 8–2,100 ft.

Myrmicidae: (9) *Myrmica rubra* L., sh. 16-23. VI. 95; 19. VI. 99, 8-900 ft. *Petiolata parasitica*: *Ichneumonidae*: (10) 1 sp., sh. 22. V.-3. VI. 95; 23. V. 97, 10-1,300 ft. *Chalcididae*: (11 and 12) 2 spp., 15-29. VI. 95; 29. VI. 96; 11. VI. 99, 8-2,500 ft. **Diptera.** *Syrphidae*: (13) *Platychirus manicatus* Mg., 21. VII. 95; 25. VI. 96, 7-1,000 ft. (14) *P. clypeatus* Mg., 29. VI. 95, 1,000 ft. (15) *P. albimanus* F., 21. IX. 95, 800 ft. (16) *Melanostoma mellinum* L., 20. VI. 95, 1,000 ft. (17) *Chilosia fraterna* Mg., sh. 26. VI. 95; 19. VI. 96, 8-1,300 ft. (18) *Chrysogaster hirtella* Lw., sh. 22. VI. 95, 800 ft. (19) *Syrphus* sp., 20. VI. 95, 900 ft. (20) *Ascia* ? *podagrica* F., 26. VI.-1. VII. 95, 800 ft. (21) *Sphaerophoria scripta* L., sh. 19. VI. 96, 2,200 ft. (22) *S. nitidicollis* Ztt., 20. VI. 95, 1,600 ft. *Empididae*: (23) *Empis lucida* Ztt., 12-14. VI. 99, 14-1,600 ft. *Bibionidae*: (24) *Scatopse* sp., 29. VI. 96, 1,500 ft. *Dolichopodidae*: (25) *Dolichopus atratus* Mg., 22. VI. 96, 800 ft. (26) *D. rupestris* Hal., sh. 6. VII. 95, 1,500 ft. (27) *Hercostomus nigripennis* Fln., 1. VII. 95, 800 ft. *Tachinidae*: (28) *Siphona geniculata* Deg., 18. VI. 99, 800 ft. *Muscidae*: (29) *Calliphora erythrocephala* Mg., 4. VII. 95; 16. VI. 99, 8-1,500 ft. *Anthomyiidae*: (30) *Hyetodesia incana* W., 26-29. VI. 95, 1,000 and 2,400 ft. (31) *Spilogaster nigrivenis* Ztt., 30. VI. 96, 2,100 ft. (32) *Limnophora* sp., sh. 19. VI. 96, 15-1,600 ft. (33) *Drymia hamata* F., 20. VI.-6. VII. 95; 20. VI.-1. VII. 96, 8-2,500 ft. (34) *Trichophthicus hirsutulus* Ztt., 20. VI. 95; 6. VII. 96, 16-2,000 ft. (35) *Hylemyia nigrescens* Rnd., sh. 10-11. VI. 99, 7-1,300 ft. (36) *Anthomyia radicum* L., 10-18. VI. 99, 7-2,000 ft. (37) *A. sulciventris* Ztt., 20. VI. 95; 20-27. V. 97, 5-2,500 ft. (38 and 39) *Anthomyia* 2 spp., sh. and fp. 20. VI. 95; 14-21. IX. 95; 22. V. 96; 19-22. VI. 96, 8-2,500 ft. (40) *Coenosia* sp., fp. 19-20. VI. 95; 27. VI. 96; 11. VI. 99, 8-2,000 ft. *Cordyluridae*: (41) *Scatophaga* sp., sh. 19. VI. 99, 2,200 ft. *Ortalidae*: (42) *Pteropaectria frondescentiae* L., sh. 1-6. VII. 95, 9-1,700 ft. *Ephydriidae*: (43) 1 sp. 15. VI. 95, 900 ft. *Chloropidae*: (44) *Oscinis* sp., 20. VI. 95, 8-1,200 ft. *Phytomyzidae*: (45) *Phytomyza* sp., 14. IX. 95, 1,300 ft. *Phoridae*: (46) *Phora* sp., 20. VI. 95; 20. IX. 95, 10-1,300 ft. **Coleoptera.** (47) *Meligethes viridescens* F., sh. and fp. 24-29. VI. 95; 21. IX. 95; 19-25. VI. 96, 7-2,500 ft. (48) *M. aeneus* F., 1. VII. 95, 1,500 ft. **Hemiptera.** (49) 1 sp., 10. VI. 99, 700 ft.

213. *Potentilla maculata*, Pourr. (*P. aurea*, Linn.). [Lit. *Brit.* 23; *Alps* 2, 21 a, 21 b; *Pyren.* 17.] The flower is 18-20 mm. across and very conspicuous. The mechanism seems to agree closely with that of *P. Tormentilla*. Honey is present in fair quantity.

Visitors. **Diptera.** *Syrphidae*: (1) *Platychirus* sp., 17. VI. 99, 2,300 ft. *Anthomyiidae*: (2) *Drymia hamata* Fln., seeking h. 20. VI. 96, 2,300 ft. (3) *Anthomyia sulciventris* Ztt., 25. VI. 96, 2,200 ft. **Araneida.** (4) *Xysticus* sp., lying in wait, 17. VI. 99, 2,300 ft.

214. *Potentilla Comarum*, Nestl. [Lit. *Brit.* 23; *N.C.E.* 1, 8, 12, 14, 14 a, 18, 33; *Arct.* 34.] At the opening of the bud the stamens standing erect dehisce; then they move outwards and the anthers fall off. But it would seem that the outermost stigmas are receptive before all chance of pollination from the innermost stamens has passed away. The central

stigmas are then left to be fertilized by some outside agent. The stamens are of three lengths, respectively 4, 5, and 6 mm., the shortest are the innermost before the petals, the longest those before the sepals. Honey is abundant and protected by hairs.

Visitors. **Hymenoptera.** Aculeata: *Apidae*: (1) *Andrena* ? *analys* Panz., sh. 19. VI. 96. *Petiolata parasitica*. (2) 1 sp., sh. 27. VI. 96. **Diptera.** *Empididae*: (3) *Empis bilineata* Lw., 4. VII. 95. (4) *E. stercorea* L., sh. 1. VII. 95. *Chironomidae*: (5) *Ceratopogon* sp., sh. 18–27. VI. 96. *Tipulidae*: (6) *Limnophila lineolella* Verrall, sh. 5. VI. 95; 18. VI. 96. *Anthomyiidae*: (7) *Hyetodesia incana* W., sh. 28. VI.–1. VII. 95; 18. VI.–4. VII. 96, fairly freq. **Coleoptera.** (8) *Meligethes viridescens* F., sh. 18. VI. 96. (9) *M. aeneus* F., sh. 1. VII. 95. All at 800 ft.

CLASS AB, § 57. PARNASSIA TYPE.

215. *Parnassia palustris*, Linn. [Lit. *Brit.* 23, 39; *N.C.E.* 1, 11, 14, 24, 25, 34, 35, 40; *Arct.* 36; *Alps* 2, 9; *Pyren.* 17.]

Visitors. **Hymenoptera.** Aculeata: *Formicidae*: (1) *Formica fusca* Latr., seeking h. 16. IX. 95, 12–1,300 ft. *Myrmicidae*: (2) *Myrmica rubra* L., sh. and seeking h. 16. IX. 95, 12–1,300 ft. *Petiolata parasitica*. *Ichneumonidae*: (3) 1 sp., sh. 16. IX. 95, 1,300 ft. *Braconidae*: (4) 1 sp., 16. IX. 95, 1,300 ft. **Diptera.** *Cecidomyiidae*: (5) *Cecidomyia* sp., sh. 16. IX. 95, 1,200 ft. *Anthomyiidae*: (6) *Hyetodesia incana* W., fp. 16. IX. 95, 1,200 ft. (7) *Trichophthicus* sp., 16. IX. 95, 1,200 ft. (8) *Anthomyia* sp., 13. IX. 95, 700 ft. *Cordyluridae*: (9) *Scatophaga stercorea* L., sh. 16. IX. 95, 1,300 ft. **Coleoptera.** (10) *Meligethes viridescens* F., sh. 16. IX. 95, 12–1,300 ft. (11) *Epuraea aestiva* L., sh. 16. IX. 95, 1,200 ft. **Thysanoptera.** (12) *Thrips* sp., sh. 13–21. IX. 95, 7–1,000 ft.

CLASS AB, § 58. INTERMEDIATE SAXIFRAGA TYPE.

216. *Saxifraga nivalis*, Linn. [Lit. *Arct.* 36, 37 b.] It seems to be abundantly self-fertilized.

Visitors. **Hymenoptera.** *Petiolata parasitica*. (1) 1 sp. 10. VII. 96, 2,000 ft.

217. *Saxifraga hypnoides*, Linn. [Lit. *Brit.* 23.] It is fairly well visited by allotropous insects.

Visitors. **Lepidoptera.** Heterocera: *Geometridae*: (1) *Psodos trepidaria* Tr., sh. 22. VI. 95, 800 ft. *Tortricidae*. (2) 1 sp. 22. VI. 96, 2,500 ft. **Hymenoptera.** *Petiolata parasitica*. *Ichneumonidae*: (3, 4, and 5) 3 sp., sh. 17–24. VI. 95; 26. VI.–6. VII. 96, 16–2,500 ft. *Cynipidae*: (6) 1 sp., sh. 22. VI.–4. VII. 95, 18–27,000 ft. Sessiliventre. *Tenthredinidae*: (7) *Nematus carinatus* Htg., sh. 17. VI. 99, 2,400 ft. **Diptera.** *Syrphidae*: (8) *Platychirus manicatus* Mg., sh. 22. VI. 95, 1,800 ft. *Empididae*: (9) *Empis tessellata* F., sh. 22. VI. 95, 2,000 ft. (10) *E. lucida* Ztt., 22. VI. 96, 23–2,400 ft. (11) *E. aestiva* Lw., sh. 30. VI. 96, 2,100 ft. (12 and 13) *Empis* spp., 22. VI. 95, 23–2,500 ft. *Cecidomyiidae*: (14) *Sciara* sp.,

30. VI. 96, 2,100 ft. *Bibionidae*: (15) *Dilophus albipennis* Mg., sh. 22. VI. 95, 18–2,300 ft. *Chironomidae*: (16) *Tanypus nebulosus* Mg., sh. 15. VII. 95, 2,400 ft. (17) Another Chironomid, sh. 17. VI. 95, 1,800 ft. *Limnobiidae*: (18) *Dicranomyia morio* F., sh. 22. VI.–3. VII. 96, 22–2,400 ft. *Anthomyiidae*: (19) *Drymia hamata* Fln., sh. 22. VI. 95; 1. VII. 96, 18–2,400 ft. (20) *Trichophthicus hirsutulus* Ztt., sh. 6–20. VII. 96, 23–2,400 ft. (21) *Trichophthicus* sp., sh. 20. VII. 96, 23–2,400 ft. (22) *Anthomyia sulciventris* Ztt., 22. VI. 95, 1,800 ft. (23, 24, and 25) *Anthomyia* 3 spp., sh. 21. VI.–11. VII. 95; 22. VI.–6. VII. 96, 15–2,600 ft. *Cordyluridae*: (26) *Scatophaga stercoraria* L., fp. 22. VI.–4. VII. 95; 30. VI. 96, 21–2,500 ft. *Phoridae*: (27) *Phora rufipes* Mg., sh. 3. VII. 96, 2,200 ft. **Coleoptera**. (28) *Meligethes viridescens* F., sh. 22. VI. 95; 3–6. VII. 96, 18–2,400 ft. (29) *Anthophagus alpinus* Payk., sh. freq. 3–4. VII. 95; 22. VI.–6. VII. 96, 21–2,600 ft. (30) *Helodes marginata* F., 24. VI. 95, 1,600 ft. (31) *Epuraea aestiva* L., sh. 3. VII. 96, 2,400 ft. **Thysanoptera**. (32) *Thrips* sp., sh. 3–4. VII. 95, 2,600 ft. **Araneida**. (33) *Oligolophus* sp., once in the flower, 20. VI. 96, 2,100 ft.

CLASS AB, § 59. ALSINE TYPE.

218. *Cerastium triviale*, Link. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 a, 3 b, 14, 18, 21 a, 21 b, 25, 34.] Varieties from high up have larger flowers than occur low down. The stigmas of these ultimately recurve so far as to bring about self-pollination. The long stamens dehisce just before the short ones.¹

Visitors. Hymenoptera. *Petiolata parasitica*. (1) sp., sh. 2. VII. 95, 800 ft. **Diptera.** *Syrphidae*: (2) *Platychirus manicatus* Mg., sh. and fp. 6. VII. 95; 25. VI. 96, 7–800 ft. *Mycetophilidae*: (3) *Sciara*?, sh. 2. VII. 96, 2,800 ft. *Chironomidae*: (4) *Orthocladus* sp., sh. 29. VI. 95, 1,600 ft. *Anthomyiidae*: (5) *Limnophora* sp., sh. 1. VII. 95, 800 ft. (6) *Anthomyia radicum* L., 10–11. VI. 99, 7–800 ft. (7) *Trichophthicus* sp., 2. VII. 96, 2,800 ft. *Phoridae*: (8) *Phora* sp., 13. VI. 99, 900 ft. **Thysanoptera**. (9) *Thrips* sp., sh. 3. VII. 95; 29. VI. 96, 8–1,000 ft.

219. *Cerastium alpinum*, Linn. [Lit. *Brit.* 23; *Arct.* 7, 34, 36, 37 a, 38; *Alps* 2, 9, 21 b, Ludwig 1394.] The flower is conspicuous, the petals attaining a length of 12 mm. Fruit is set in plenty in July and later, but flowering continues beyond this.

Visitors. Hymenoptera. *Petiolata parasitica*. *Chalcididae*: (1) 1 sp., sh. 17. VI. 99, 2,300 ft. **Diptera.** *Anthomyiidae*: (2) *Drymia hamata* Fln., sh. 17. VI. 99, 2,300 ft. (3) *Trichophthicus* sp., sh. and fp. 20. VI. 96, 23–2,400 ft. **Coleoptera**. (4) *Meligethes aeneus* F., sh. 17. VI. 99, 2,300 ft. **Thysanoptera**. (5) *Thrips* sp., 17. VI. 99, 2,300 ft.

220. *Stellaria media*, Cyr. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 b, 14, 18, 21 a, 21 b, 25, 33, Warnstorf 2507; *Alps* 2; *N. Am.* 12 b.] Always self-fertilized in the absence of insect visitors.

Visitors. Hymenoptera. *Petiolata parasitica*. *Ichneumonidae*: (1) 1 sp., 17.

¹ In August, 1905, on the Yorkshire moors north of Scarborough, about 40 per cent. of the flowers of *Cerastium triviale* then open had infertile stamens.

IX. 95, 800 ft. *Braconidae*: (2) 1 sp., sh. 24. IX. 95, 1,000 ft. (3) a second sp., 10. VI. 99, 700 ft. **Diptera.** *Syrphidae*: (4) *Platychirus manicatus* Mg., sh. 10. VI. 99, 700 ft. *Muscidae*: (5) *Calliphora erythrocephala* Mg., sh. 17. IX. 95, 800 ft. (6) *Pollenia rudis* F., sh. 22. IX. 95, 800 ft. *Anthomyiidae*: (7) *Anthomyia radicum* L., sh. 10. VI. 99, 700 ft. (8) *Anthomyia* sp., 17–21. IX. 95, 800 ft. **Coleoptera.** (9) *Meligethes viridescens* F., sh. and fp. 16–22. IX. 95, 800 ft. **Thysanoptera.** (10) *Thrips* sp., sh. 17–22. IX. 95, 800 ft.

221. *Stellaria Holostea*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 b, 18, 21 a, 21 b, 33, 34, 40; *Alps* 2; *Pyren.* 17.]

Visitor. **Diptera.** *Anthomyiidae*: (1) sp. fp. 10. VI. 99, 600 ft.

222. *Stellaria graminea*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 14, 18, 21 a, 21 b, 25, 33, 34; *Alps* 2.]

Visitors. **Diptera.** *Syrphidae*: (1) *Platychirus manicatus* Mg., 5. VII. 95, 800 ft. *Anthomyiidae*: (2) *Trichophthicus* sp., fp. 16. IX. 95, 900 ft.

223. *Sagina procumbens*, Linn. [Lit. *Brit.* 23; *N.C.E.* 14, 18, 21 a, 21 b, 34; *Arct.* 37 a.] Self-pollinating.

Visitor. **Diptera.** *Chloropidae*: (1) *Oscinis*?, 22. VI. 95, 800 ft.

224. *Spergula arvensis*, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 9, 14, 14 a, 18, 21 a, 21 b, 24, 33.] Schulz (in *Ber. d. deutschen Bot. Gesellsch.* xxi, 1903, 119) points out how this plant is self-fertilized.

Visitors. **Diptera.** *Syrphidae*: (1) *Platychirus manicatus* Mg., 5. VII. 95. (2) *P. albimanus* F., sh. 22. IX. 95. (3) *Syrpitta pipiens* L., 30. VI. 95. *Tachinidae*: (4) *Siphona geniculata* Deg., sh. 22. IX. 95. *Anthomyiidae*: (5) *Trichophthicus* sp., sh. 30. VI. 95. (6) *Anthomyia* sp., sh. 22. IX. 95. **Thysanoptera.** (7) *Thrips* sp., 30 VI. 95; 22. IX. 95. All at 800 ft.

CLASS AB, § 60. LOISELEURIA TYPE.

225. *Loiseleuria procumbens*, Desv. [Lit. *Arct.* 34, 36, 37 a, 38; *Alps* 2, 9.] The flower is slightly protogynous with ultimate self-fertilization on the fall of the corolla and sometimes before. The flowers are very little visited; Bombi pass them over in search of those of *Vaccinium*; they fill with water in bad weather. Yet each one sets seed. Like several other alpine plants which grow at Clova they are extremely variable, frequently being 6- or 7-merous.

Visitors. **Diptera.** *Mycetophilidae*: (1) *Sciara* sp., four individuals sh. *Bibionidae*: (2) *Scatopse* sp. *Anthomyiidae*: (3) 1 sp. All 11. VI. 99, 2,400 ft.

CLASS AB (? CLASS Ne), § 61. SALIX TYPE.

226. *Salix Caprea*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 b, 16, 33, 34, 40.]

Visitors to male catkins. **Hymenoptera.** *Aculeata*: *Apidae*: (1) *Bombus lap-*

ponicus F., sh. 9-14. V. 98, 8-1,900 ft. (2) *B. terrestris* L., 9-11. V. 98, 800 ft. **Diptera.** *Syrphidae*: (3) *Platychirus discimanus* Lw., fp. and sh. 21. V. 97; 14. V. 98, 9-1,300 ft. (4) *Eristalis arbustorum* L., sh. 14. V. 98, 900 ft. *Empidae*: (5) *Empis borealis* L., sh. 21. V. 97, 1,300 ft. (6) *E. niveipennis* sh. 21. V. 97, 1,300 ft. *Muscidae*: (7) *Lucilia cornicina* F., 21. V. 97, 1,300 ft. *Anthomyiidae*: (8) *Anthomyia sulciventris* Ztt., sh. and fp. 21. V. 97, 1,300 ft. (9) *Anthomyia* sp., 9-14. V. 98, 9-1,500 ft. *Cordyluridae*: (10) *Scatophaga stercoraria* L., sh. 9. V. 98, 800 ft. *Sepsidae*: (11) *Sepsis cynipsea* L., ? sh. 21. V. 97, 1,300 ft. **Hemiptera.** (12) *Anthocoris* sp., sh. 14. V. 98, 900 ft.

Visitors to female catkins. **Hymenoptera.** Aculeata: *Apidae*: (1) *Bombus lapponicus* F., sh. 9-16. V. 98, 8-1,400 ft. **Diptera.** *Empidae*: (2) *Empis lucida* Ztt., 16. V. 98, 800 ft. *Chironomidae*: (3) 1 sp., 16. V. 98, 800 ft. *Anthomyiidae*: (4) *Anthomyia* sp., 14. V. 98. 1,400 ft. all sh.

227. *Salix aurita*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 b, 16, 33.] This is well visited, especially its male catkins.

Visitors to male catkins. **Hymenoptera.** Aculeata: *Apidae*: (1) *Apis mellifica* L., cp. and sh. freq., 19-27. V. 97; 7-16. V. 98, 6-900 ft. (2) *Bombus hortorum* L., 22. V. 97, 700 ft. (3) *B. lapponicus* F., sh. 20-22. V. 97; 16. V. 98, 6-900 ft. (4) *B. terrestris* L., sh. 20-22. V. 97, 6-800 ft. *Vespidae*: (5) *Vespa* sp., 20. V. 97, 900 ft. *Formicidae*: (6) *Formica fusca* Latr., sh. 20. V. 97, 800 ft. **Diptera.** *Syrphidae*: (7) *Melanostoma quadrimaculatum* Verrall, 7. V. 98, 600 ft. (8) *Chilosia bergenstammi* Becker, sh. 22. V. 97, 600 ft. (9) *Platychirus discimanus* Lw., sh. and fp. 19-20. V. 97; 7-16. V. 98, 8-900 ft. (10) *Sericomyia lappona* L., sh. 20. V. 97, 1,200 ft. (11) *Eristalis arbustorum* L., sh. 16. V. 98, 700 ft. *Empidae*: (12) *Empis borealis* L., 20-27. V. 97, 6-1,200 ft. (13) *Rhamphomyia cinerascens* Mg., sh. 20. V. 97, 9-1,200 ft. (14) *R. sulcata* Fln., sh. 21. V. 96, 700 ft. *Mycetophilidae*: (15) *Sciara* sp., 16. V. 98, 600 ft. *Bibionidae*: (16) *Scatopse* sp., sh. 19. V. 97, 800 ft. *Chironomidae*: (17) 1 sp., 27. V. 97, 700 ft. *Muscidae*: (18) *Lucilia cornicina* F., sh. 19-20. V. 97, 8-1,200 ft. (19) *Pollenia vespillo* F., sh. 20-27. V. 97; 16. V. 98, 7-1,200 ft. *Anthomyiidae*: (20) *Anthomyia sulciventris* Ztt., fp. and sh. 20-27. V. 97; 7. V. 98, 7-900 ft. (21) *Anthomyia* sp., sh. 19. V. 97, 800 ft. (22) *Hylemyia* ?, sh. 22. V. 97, 700 ft. *Cordyluridae*: (23) *Scatophaga stercoraria* L., 19. V. 97; 16. V. 98, 7-800 ft.

Visitors to female catkins. **Hymenoptera.** Aculeata: *Apidae*: (1) *Bombus terrestris* L., sh. 22. V. 97; 7. V. 98, 600 ft. (2) *B. lapponicus* F., 22. V. 97; 7-16. V. 98, 6-800 ft. (3) *Andrena clarkella* Kirby, sh. 22. V. 97, 600 ft. **Diptera.** *Syrphidae*: (4) *Platychirus discimanus* Lw. 19. V. 97; 7. V. 98, 6-1,300 ft. (5) *Chilosia sparsa* Lw., sh. 22. V. 97, 600 ft. *Mycetophilidae*: (6) *Sciara* sp., 16. V. 98, 600 ft. *Muscidae*: (7) *Lucilia cornicina* F., 20. V. 97, 900 ft. (8) *Pollenia vespillo* F., sh. 20. V. 97; 7. V. 98, 6-1,200 ft. *Anthomyiidae*: (9) 1 sp., 19-20. V. 97, 8-1,800 ft. *Cordyluridae*: (10) *Scatophaga stercoraria* L., sh. 20-22. V. 97; 7-16. V. 98, 6-1,200 ft. **Coleoptera.** (11) *Phyllodecta vulgatissima* L., sh. 22. V. 97, 700 ft.

228. *Salix Lapponum*, Linn. [Lit. *Arct.* 34.]

Visitors to male catkins. Hymenoptera. Aculeata: *Apidae*: (1) *Bombus lapponicus* F., sh. 24. V. 97, 2,800 ft. *Vespidæ*: (2) *Vespa norvegica* F., 11. VI. 99, 2,100 ft. *Diptera. Mycetophilidae*: (3) *Sciara* sp., 11. VI. 99, 2,100 ft. *Chironomidae*: (4) 1 sp., 24. V. 97, 2,300 ft. *Anthomyiidae*: (5) *Coenosia* sp., fp. 24. V. 97; 11. VI. 99, 21–2,300 ft.

Visitor to female catkins. Diptera. Bibionidae: (1) *Scatopse* sp., 11. VI. 99, 2,100 ft.

229. *Salix repens*, Linn. [Lit. *N.C.E.* 1, 14, 25, 33, 34.]

Visitors to male catkins. Hymenoptera. Aculeata: *Apidae*: (1) *Apis mellifica* L., sh. 7. V. 98, 600 ft. (2) *Bombus lapponicus* F., sh. 22. V. 97, 700 ft. (3) *B. terrestris* L., 7. V. 98, 600 ft. Sessiliventre. *Tenthredinidae*: (4) *Nematus fallax* Lep., sh. 18. V. 97, 800 ft. *Diptera. Syrphidae*. (5) *Platychirus discimanus* Lw., sh. and fp. freq. 21–27. V. 97; 7. V. 98, 6–1,400 ft. (6) *Syrphus punctulatus* Verrall, sh. 22. V. 97, 700 ft. *Empidae*: (7) *Empis borealis* L., 20–22. V. 97, 7–1,400 ft. (8) *E. lucida* Ztt., sh. 7. V. 98, 600 ft. (9 and 10) *Empis* spp., sh. and fp., 21. V. 97, 1,400 ft. *Muscidae*: (11) *Lucilia cornicina* F., sh. 18. V. 97, 800 ft. (12) *Pollenia vespillo* F., sh. 7. V. 98, 6–700 ft. *Anthomyiidae*: (13) *Anthomyia sulciventris* Ztt., sh. and fp. 18–22. V. 97; 16. V. 98, 6–900 ft. (14 and 15) *Anthomyia* spp., sh. 20–27. V. 97; 14–16. V. 98, 7–800 ft.

Visitors to female catkins. Hymenoptera. Aculeata: *Apidae*: (1) *Bombus lapponicus* F., sh. 18–20. V. 97, 800 ft. (2) *B. terrestris* L., sh. 22. V. 97, 7. V. 98, 700 ft. *Diptera. Empidae*: (3) *Rhamphomyia cinerascens* Mg., sh. 20. V. 97, 8–900 ft. *Muscidae*: (4) *Lucilia cornicina* F., 7. V. 98, 700 ft. (5) *Pollenia vespillo* F., 20. V. 97, 900 ft. *Anthomyiidae*: (6) *Anthomyia sulciventris* Ztt., sh. 20. V. 97, 800 ft. (7 and 8) *Anthomyia* spp., 20–22. V. 97, 7–900 ft.

230. *Salix phylicifolia*, Linn. (including *S. nigricans*, Sm.) [Lit. *Arct.* 7, 34, 36.]

Visitor to male catkins. Hymenoptera. Aculeata: *Apidae*: (1) *Bombus lapponicus* F., sh. 13. V. 98, 700 ft.

Visitors to female catkins. Hymenoptera. Aculeata: *Apidae*: (1) *Bombus lapponicus* F., sh. 13. V. 98, 800 ft. *Diptera. Syrphidae*: (2) *Platychirus discimanus* Lw., 21. V. 97, 1,300 ft. *Empidae*: (3) *Rhamphomyia segmentata* Ztt., sh. 13. VI. 99, 1,400 ft. *Chironomidae*: (4) 1 sp., 13. V. 98, 700 ft. *Anthomyiidae*: (5) *Hyetodesia semicinerea* W., sh. 13. V. 98, 7–800 ft. (6) *Anthomyia sulciventris* Ztt., 21. V. 97, 8–1,300 ft. (7 and 8) *Anthomyia* spp., 13. V. 98, 700 ft. *Cordyluridae*: (9) *Scatophaga stercoraria* L., 21. V. 97, 1,300 ft. *Coleoptera*. (10) *Telephorus obscurus* L., sh. 13. VI. 99, 1,400 ft.

231. *Salix herbacea*, Linn. [Lit. *Arct.* 36, 38; *Alps* 2, 9.] Fruits very freely.

Visitors to male catkins. Hymenoptera. Petiolata parasitica. *Ichneumonidae*: (1) 1 sp. Sessiliventre. *Tenthredinidae*: (2) *Nematus* ? *capreae* L., sh. *Diptera. Chironomidae*: (3 and 4) *Ceratopogon* spp., sh. *Anthomyiidae*: (5) *Anthomyia sulciventris* Ztt., sh. (6) *Anthomyia* sp. All 24. V. 97, 2,600 ft.

Visitors to female catkins. **Hymenoptera.** Petiolata parasitica. *Ichneumonidae*:
 (1) A second individual of the same species that was caught on the male catkins, sh.
Diptera. *Anthomyiidae*: (2) *Anthomyia* sp., as named above. Both 24. V. 97,
 2,600 ft.

TABLE XL.

Actual number of Individuals visiting the different species in Class AB.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
184. <i>Listera cordata</i> . . .	—	—	—	—	1	—	—	—	—	—	—	2	3	—	6
185. <i>Malaxis paludosa</i> . . .	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
186. <i>Oxalis Acetosella</i> . . .	—	—	—	—	—	—	—	—	1	—	3	9	—	—	13
187. <i>Linum catharticum</i> . . .	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
188. <i>Ribes Grossularia</i> . . .	5	4	—	—	—	—	1	—	—	—	1	6	—	1	18
189. <i>Ribes rubrum</i> . . .	—	—	—	—	—	—	—	—	—	—	—	7	—	1	8
190. <i>Berberis Aquifolium</i> . . .	—	2	—	—	—	—	—	—	—	—	—	—	—	—	2
191. <i>Acer Pseudo-platanus</i> . . .	15	13	—	—	1	—	5	2	—	—	—	41	31	—	108
192. <i>Caltha palustris</i> . . .	—	—	—	—	3	—	—	—	—	—	16	799	11	6	835
193. <i>Vaccinium Oxycoccus</i> . . .	—	—	—	—	1	—	—	—	—	—	—	1	—	—	2
194. <i>Barbarea vulgaris</i> . . .	—	—	—	—	—	—	—	—	—	—	—	—	5	—	5
195. <i>Cochlearia officinalis</i> . . .	—	—	—	—	—	—	—	1	—	—	—	10	2	1	14
196. <i>Brassica Sinapis</i> . . .	—	—	—	—	—	—	—	2	—	—	1	—	5	—	8
197. <i>Capsella Bursa-pastoris</i> . . .	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
198. <i>Iberis amara</i> . . .	—	—	—	—	—	—	—	2	—	—	33	29	3	—	67
199. <i>Trollius europaeus</i> . . .	—	—	—	—	1	—	—	—	—	—	1	26	8	—	36
200. <i>Philadelphus coronarius</i> . . .	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
201. <i>Sedum Rhodiola</i> . . .	—	—	—	—	3	—	—	—	—	—	2	16	8	—	29
202. <i>Pyrus intermedia</i> . . .	—	—	—	—	2	—	—	—	—	—	3	18	6	—	29
203. <i>Pyrus Malus</i> . . .	—	—	—	—	—	—	—	—	—	—	—	14	22	—	36
204. <i>Ranunculus Auricomus</i> . . .	—	—	—	—	—	—	—	—	—	—	—	2	—	—	2
205. <i>Ranunculus Flammula</i> . . .	—	—	—	—	—	—	—	1	—	1	6	62	15	—	85
206. <i>Ranunculus bulbosus</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
207. <i>Ranunculus acris</i> . . .	—	1	1	26	9	—	—	2	—	1	48	1414	131	6	1639
208. <i>Ranunculus repens</i> . . .	—	—	—	3	—	—	—	—	—	—	3	98	19	—	123
209. <i>Ranunculus Ficaria</i> . . .	—	—	—	—	—	—	—	—	—	—	—	35	—	1	36
210. <i>Fragaria vesca</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
211. <i>Potentilla Fragariastrum</i> . . .	—	—	—	—	2	—	—	—	—	—	—	6	—	—	8
212. <i>Potentilla Tormentilla</i> . . .	—	1	6	—	14	17	—	4	1	5	19	286	8	1	362
213. <i>Potentilla maculata</i> . . .	—	—	—	—	—	—	—	—	—	—	1	3	—	1	5
214. <i>Potentilla Comarum</i> . . .	—	—	1	—	1	—	—	—	—	—	3	22	6	—	33
215. <i>Parnassia palustris</i> . . .	—	—	—	—	3	4	—	—	—	—	—	11	7	10	35
216. <i>Saxifraga nivalis</i> . . .	—	—	—	—	1	—	—	—	—	—	—	—	—	—	1
217. <i>Saxifraga hypnoides</i> . . .	—	—	—	1	10	—	—	1	1	—	12	73	48	5	151
218. <i>Cerastium triviale</i> . . .	—	—	—	—	4	—	—	—	—	—	2	11	—	2	19
219. <i>Cerastium alpinum</i> . . .	—	—	—	—	1	—	—	—	—	—	—	4	1	2	8
220. <i>Stellaria media</i> . . .	—	—	—	—	6	—	—	—	—	—	1	7	3	25	42
221. <i>Stellaria Holostea</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
222. <i>Stellaria graminea</i> . . .	—	—	—	—	—	—	—	—	—	—	1	1	—	—	2
223. <i>Sagina procumbens</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
224. <i>Spergula arvensis</i> . . .	—	—	—	—	—	—	—	—	—	—	16	4	—	2	22
225. <i>Loiseleuris procumbens</i> . . .	—	—	—	—	—	—	—	—	—	—	—	6	—	—	6
Class AB. Section Ne.															
226. <i>Salix Caprea</i> . . .	—	23	—	—	—	—	—	—	—	—	15	24	—	1	63
227. <i>Salix aurita</i> . . .	47	67	1	—	—	1	1	—	—	—	49	79	1	—	246
228. <i>Salix Lapponum</i> . . .	—	1	—	—	—	—	1	—	—	—	—	13	—	—	15
229. <i>Salix repens</i> . . .	1	6	—	1	—	—	—	—	—	—	25	32	—	—	65
230. <i>Salix phyllifolia</i> . . .	—	3	—	—	—	—	—	—	—	—	3	21	1	—	28
231. <i>Salix herbacea</i> . . .	—	—	—	1	2	—	—	—	—	—	—	10	—	—	13
Total . . .	68	121	9	32	66	22	8	16	3	7	264	3210	344	65	4235
Percentage . . .	1.37	2.88	.21	7.6	1.56	.52	.19	.28	.07	.16	6.24	75.79	8.12	1.54	

TABLE XLI.

To show how class AB obtains visits from less than its share in proportion of decidedly desirable insects and more of indifferent insects.

	<i>Available.</i>		<i>To Class AB.</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Decidedly desirable	1,763	10.19	205	4.84
Desirable	1,277	7.37	276	6.52
Indifferent	12,993	75.08	3,568	84.27
Injurious	1,273	7.36	185	4.37

TABLE XLII.

Insects visiting class AB in different seasons classed by desirability.

	<i>Spring.</i>		<i>Summer.</i>		<i>Autumn.</i>	
Decidedly desirable	188	16.33	16	.59	1	.27
Desirable	99	8.60	159	5.85	18	4.89
Indifferent	848	73.73	2,421	89.17	299	81.02
Injurious	15	1.30	119	4.38	51	13.82
Total	1,150		2,715		369	

TABLE XLIII.

Percentage of different groups of insects visiting Class AB in different seasons.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Di.</i>	<i>Col.</i>	<i>Etc.</i>
Spring	5.91	10.43	.07	.86	.17	—	—	—	8.52	72.26	1.30	.43
Summer	—	—	.29	3.64	.22	.58	.11	.25	5.45	79.11	9.57	.73
Autumn	—	.27	—	2.98	—	—	—	—	4.87	62.33	18.69	10.84

TABLE XLIV.

Desirability of visitors to Class AB according to colour, in percentages.

	<i>Rose and purple</i>	<i>Yellow.</i>	<i>White.</i>	<i>Green.</i>
Decidedly desirable	—	.41	1.10	30.96
Desirable	—	3.31	16.08	16.23
Indifferent	87.50	93.40	64.98	50.83
Injurious	12.50	2.87	17.84	1.98

TABLE XLV.

Percentage of different groups of insects visiting flowers of different colours in Class AB.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>
Rose-purple	—	—	—	12.33	—	—	—	—	—	87.56	—	—
Yellow . .	—	.12	.22	2.39	—	.28	.03	.22	3.06	86.58	6.59	.47
White . .	—	—	—	7.48	—	1.10	.44	—	15.63	44.71	20.26	10.35
Green . .	11.25	19.37	.33	1.49	1.32	.33	—	—	15.89	42.54	6.95	.49

In Class AB, Tables XLIV and XLV show that green flowers get the best visitors, and white flowers get, on the whole, better visitors than yellow flowers. In Table XLII it is seen that in spring many high types of insects go to AB. This is due to the frequent visits of *Apis* and *Bombus* to *Acer Pseudo-platanus* and *Salices*—green flowers. If we take away *Salix* from Class AB, then we obtain Table XLVI:

TABLE XLVI.

Insects visiting Class AB (*Salix* excluded) in different seasons classed by desirability.

	<i>Spring.</i>		<i>Summer.</i>		<i>Autumn.</i>	
Decidedly desirable	40	5.46	16	.59	1	.27
Desirable	7	.95	158	5.83	18	4.89
Indifferent	671	91.54	2,418	89.19	299	81.02
Injurious	15	2.05	119	4.39	51	13.82
Total	733		2,711		369	

And if we also take away *Acer Pseudo-platanus* we leave hardly any insects of high type for spring.

The visitors to *Salix* which are, all but four, spring insects are:—

Decidedly desirable . .	148	34.34%
Desirable	93	21.58%
Indifferent	181	42.00%
Injurious	9	2.08%

Class AB attracted four species of the butterflies, four of the larger moths, and four of the smaller, including *Eriocephala*; of Hymenoptera, *Apis*, three species of *Bombus*, three of *Andrena*, two of *Vespa*, two ants, some eight or more species of parasitic Hymenoptera and four Tenthredinidae: among Diptera, in the Syrphidae, of one species of *Sericomyia*, two of *Eristalis*, three of *Chilosia*, four of *Syrphus*, a *Chrysogaster*, five of *Platychirus*, two of *Melanostoma*, two of *Sphaerophoria*, *Syritta*, and one of *Ascia*; in the Empidae of ten species of *Empis*, four of *Rhamphomyia*, two of *Hilara* and one of *Clinoceira*; in Tachinidae two species of *Siphona*; in

Muscidae, two species of Pollenia, one of Lucilia and one of Calliphora ; in Sarcophagidae a Sarcophaga ; in Cordyluridae three species of Scatophaga ; in Sciomyzidae, one of Tetanocera, in Anthomyiidae twenty-three species including Drymia hamata ; in Tipulidae two species ; in Bibionidae two, in Dolichopodidae three ; and of small flies seventeen ; among Coleoptera eighteen species ; among Hemiptera four species ; among Neuroptera two species ; among Thysanoptera Thrips ; and among Araneida a crab-spider and a harvester spider.

CLASS Po. AB, § 62. ERECT AB-LIKE TYPE, WITH MUCH POLLEN.

232. Helianthemum vulgare, Linn. [Lit. *Brit.* 23, 39 ; *N.C.E.* 1, 3 b, 11, 33, Warnstorf 2507 ; *Alps* 2, 16, 34 ; *Pyren.* 17.]

Visitors. **Lepidoptera.** Heterocera : *Tortricidae* : (1) Tortrix sp. seeking h. 2. VI. 95, 800 ft. *Eriocephalidae* : (2) Eriocephala calthella L., fp. 21. VII. 95, 900 ft. **Hymenoptera.** Aculeata : *Apidae* : (3) Apis mellifica L., twice fp. 25. VI. 96, 700 ft. (4) Andrena analis Panz., 20. VI. 95, 1,000 ft. **Diptera.** *Syrphidae* : (5) Platychirus manicatus Mg., seeking h. 3. VII. 95 ; 19. VI. 99, 8-1,000 ft. (6) Chrysogaster hirtella Lw., fp. 18. VI. 96, 800 ft. (7) Sphaerophoria picta Mg., 3. VII. 95, 1,200 ft. (8) Ascia sp. fp. 25. VI. 96, 700 ft. *Mycetophilidae* : (9) Sciara sp. 4. VII. 94, about 800 ft. *Anthomyiidae* : (10) Hyetodesia lucorum Fln., fp. 29. VI. 95, 800 ft. (11) Hyetodesia sp., 4. VII. 94 ; 3. VII. 95, about 8-1,000 ft. (12) Limnophora sp., seeking h. and fp. 22. VI. 95, 800 ft. (13) Drymia hamata Fln., fp. 20. VI. 95, 1,000 ft. (14) Trichophthicus hirsutulus Ztt., fp. 24. VI.-23. VII. 95 ; 8. VII. 96, 8-1,200 ft. (15) Hylemyia nigrescens Rnd., 15-16. VI. 99, 800 ft. (16) Anthomyia radicum L., 4. VII. 94, about 800 ft. (17 and 18) Anthomyia spp. fp. 4. VII. 94 ; 14. VI.-3. VII. 95 ; 16. VI.-11. VII. 96 ; 19. VI. 99, 7-1,300 ft. (19) Homalomyia incisurata Ztt., 4. VII. 94, about 800 ft. (20) Coenosia sp., 4. VII. 94, about 800 ft. **Coleoptera.** (21) Meligethes viridescens F., 4. VII. 94, about 800 ft. **Neuroptera.** (22) Chloroperla sp., 4. VII. 94, about 800 ft.

233. Hypericum pulchrum, Linn. [Lit. *Brit.* 23 ; *N.C.E.* 14, 18.]

Visitors. **Hymenoptera.** Aculeata : *Apidae* : (1) Andrena analis Panz., 22. VI. 96, 1,000 ft. **Diptera.** *Syrphidae* : (2) Sphaerophoria sp., 28. V. 95, 1,000 ft. *Anthomyiidae* : (3) Hyetodesia incana W., fp. 27. VI. 95 ; 29. VI. 96, 11-1,800 ft. (4) Trichophthicus sp., fp. 5-17. VII. 95 ; 29. VI. 96, 8-1,500 ft. (5) Anthomyia sp., fp. 24. IX. 95, 900 ft.

234. Rosa mollis, Sm. (*R. villosa*, Linn.). [Lit. of *R. canina*, sensu ampliore, *Brit.* 23 ; *N.C.E.* 1, 3 b, 8, 14, 18, 34.]

Visitors. **Hymenoptera.** Aculeata : *Apidae* : (1) Bombus lapponicus F., seeking h. 10. VII. 96, 2,100 ft. (2) B. terrestris L., cp. and seeking h. 26. VI. 95 ; 26. VI. 96, 8-900 ft. **Diptera.** *Syrphidae* : (3) Eristalis rupium F., seeking h. 25-26. VI. 95, 800 ft. (4) E. arbustorum L., 8. VII. 95, 800 ft. *Anthomyiidae* : (5) Hyetodesia incana W., 26. VI. 96, 900 ft. (6) H. semicinerea W., 3. VII. 95, 800 ft. (7) Drymia hamata Fln., seeking h. 24. VI. 95, 800 ft. (8) Trichophthicus sp., fp. and

seeking h. 21. VI.-4. VII. 95, 800 ft. (9) *Anthomyia* sp., fp. and seeking h. 4-5. VII. 95; 24-25. VI. 96, 7-800 ft. **Thysanoptera.** (10) *Thrips* sp., 21. VI.-11. VII. 96, 7-800 ft. **Neuroptera.** (11) *Chloroperla* sp., 2. VII. 95, 800 ft.

CLASS Po. AB, § 63. AB-LIKE TYPE, WITH MASSED FLOWERS.

235. *Spiraea Ulmaria*, Linn. [Lit. *Brit.* 23, 39; *N.C.E.* 1, 3 b, 8, 11, 14 a, 16, 18, 21 a, 21 b, 33, 34, 40; *Arct.* 36; *Alps*, 2; *Pyren.* 17.]

Visitors. **Lepidoptera.** Heterocera: *Eriocephalidae*: (1) *Eriocephala calthella* L., fp. 6-17. VII. 95, 7-800 ft. **Hymenoptera.** Aculeata: *Apidae*: (2) *Apis mellifica* L., cp. and seeking h., 15-22. VII. 95; 3-11. VII. 96, 7-800 ft. freq. (3) *Bombus lapponicus* F., seeking h. 4-11. VII. 96, 800 ft. (4) *B. terrestris* L., cp. 15. VII. 95; 11. VII. 96, 7-800 ft. *Vespidae*: (5) *Vespa norvegica* F., seeking h. 4-11. VII. 96, 800 ft. Sessiliventre. *Tenthredinidae*: (6) *Allantus arcuatus* Forst., 29. V. 96, 900 ft. **Diptera.** *Syrphidae*: (7) *Eristalis arbustorum* L., fp. and seeking h., 15-17. VII. 95; 25. VI. 96, 7-800 ft. *Muscidae*: (8) *Calliphora vomitoria* L., 3. VII. 96, 800 ft. *Anthomyiidae*: (9) *Hyetodesia incana* W., fp. and seeking h., 15. VII. 95; 3-11. VII. 96, 800 ft. (10) *Limnophora* sp., 2. VII. 95, 800 ft. (11) *Trichophthalmicus* sp., fp. 12. VII. 95; 3. VII. 96, 7-800 ft. (12 and 13) *Anthomyia* spp., fp. 4-15. VII. 95; 11. VII. 96, 7-800 ft. *Cordyluridae*: (14) *Scatophaga maculipes* Ztt., fp. 15. VII. 95, 800 ft.

CLASS Po. AB, § 64. AB-LIKE TYPE WITH LITTLE POLLEN.

236. *Lysimachia punctata*, Linn. An escape from cultivation.

Visitor. **Diptera.** *Chironomidae*: (1) *Ceratopogon flavipes* Mg., seeking h., 2. VII. 95, 800 ft.

237. *Lysimachia nemorum*, Linn. [Lit. *Brit.* 23; *N.C.E.* 18, 33.]

Visitors. **Hymenoptera.** Aculeata: *Formicidae*: (1) *Formica fusca* Latr., seeking h., 29. VI. 96, 1,500 ft. **Diptera.** *Syrphidae*: (2) *Syrphus* sp., 23. VI. 96, 900 ft. *Chironomidae*: (3) *Orthocladus* sp., 29. VI. 95, 1,100 ft. *Anthomyiidae*: (4) 1 sp., fp. 10. VI. 99, 700 ft.

238. *Trientalis europaea*, Linn. [Lit. *N.C.E.* 1, 3 c, 4, 21 a, 21 b; *Arct.* 36.] The stamens and style are of equal length and are ripe together, but are not near enough to bring about spontaneous self-pollination.

Visitors. **Diptera.** *Syrphidae*: (1) *Platychirus albimanus* F., seeking h., 27. VI. 95, 2,100 ft. (2) *Syrphus vitripennis* Mg., fp. 15. VI. 99, 1,200 ft. *Empidae*: (3) *Empis tessellata* F., seeking h. 19. VI. 96, 1,500 ft. *Anthomyiidae*: (4) *Anthomyia* sp., fp. 22. V. 96; 10. VI. 99, 7-1,000 ft. **Coleoptera.** (5) *Telephorus paludosus* Fall., 20. VI. 95, 1,500 ft. **Thysanoptera.** (6) *Thrips* sp., 10. VI. 99, 700 ft.

239. *Narthecium Ossifragum*, Huds. [Lit. *Brit.* 23, 39; *N.C.E.* 3 a, 14, 14 a, 18; *Alps* 9.]

Visitors. **Lepidoptera.** Heterocera: *Eriocephalidae*: (1) *Eriocephala calthella*

L., fp. 28. VI.-6. VII. 95, 800 ft. **Hymenoptera.** Aculeata: *Apidae*: (2) *Bombus hortorum* L., seeking h., 11. VII. 96, once 800 ft. **Diptera.** *Syrphidae*: (3) *Platychirus manicatus* Mg., fp. 6. VII. 95, 900 ft. *Anthomyiidae*: (4) *Hyetodesia incana* W., fp. 6-11. VII. 96, 8-900 ft. (5) *Hyetodesia* sp., 2. VII. 95, 900 ft. (6) *Trichophthicus* sp., fp. 26. VI.-6. VII. 95; 1-6. VII. 96, 9-1,500 ft.

TABLE XLVII.

Total number of visitors to AB-like flowers of Class Po.

<i>Class Po. (AB)</i>	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
232. <i>Helianthemum vulgare</i> .	2	—	1	—	—	—	—	—	1	1	8	55	—	—	68
233. <i>Hypericum pulchrum</i> .	—	—	1	—	—	—	—	—	—	—	1	15	—	—	17
234. <i>Rosa mollis</i> (villosa) .	—	5	—	—	—	—	—	—	—	—	3	17	—	3	28
235. <i>Spiraea Ulmaria</i> . . .	46	4	—	1	—	—	1	—	—	6	3	24	—	—	85
236. <i>Lysimachia punctata</i> .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
237. <i>Lysimachia nemorum</i> .	—	—	—	—	—	1	—	—	—	—	1	2	—	—	4
238. <i>Trientalis europaea</i> . .	—	—	—	—	—	—	—	—	—	—	3	12	1	1	17
239. <i>Narthecium Ossifragum</i>	—	1	—	—	—	—	—	—	—	11	1	16	—	—	29
Total	48	10	2	1	—	1	1	—	1	18	20	142	1	4	249
Percentages	19.28	4.02	.80	.40	—	.40	.40	—	.40	7.23	8.03	57.03	.40	1.61	

CLASS A, § 65. OPEN SAXIFRAGA TYPE.

240. *Saxifraga aizoides*, Linn. [Lit. *N.C.E.* 1; *Arct.* 7, 33, 37 b; *Alps* 2, 16; *Pyren.* 17.] Proterandrous with ultimate self-pollination. The stamens are of the usual two lengths, and go through the usual process of coming up singly to dehisce at the centre of the flower and finally coming up together to effect self-pollination.

Visitors. **Lepidoptera.** Heterocera: *Noctuidae*: (1) *Hadena gemina* Hb., sh. 18. VI. 96, 800 ft. *Tortricidae*: (2) 1 sp., sh. 22. VI. 96, 23-2,400 ft. *Eriocephalidae*: (3) *Eriocephala calthella* L., 28. VI.-11. VII. 96; 26. VI.-10. VII. 96, 800-2,400 ft. **Hymenoptera.** Aculeata: *Apidae*: (4) *Bombus lapponicus* F., sh. 1. VII. 95, 800 ft. and 1-10. VII. 96, 19-2,200 ft. (5) *B. terrestris* L., 14. IX. 95, 1,800 ft. (6) *Andrena fucata* Sm., sh. 23. VII. 95, 800 ft. *Vespidae*: (7) *Vespa norvegica* F., sh. 6-23. VII. 95; 4-10. VII. 96, 800 ft. *Formicidae*: (8) *Formica fusca* Latr., sh. very ab. 21. VI.-23. VII. 95; 20-23. IX. 95; 23. VI.-10. VII. 96, 8-2,400 ft. *Myrmicidae*: (9) *Myrmica rubra* L., sh. freq. 22. VI.-11. VII. 95; 14-18. IX. 95; 5. VII. 96, 8-1,700 ft. Petiolata parasitica: *Ichneumonidae*: (10) *Ichneumon molitorius* Grav., sh. 18-24. IX. 95, 9-1,800 ft. (11) *Hemiteles micator* Grav., sh. 19. IX. 95, 2,400 ft. (12) *Pimpla examinitor* F., 18. IX. 95, 800 ft. (13) *Amblyteles subsericans* Grav., sh. 4. IX. 95, 1,500 ft. (14, 15, 16, 17, 18, and 19) 6 spp. sh. 4. VII. 94; 1-23. VII. 95; 14-23. IX. 95; 18. VI.-10. VII. 96, 800-2,600 ft. *Chalcididae*: (20 and 21) 2 sp. sh. 22. VI.-10. VII. 96, 23-2,400 ft. *Cynipidae*: (22) 1 sp., 23. VII. 95, 800 ft. Sessiliventre: *Tenthredinidae*: (23) *Tenthredo olivacea* Klug., 6. VII. 95, 2,500 ft.

Diptera. *Syrphidae*: (24) *Chilosia fraterna* Mg., sh. 22. VI. 95; 8. VI. 96; 15. VI. 99, 8-1,100 ft. (25) *Syrphus* ? *ribesii* L., sh. 8. VI.-10. VII. 96, 8-2,300 ft. (26) *S.* ? *vitripennis* Mg., sh. 23. VII. 95, 800 ft. (27) *Sphaerophoria scripta* L., sh. 23. VII. 95, 800 ft. (28) *Sericomyia borealis* Fln., 2. VII. 96, 800 ft. (29) *Eristalis arbustorum* L., sh. 18. VI. 96, 800 ft. (30) *Syritta pipiens* L., sh. 18. VI.-10. VII. 96, 800 ft. *Empidae*: (31) *Empis tessellata* F., sh. 26. VI. 95; 2. VII. 96, 8-900 ft. (32) *E. punctata* Mg., sh. 23. VII. 95, 800 ft. (33) *Rhamphomyia albosegmentata* Ztt., 26. VI. 95, 1,000 ft. (34) *R. ? sulcata* Fln., 4. VII. 94, 800 ft. (35) *Rhamphomyia* sp., sh. 6. VII. 96, 800 ft. (36) *Hilara matrona* Hal., sh. 23. VII. 95, 800 ft. (37) *Hilara* sp., sh. 4. VII. 94; 4. VII. 95, 800 ft. *Mycetophilidae*: (38) *Sciara* sp., sh. 4-23. IX. 95; 1. VII. 96, 11-2,200 ft. *Bibionidae*: (39) *Scatopse* sp., sh. 6. VII. 96, 2,100 ft. (40) *Dilophus albipennis* Mg., 22. VI.-1. VII. 95; 26-27. VI. 96, 8-900 ft. (41) *Bibio pomonae* F., sh. 24. IX. 95; 10. VII. 96, 800 ft. *Simuliidae*: (42) *Simulium* sp., 25. VI. 96, 2,200 ft. *Chironomidae*: (43) *Corynoneura* sp., sh. 4. VII. 94, 18. VI. 96, 800 ft. (44) *Ceratopogon* sp., 4. VII. 94, 800 ft. *Psychodidae*: (45) *Psychoda* sp., 22. VI. 95, 11-1,800 ft. (46) *Psychoda* ?, 21. IX. 95, 1,100 ft. *Limnobiidae*: (47) *Limnophila meigenii* Verrall, sh. 23. IX. 95, 1,400 ft. *Dolichopodidae*: (48) *Dolichopus signatus* Mg., sh. 28. VI. 95, 800 ft. (49) *D. atratus* Mg., sh. 4. VII. 94; 28. VI. 95, 800 ft. (50) *D. pennatus* Mg., sh. 28. VI. 95, 800 ft. (51) *Dolichopus* sp., sh. 18. VI.-6. VII. 96, 8-2,200 ft. (52) *Argyra argentina* Mg., sh. 23. VII. 95, 800 ft. *Tachinidae*: (53) *Echinomyia fera* L., sh. 1. VII. 95, 800 ft. *Sarcophagidae*: (54) *Sarcophaga* sp., 2. VII. 96, 800 ft. (55) *Cynomyia mortuorum* L., sh. 1-10. VII. 95, 8-2,200 ft. (56) *C. alpina* Ztt., 10. VII. 95, 2,200 ft. *Muscidae*: (57) *Lucilia cornicina* F., sh. 24. IX. 95, 17-1,800 ft. (58) *Calliphora cognata* Mg., sh. 10. VII. 95, 2,200 ft. (59) *C. erythrocephala* Mg., 18. VI.-6. VII. 96, 800 ft. (60) *C. vomitoria* L., sh. 4-23. VII. 95, 800 ft. (61) *Pollenia rudis* F., sh. 24. IX. 95, 1,800 ft. *Anthomyiidae*: (62) *Hyetodesia incana* W., sh. freq. 4. VII. 94; 22. VI.-23. VII. 95; 18. IX. 95; 18. VI.-4. VII. 96, 8-2,200 ft. (63) *H. lucorum* Fln., 4. VII. 94, 800 ft. (64) *H. errans* Mg., 4. VII. 94. (65) *Limnophora solitaria* Ztt., sh. 26. VI.-10. VII. 96, 18-2,300 ft. (66) *Drymia hamata* Fln., 25. VI. 95; 14. IX. 95, 800 ft. (67) *Trichophthicus* sp., sh. 6. VII. 95; 18. IX. 95, 8-1,300 ft. (68) *Anthomyia sulciventris* Ztt., 22. VI.-23. VII. 95, 8-900 ft. (69) *A. radicum* L., 4. VII. 94, 800 ft. (70, 71, and 72) *Anthomyia* spp., sh. 4. VII. 94; 6-13. VII. 95; 14-24. IX. 95; 19. VI.-10. VII. 96, 8-2,500 ft. (73) *Coenosia* sp., sh. 4. VII. 95, 800 ft. *Cordyluridae*: (74) *Scatophaga stercoraria* L., fp. sh. 4. VII. 94; 6. VII. 95; 14-23. IX. 95; 2-10. VII. 96, 8-2,500 ft. (75) *S. squalida* Mg., sh. 28. VI. 95, 800 ft. *Ortalidae*: (76) *Pteropaectria frondescentiae* L., 22. VI. 95; 18-22. VI. 96, 8-2,300 ft. *Sepsidae*: (77) *Sepsis cynipsea* L., 14. IX. 95, 1,500 ft. *Ephydridae*: (78) *Hydrellia griseola* Fln., sh. 28. VI. 95, 1,700 ft. *Chloropidae*: (79) *Chloropisca ornata* Mg., 1. VII. 95, 800 ft. *Phoridae*: (80) *Phora rufipes* Mg., sh. 22. VII. 95, 800 ft. (81) *Phora* sp., sh. 14-23. IX. 95, 8-1,800 ft. **Coleoptera.** (82) *Meligethes viridescens* F., sh. and fp. 28. VI. 95; 16-21. IX. 95; 26. VI.-6. VII. 96, 8-2,300 ft. (83) *Sericosomus brunneus* L., sh. 22. VI.-1. VII. 95, 9-1,100 ft. (84) *Donacia discolor* Panz., sh. 23. VII. 95, 800 ft. (85) *D. sericea* L., sh. 23. VII. 95, 800 ft. (86) *Anthophagus alpinus* Payk., sh. 6-13. VII. 95; 6. VII. 96, 20-2,400 ft. (87) *Epuraea aestiva* L., 23. IX. 95, 2,000 ft. (88) *Telephorus pellucidus* F., sh. 2. VII.

95, 800 ft. (89) *Corymbites cupreus* F., 4. VII. 94, 800 ft. **Araneida.** (90) *Oligolophus morio* F., sh. 23. IX. 95, 14–2,000 ft.

241. *Saxifraga umbrosa*, Linn. [Lit. *N.C.E.* Plateau 2002; *Alps* 2.] An escape from cultivation.

Visitors. **Hymenoptera.** *Petiolata parasitica*: (1) 1 sp. **Diptera.** *Syrphidae*: (2) *Syritta pipiens* L., sh. *Anthomyiidae*: (3) 1 sp. All 18. VI. 96, 900 ft.

242. *Saxifraga stellaris*, Linn. [Lit. *Brit.* 23; *Arct.* 7, 36, 37 a, 38; *Alps* 2, 21b.] At Clova the flower is variable, producing frequently extra parts; the terminal flower is especially so, large, and often has three carpels (cf. Wydler in *Flora*, 1860, p. 387). This is partly in contrast to the observations of Warming and Schulz, who find the terminal flower is frequently female and small in size.

Visitors. **Diptera.** *Empidae*: (1) *Empis lucida* Ztt., 22. VI. 95, 2,600 ft. (2) *E. vernalis* Mg., ? sh. 12–16. VI. 99, 22–2,500 ft. *Anthomyiidae*: (3) *Drymia hamata* Fln., sh. 20. VI. 96, 2,300 ft. (4) *Anthomyia sulciventris* Ztt., 22. VI. 95; 21. V. 97, 10–1,800 ft. (5 & 6) *Anthomyia* spp., sh. 19. VI.–6. VII. 95; 23. V. 96; 20. VI.–6. VII. 96, 12–2,600 ft.

243. *Chrysosplenium oppositifolium*, Linn. [Lit. *Brit.* 23, 29; *N.C.E.* 1, 3 a.] Flowers ♀, by contabescence of the anthers, were observed once.

Visitors. **Lepidoptera.** *Heterocera*: (1) microlepidopteron, sh. 22. V. 96, 1,200 ft. **Hymenoptera.** *Petiolata parasitica*: *Ichneumonidae*: (2) 1 sp., 22. V. 97; 14. V. 98, 5–900 ft. **Diptera.** *Empidae*: (3) *Empis tessellata* F., sh. 22. V. 96, 1,200 ft. (4) *Rhamphomyia sulcata* Fln., sh. 22. V. 96, 1,200 ft. *Cecidomyiidae*: (5) *Tanytarsus* sp., sh. 14. V. 98; 15. VI. 99, 9–1,900 ft. *Mycetophilidae*: (6) *Sciara* sp., 20. VI. 95, 2,500 ft. *Psychodidae*: (7) *Psychoda* sp., sh. 14. V. 98, 900 ft. *Anthomyiidae*: (8) *Anthomyia sulciventris* Ztt., sh. 22. V. 97, 500 ft. (9) *Anthomyia* sp., 21. VI. 95, 1,400 ft. *Cordyluridae*: (10) *Scatophaga stercoraria* L., sh. 14. V. 98, 900 ft. (11) *S. squalida* Mg., 21. VI. 95, 1,400 ft. *Helomyzidae*: (12) *Helomyza flava* Mg., sh. 12. V. 98, 800 ft. **Coleoptera.** (13) *Anthrophagus alpinus* Payk., 22. VI. 96, 2,400 ft. (14) *Telephorus paludosus* Fln., sh. 15. VI. 99, 1,900 ft. **Hemiptera.** (15) 1 sp., sh. 22. V. 97, 500 ft.

CLASS A, § 66. AUCUPARIA TYPE.

244. *Pyrus aucuparia*, Gaertn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 16, 18, 33, 40; de Vries 2460; *Pyren.* 17.)

Visitors. **Lepidoptera.** *Heterocera*: *Tineidae*: (1) 1 sp., 14. VI. 99, 1,400 ft. **Hymenoptera.** *Aculeata*: *Apidae*: (2) *Apis mellifica* L., sh. 11. VI. 99, 800 ft. (3) *Bombus terrestris* L., ran rapidly over an inflorescence ? sh., 16. VI. 99, 1,300 ft. (4) *B. lapponicus* F., 14. VI. 99, 1,400 ft. *Formicidae*: (6) *Formica fusta* Latr., 14–16. VI. 99, 1,400 ft. *Petiolata tubulifera*: *Chrysididae*: (6) *Chrysis* ? *ignita* L., 11. VI. 99, 800 ft. *Petiolata parasitica*: *Chalcididae*: (7) 1 sp., 14. VI. 99, 1,400 ft.

Diptera. *Syrphidae*: (8) *Syrphus vitripennis* Mg., sh. 11-16. VI. 99, 8-1,400 ft. (9) *Chrysogaster hirtella* Lw., 13. VI. 99, 1,400 ft. (10) *Eristalis arbustorum* L., 13-1,400 ft. *Empidae*: (11) *Empis tessellata* F., 16. VI. 99, 13-1,400 ft. (12) *E. bilineata* Lw., 11. VI. 99, 800 ft. (13) *E. opaca* F., 13. VI. 99, 1,400 ft. (14) *E. lucida* Ztt., 13-16. VI. 99, 13-1,400 ft. (15) *Rhamphomyia sulcata* Fln., sh. 11. VI. 99, 800 ft. (16) *R. cinerascens* Mg., sh. 11. VI. 99, 800 ft. *Chironomidae*: (17) 1 sp., 28. VI. 95, 1,800 ft. *Bibionidae*: (18) *Scatopse* sp., 14. VI. 99, 1,400 ft. (19) *Bibio nigriventris* Hal., 13-14. VI. 99, 13-1,400 ft. *Sarcophagidae*: (20) *Sarcophaga* sp., 13. VI. 99, 1,400 ft. *Muscidae*: (21) *Lucilia* sp., sh. 13-14. VI. 99, 13-1,400 ft. (22) *Calliphora erythrocephala* Mg., 11-16. VI. 99, 13-1,400 ft. (23) *C. vomitoria* L., 14. VI. 99, 1,400 ft. *Anthomyiidae*: (24) *Mydaea* sp., 11-16. VI. 99, 8-1,400 ft. (25) *Limnophora* sp., 28. VI. 95, 1,800 ft. (26) *Drymia hamata* Fln., sh. 16. VI. 99, 1,400 ft. (27) *Trichophthicus* sp., sh. 25. VI. 95, 2,000 ft. *Chloropidae*: (28) *Chlorops* sp., 14. VI. 99, 1,400 ft. **Coleoptera.** (29) *Meligethes viridescens* F., sh. 25-28. VI. 95; 11-14. VI. 99, 8-2,000 ft. (30) *Epuraea aestiva* L., sh. 25. VI. 95, 2,000 ft. (31) *Corymbites cupreus* F., 14. VI. 99, 1,400 ft. (32) *C. quercus*, Gyll., sh. 14. VI. 99, 13-1,400 ft. (33) *Rhagium inquisitor* F., devouring the anthers, 13-14. VI. 99, 1,400 ft. **Thysanoptera.** (34) *Thrips* sp., sh. 25. VI. 95; 14. VI. 99, 14-2,000 ft.

245. Crataegus Oxyacantha, Linn. [Lit. *Brit.* 23; *N.C.E.* 1, 3 b, 4, 14, 14 a, 16, 18, 34, 40; *Pyren.* 17.] Planted above 500 ft.

Visitors. **Hymenoptera.** *Aculeata*: *Apidae*: (1) *Apis mellifica* L., sh. 11. VI. 99, 800 ft. *Petiolata parasitica*: *Proctotrypidae*: (2) 1 sp., 11. VI. 99, 800 ft. **Diptera.** *Syrphidae*: (3) *Eristalis arbustorum* L., sh. 19. VI. 99, 700 ft. *Empidae*: (4) *Empis bilineata* Lw., 11. VI. 99, 800 ft. (5) *Rhamphomyia sulcata* Fln., sh. 11-12. VI. 99, 800 ft. *Bibionidae*: (6) *Scatopse brevicornis* Mg., sh. 11-12. VI. 99, 800 ft. **Coleoptera.** (7) *Meligethes viridescens* F., sh. 11-19. VI. 99, 7-800 ft.

CLASS A, § 67. ALCHEMILLA TYPE.

246. Alchemilla alpina, Linn. [Lit. *N.C.E.* 1, 4, 34; *Alps* 2; *Pyren.* 17.] Very abundant.

Visitors. **Lepidoptera.** *Rhopalocera*: (1) *Erebia epiphron* Kn., 25. V. 95, once. *Heterocera*: *Noctuidae*: (2) *Celaena haworthii* Cuc., sh. 25. V. 95; 21. IX. 95, 18-2,000 ft. *Geometridae*: (3) *Larentia salicata* Hb., 15-21. VI. 95, 13-1,500 ft. *Crambidae*: (4) *Pyrausta alpinalis* Schiff., sh. 16-21. VI. 95, 17-2,300 ft. *Tortricidae*: (5) *Tortrix* sp., sh. 19-27. VI. 95, 17-2,400 ft. (6) *Glyphipteryx fuscoviridella* Haw., sh. 16. IX. 95, 900 ft. *Tineidae*: (7) *Plutella cruciferarum* Zel., sh. 19. VI. 95, 2,400 ft. **Hymenoptera.** *Aculeata*: *Formicidae*: (8) *Formica fusca* Latr., 16. VI.-1. VII. 95; 24. IX. 95; 19-26. VI. 96; 14. VI. 99, 9-2,100 ft. *Myrmicidae*: (9) *Myrmica rubra* L., sh. 16-21. IX. 95, 9-1,300 ft. *Sessiliventre*s: *Tenthredinidae*: (10) *Tenthredo olivacea* Klug., 25. VI. 95, 2,000 ft. (11) *Tenthredopsis* sp., sh. 17. VI. 99, 1,100 ft. (12) *Dolerus elongatus* Thomson, sh. 15-25. VI. 95; 22. VI. 96, 12-2,400 ft. *Petiolata parasitica*: *Ichneumonidae*: (13) *Ichneumon molitorius* Grav., sh. 18-24. IX. 95, 9-2,400 ft. freq. (14) *Alomyia debellator* F., sh. 28. VI.-2.

VII. 95; 21-23. IX. 95, 8-1,800 ft. (15) *Pimpla examinatore* F., sh. 24. IX. 95, 12-1,400 ft. (16) *Limneria* sp., sh. 21. IX. 95, 1,300 ft. (17) *Limneria* sp., sh. 21-23. IX. 95, 2,200 ft. (18) *Polyrrhembia tenebricosa* Grav., sh. 21. IX. 95, 1,600 ft. (19) *Hemiteles politus* Bridgman, 21. IX. 95, 1,700 ft. (20) *H. micator* Grav., 19. IX. 95, 2,300 ft. (21) *Hemiteles* sp., 15-20. VI. 95; 18-21. IX. 95, 8-1,600 ft. (22) *Exephanes hilaris* Grav., 19-23. IX. 95, 15-2,500 ft. (23) *Campoplex* sp., sh. 21. VI.-3. VII. 95, 11-2,200 ft. (24) *Lissonotus* sp., 25. VI. 95, 2,200 ft. (25) *Xylonomus*?, sh. 20-23. IX. 95, 25-3,600 ft. (26) *Pezomachus* sp., 23. IX. 95, 1,700 ft. (27 and 28) Two other spp., 19. VI.-3. VII. 95; 20. IX. 95, 9-2,500 ft. *Brachonidae*: (29 and 30) Two spp., sh. 20. VI. 95; 16-24. IX. 95, 8-1,300 ft. *Proctotrypidae*: (31) *Proctotrypes* sp., 24. IX. 95, 1,200 ft. *Chalcididae*: (32, 33, 34, 35, 36, and 37) Six spp., sh. 16-20. VI. 95; 14-23. IX. 95; 18-30. VI. 96, 8-2,500 ft. *Cynipidae*: (38) *Eucoela* sp., 14-23. IX. 95, 17-1,800 ft. *Diptera. Syrphidae*: (39) *Syrphus* sp., 10. VII. 96, 2,300 ft. (40) *Ascia podagrica* F., 23. IX. 95, 2,300 ft. *Empidae*: (41) *Empis tessellata* F., sh. 21-25. VI. 95, 15-2,000 ft. (42) *E. aestiva* Lw., sh. 30. VI. 96, 2,100 ft. (43) *E. lucida* Ztt., 22. VI. 96, 2,400 ft. (44) *Empis* sp., 21. VI. 96, 1,300 ft. (45) *Cyrtoma* sp., sh. 3. VII. 95, 2,200 ft. (46) *Hilara pilosa* Ztt., sh. 24. VI. 95, 2,000 ft. (47) *Tachydromia pubicornis* Ztt., 16-23. IX. 95, 9-1,600 ft. (48) *T. stigmatella* Ztt., 3. VII. 95, 2,400 ft., and 4. VII. 94, 2,000 ft. *Cecidomyiidae*: (49) *Cecidomyia* sp., 4. VII. 94. (50) *Lestremia* sp., sh. 21-23. IX. 95, 12-2,000 ft. *Mycetophilidae*: (51) *Sciara* sp., sh. 16-24. VI. 95; 14-23. IX. 95; 1. VII. 96, 9-3,000 ft. freq. (52) *Sceptonia nigra* Mg., 4. VII. 94, ? 2,000 ft. (53) *Boletina* ? *dubia* Staeg., 23. IX. 95, 2,100 ft. *Bibionidae*: (54) *Dilophus albipennis* Mg., sh. 21-25. VI. 95; 24. IX. 95; 27. VI. 96, 11-2,200 ft. (55) *Bibio pomonae* F., sh. 23. IX. 95, 12-1,800 ft. *Simuliidae*: (56) *Simulium* sp., 25. VI. 95; 16. IX. 95, 9-1,800 ft. *Chironomidae*: (57) *Corynoneura* sp., 19-20. IX. 95, 23-3,600 ft. (58) *Chironomus* sp., 20. VI. 95; 23. IX. 95, 18-1,900 ft. (59) *Crichtopus* sp., sh. 3. VII. 95, 2,200 ft. (60) *Tanytarsus* sp., 23. IX. 95, 700 ft. (61) *Metriocnemis* sp., 23. IX. 95, 1,400 ft. (62) *Ceratopogon* sp., 23. IX. 95, 1,700 ft. *Psychodidae*: (63) *Psychoda* sp., 16-23. IX. 95, 9-1,800 ft. *Limnobiidae*: (64) *Rhypholophus nodulosus* Mcq., sh. 23. IX. 95, 1,700 ft. *Tipulidae*: (65) *Tipula excisa* Schum., sh. 16-25. VI. 95, 19-2,400 ft. *Dolichopodidae*: (66) *Dolichopus rupestris* Hal., 6. VII. 95, 2,600 ft. (67) *D. atratus* Mg., 4. VII. 95, ? 2,000 ft. (68) *Gymnopternus celer* Mg., 16. IX. 95, 900 ft. *Sarcophagidae*: (69) *Cynomyia mortuorum* L., 21. VI. 95; 24. IX. 95, 12-1,300 ft. *Muscidae*: (70) *Lucilia cornicina* F., sh. 19-24. IX. 95, 9-2,400 ft. (71) *Calliphora erythrocephala* Mg., 23-24. IX. 95, 9-1,800 ft. (72) *Pollenia rudis* F., 19-24. IX. 95, 8-2,500 ft. freq. *Anthomyiidae*: (73) *Hyetodesia incana* W., sh. 20-28. VI. 95; 23. IX. 95; 19. VI. 96; 14-19. VI. 99, 8-2,500 ft. (74) *H. semicinerea* W., sh. 16. IX. 95, 900 ft. (75) *H. basalis* Ztt., 21. VI. 95, 1,500 ft. (76) *H.* sp., 4. VII. 95, 2,000 ft. (77) *Mydaea* ? *tincta* Ztt., 25. VI. 95, 1,700 ft. (78) *Spilogaster nigrivenis* Ztt., sh. 27. VI. 96, 1,400 ft. (79) *S. quadrum* F., sh. 24. VI. 95, 1,500 ft. (80) *Limnophora solitaria* Ztt., 26. VI.-4. VI. 95; 19-27. VI. 96, 19-2,300 ft. (81) *Drymia hamata* Fln., 16-25. VI. 95; 16. VI. 96, 13-2,200 ft. (82) *Trichophthicus cunctans* Mg., 4. VII. 95, ? 8,000 ft. (83 and 84) *Trichophthicus* spp., sh. 24. VI. 95; 19. IX. 95, 20-2,200 ft. (85) *Hylemyia nigrescens* Rnd., sh. 24. VI. 95, 1,700 ft.

(86) *Anthomyia sulciventris* Ztt., 27. VI. 95, 2,100 ft. (87, 88, and 89) *Anthomyia* spp., sh. 16. VI.-4. VII. 95; 21-24. IX. 95; 18. VI.-8. VII. 96, 8-2,700 ft. (90) *Azelia aterrima* Mg., 17. VI. 95, 2,200 ft., and ? 4. VII. 95. (91) *Caricea* sp., 19. VI. 95, 2,400 ft. (92) *Coenosia infantula* Rnd., 1. VII. 95, 1,200 ft. (93) *Coenosia* sp., sh. 24. VI. 95, 1,600 ft. *Cordyluridae*: (94) *Scatophaga stercoraria* L., ? sp. 19. VI.-6. VII. 95; 16-24. IX. 95, 10-2,700 ft. (95) *S. squalida* Mg., 20-21. VI. 95, 13-1,900 ft. *Sciomyzidae*: (96) *Tetanocera* sp., 16. IX. 95, 900 ft. *Ortalidae*: (97) *Pteropaectria frondescentiae* L., 1. VII. 96, 1,900 ft. *Sepsidae*: (98) *Sepsis cynipsea* L., 23. IX. 95, 16-1,900 ft. *Ephydriidae*: (99) *Hydrellia griseola* Fln., 3. VII. 95, 2,600 ft. *Chloropidae*: (100) *Chlorops* sp., 3. VII. 95, 2,600 ft. *Borboridae*: (101) *Borborus equinus* Fln., 23. IX. 95, 1,800 ft. *Phoridae*: (102) *Phora rufipes* Mg., 14. IX. 95, 1,200 ft. (103) *Phora* sp., sh. 16. VI.-3. VII. 95; 16-24. IX. 95, 8-2,400 ft. freq. **Coleoptera**. (104) *Meligethes viridescens* F., sh. 24. VI. 95, 1,600 ft. (105) *Anthophagus alpinus* Payk., sh. 3-4. VII. 95; 22. VI.-6. VII. 96, 24-2,700 ft. (106) *Epuraea aestiva* L., 3. VII. 95, 2,500 ft. (107) *Corymbetes cupreus* F., 26. VI. 95, 1,000 ft. (108) *C. quercus* Gyll., 16-28. VI. 95, 17-2,000 ft. (109) *Dolopius marginatus* L., 4. VII. 94. (110) *Helodes marginata* F., 15. VI. 95, 1,200 ft. (111) *Sericosomus brunneus* L., 25. VI. 95, 1,700 ft. (112) *Telephorus paludosus* Fln., 16.-20. VI. 95. (113) *Rhagonycha limbata* Thoms., sh. 17-24. VI. 95; 19. VI. 96, 12-2,000 ft. (114) *Malthodes atomus* Thoms., 18. VI. 96, 1,100 ft. (115) *Apion* sp., 16. IX. 95, 900 ft. **Hemiptera**. (116) *Heterocordylus tibialis* Hahn., 25. VI. 95, 800 ft. (117) *Nabis flavomarginatus* Scholtz, 21-23. IX. 95, 16-1,800 ft. (118) *Stygnus* sp., 21. IX. 95, 1,700 ft. (119) *Psylla*?, sh. 21. IX. 95, 1,800 ft. **Neuroptera**. (120) 1 sp., 20. VI. 95, 1,700 ft. **Collembola**. (121) One springtail, sh. 16-23. IX. 95, 9-1,500 ft. **Araneida**. (122) *Xysticus*?, lying in wait, 23. IX. 95, 1,700 ft. (123) *Oligolophus morio* F., sh. 21-2. IX. 95, 10-2,300 ft.

247. *Alchemilla vulgaris*, Lam. [Lit. Brit. 23; N.C.E. 1, 4, 9, 14, 21 b, Plateau 2002; Arct. 36; Alps 2, 16; Pyren. 17.] This begins to flower before *A. alpina*.

Visitors. **Lepidoptera**. *Rhopalocera*: (1) *Coenonympha pamphilus* L., 15. VI. 95, 800 ft. *Heterocera*: *Geometridae*: (2) *Larentia salicata* Hb., 20. VI. 95, 2,400 ft. **Hymenoptera**. *Petiolata parasitica*: *Ichneumonidae*: (3, 4, and 5) 3 spp., sh. 15. VI. 95; 16-22. IX. 95; 27. V. 97, 7-800 ft. *Chalcididae*: (6) 1 sp., 16-17. IX. 95, 800 ft. **Diptera**. *Empidae*: (7) *Empis lucida* Ztt., 15. VI. 95, 800 ft. *Mycetophilidae*: (8) *Sciara* sp., sh. 22. IX. 95, 800 ft. *Chironomidae*: (9) *Ceratopogon leucopeza* Mg., 22. IX. 95, 800 ft. (10) A second sp., 13. V. 98, 800 ft. *Tachinidae*: (11) *Gymnochaete viridis* Fln., sh. 22. V. 96, 800 ft. *Muscidae*: (12) *Pollenia rudis* F., sh. 15-22. IX. 95, 800 ft. *Anthomyiidae*: (13) *Hyetodesia incana* W., 15-17. VI. 95; 15. IX. 95, 800 ft. (14, 15, and 16) *Anthomyia* spp., sh. 17. VI. 95; 15-22. IX. 95; 19. V. 97; 15. V. 98, 8-2,400 ft. *Cordyluridae*: (17) *Scatophaga stercoraria* L., sh., 20. VI. 95; 15-22. IX. 95; 22. V. 96, 800, and once at 2,400 ft. *Psilidae*: (18) *Psila*?, 17. VI. 95, 800 ft. *Trichaeidae*: (19) *Tephritis leontodontis*, sh. 22. IX. 95, 800 ft. *Phoridae*: (20) *Phora* sp., 15. IX. 95, 800 ft. **Coleoptera**. (21) *Meligethes viridescens* F., 16. IX. 95, 800 ft. (22) *Enicmus minutus* L., 22. IX. 95,

800 ft. **Neuroptera.** (23) *Chloroperla* sp., 21. VI. 95, 800 ft. **Hemiptera.** (24) *Aphis* sp., 17. VI. 95, 800 ft.

CLASS A, § 68. GALIUM TYPE.

248. *Galium verum*, Linn. [Lit. *Brit.* 23 ; *N.C.E.* 1, 3 c, 9, 14, 14 a, 18, 21 a, 31, 32, 40 ; *Pyren.* 17.]

Visitors. **Lepidoptera.** Heterocera: *Eriocephalidae*: (1) *Eriocephala calthella* L., sh. and sp. 4–20. VII. 95, 800 ft. **Hymenoptera.** Sessiliventre: *Tenthredinidae*: (2) *Allantus arcuatus* Forst., 5. VII. 95, 800 ft. (3) *Abia* sp., 6. VII. 95, 800 ft. Petiolata parasitica: *Ichneumonidae*: (4) 1 sp., 2. VII. 95, 800 ft. (5) 10. VII. 96, 900 ft. **Diptera.** *Syrphidae*: (6) *Syritta pipiens* L., sh. 23. VII. 95, 800 ft. *Mycetophilidae*: (7) *Sciara* sp., 16. IX. 95, 800 ft. *Bibionidae*: (8) *Dilophus albipennis* Mg., sh. 3. VII. 95, 800 ft. (9) *Bibio pomonae* F., 10–11. VII. 96, 8–900 ft. *Muscidae*: (10) *Lucilia cornicina* F., sh. 7. VII. 95, 800 ft. (11) *Calliphora erythrocephala* Mg., sh. 5–23. VII. 95 ; 11. VII. 96, 800 ft. (12) *Mesembryna meridiana* L., sh. 10. VII. 96, 800 ft. *Anthomyiidae*: (13) *Hyetodesia incana* W., sh. 3–23. VII. 95 ; 1–11. VII. 96, 7–900 ft. (14) *Trichophthicus hirsutulus* Ztt., sh. 10. VII. 96, 900 ft. (15) *Anthomyia* sp., sh. 10. VII. 96, 900 ft. *Sepsidae*: (16) *Sepsis cynipsea* L., 5. VII. 95, 800 ft. *Chloropidae*: (17) *Oscinis* sp., 5. VII. 95, 800 ft. **Coleoptera.** (18) *Meligethes aeneus* F., sh. 3. VII. 95, 800 ft. (19) *Corymbites quercus* Gyll., 2. VII. 95, 800 ft. (20) *Serica brunnea* L., 2. VII. 95, 800 ft. (21) *Thyamis laevis* Duft., 5. VII. 95, 800 ft.

249. *Galium boreale*, Linn. [Lit. *N.C.E.* 1, 3 c, 21 a, 34 ; *Alps* 2.] Proterandrous, the stigmas not receptive until the anthers have dehisced and the stamens have bent back out of the way between the petals. This they do on the third day after the opening of the bud.

Visitors. **Lepidoptera.** Heterocera: *Crambidae*: (1) *Pyrausta* ? *alpinalis* Schiff., sh. 10. VII. 96, 2,000 ft. **Hymenoptera.** Aculeata: *Formicidae*: (2) *Formica fusca* Latr., sh. 6. VII. 95, 1,800 ft. Petiolata parasitica: (3) 1 sp., 25. VI. 96, 700 ft. **Diptera.** *Syrphidae*: (4) *Platychirus manicatus* Mg., sh. 25. VI. 96, 700 ft. (5) *Syritta pipiens* L., sh. 11. VII. 96, 700 ft. *Bibionidae*: (6) *Bibio pomonae* F., sh. 11. VII. 96, 700 ft. *Orphnephilidae*: (7) *Orphnephila testacea* Ruthé, 10. VII. 96, 2,000 ft. *Anthomyiidae*: (8) *Hyetodesia variabilis* Fln., sh. 25. VI. 96, 700 ft. (9) *Spilogaster nigrivenis* Ztt., sh. 25. VI. 96, 700 ft. (10) *Limnophora solitaria* Ztt., sh. 26. VI.–10. VII. 96, 19–2,100 ft. (11) *Drymia hamata* Fln., sh. 15. VII. 95, 2,400 ft. (12) *Anthomyia sulciventris* Ztt., 25. VI. 96, 700 ft. (13) A. sp., 6. VII. 96, 1,700 ft. *Cordyluridae*: (14) *Scatophaga* sp., sh. 25. VI. 96, 700 ft.

250. *Galium saxatile*, Linn. (with *G. sylvestre* Poll.). [Lit. *N.C.E.* 1, 3 c, 4, 14, 21 a, 21 b, 32, 33 ; *Alps* 2, 21 b.]

Visitors. **Lepidoptera.** Rhopalocera: (1) *Argynnis aglaia* L., sh. 25. VI. 95, 800 ft. (2) *Coenonympha pamphilus* L., 25–28. VI. 95, 8–15,100 ft. Heterocera: *Geometres*: (3) *Psodos trepidaria* Tr., sh. 29. VI. 95, 2,500 ft. **Hymenoptera.**

Petiolata parasitica: *Proctotrypidae*: (4) *Proctotrype* sp., sh. 20. IX. 95, 3,700 ft. **Diptera.** *Empidae*: (5) *Empis tessellata* F., 1. VII. 95, 800 ft. once. *Psychodidae*: (6) *Psychoda*?, sh. 22. IX. 95, 3,600 ft. *Muscidae*: (7) *Lucilia cornicina* F., 26. VI. 95, 800 ft. twice. (8) *Calliphora vomitoria* L., 3. VII. 95, 800 ft. once. (9) *Pollenia rudis* F., 16. VI. 95, 800 ft. once. *Anthomyiidae*: (10) *Hyetodesia incana* W., 26. VI. 95, 800 ft. (11) *Limnophora solitaria* Ztt., sh. 26. VI. 96, 2,200 ft. (12) *Drymia hamata* Fln., 25. VI.-3. VII. 95; 29. VI. 96, 8-2,600 ft. (13) *Trichophthicus* sp., ? sh. 2. VII. 96, 2,800 ft. (14) *Anthomyia* sp., sh. 15-21. VI. 95; 10. VI.-8. VII. 96, 800 ft. *Cordyluridae*: (15) *Scatophaga stercoraria* L., sh. 21. VI. 95; 24. VI. 96, 800 ft. *Ephydridae*: (16) *Hydrellia griseola* Fln., 3. VII. 95, 1,600 ft. *Chloropidae*: (17) *Chlorops*?, 10. VII. 96, 2,200 ft. (18) *Oscinis* sp., 21. VII. 95, 800 ft. **Coleoptera.** (19) *Corymbites cupreus* F., sh. 19. VI. 96, 900 ft.

251. Galium Aparine, Linn. [Lit. *Brit.* 23; *N.C.E.* 18, 33, 34.]

Visitors. **Hymenoptera.** Petiolata parasitica: *Chalcididae*: (1) 1 sp., sh. 1-6. VII. 95. **Diptera.** *Anthomyiidae*: (2) *Coenosia* sp., 1. VII. 95. Both at 800 ft.

252. Galium palustre, Linn. [Lit. *Brit.* 23; *N.C.E.* 8, 14, 18, 25, 34.]

Visitors. **Diptera.** *Empidae*: (1) *Empis tessellata* F., sh. 1. VII. 95. (2) *E. stercorea* L., sh. 1. VII. 95. *Muscidae*: (3) *Lucilia cornicina* F., sh. 1. VII. 95. *Anthomyiidae*: (4) *Hyetodesia incana* W., 2-6. VII. 95. (5) *H. variabilis* Fln., 1. VII. 95. All at 800 ft.

CLASS A, § 69. ARENARIA SEDOIDES TYPE.

253. Arenaria sedcides, Schultz. [Lit. *Alps* 2, 21 b.] The flower opens very widely, so as to expose the abundant honey freely. The stamens bend very far out after dehiscing; but, as here and there an anther does not fall off, self-pollination may be brought about in the closing of the flower. Its duration is three to four days. The yellow nectaries are the most conspicuous part of the flower. Seed is freely produced.

Visitors. **Hymenoptera.** Petiolata parasitica: (1) 1 sp., sh. 27. VI. 96. **Diptera.** *Mycetophilidae*: (2) *Sciara* sp., sh. 19. VI. 99, and ? 2. VII. 96. *Bibionidae*: (3) *Biblio nigri-ventris*, Hal., sh. covered with pollen, 16. VI. 99. *Anthomyiidae*: (4) *Anthomyia* sp., 16. VI. 99. *Cordyluridae*: (5) *Scatophaga stercoraria* L., sh. 16. VI. 99. *Sapromyzidae*: (6) *Sapromyza* sp., 16. VI. 99. **Coleoptera.** (7) 1 sp. similar to *Amara bifrons* Gyll., sh. 16. VI. 99. **Collembola.** (8) 1 sp., sh. 2. VII. 96. **Acarina.** (9) 1 sp., sh. 2. VII. 96. All at 2,850 ft.

Class A attracted three species of the butterflies, three of the larger moths, and six of the smaller moths, including *Eriocephala*; of Hymenoptera, *Apis*, two species of *Bombus*, one of *Andrena*, one of *Vespa*, two species of ant, five of *Tenthredinidae*, one of *Chrysis*, and about thirty of parasitic

TABLE XLVIII.

Actual number of Individuals visiting the flowers of Class A.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
240. <i>Saxifraga aizoides</i> . . .	—	8	1	2	50	130	6	1	3	46	29	309	25	3	613
241. <i>Saxifraga umbrosa</i> . . .	—	—	—	—	1	—	—	—	—	—	1	2	—	—	4
242. <i>Saxifraga stellaris</i> . . .	—	—	—	—	—	—	—	—	—	—	4	8	—	—	12
243. <i>Chrysosplenium oppositifolium</i>	—	—	—	—	2	—	—	—	1	—	1	18	2	2	26
244. <i>Pyrus Aucuparia</i> . . .	1	2	1	—	1	3	—	—	1	—	33	110	79	51	282
245. <i>Crataegus Oxyacantha</i> .	1	—	—	—	1	—	—	—	—	—	2	5	4	—	13
246. <i>Alchemilla alpina</i> . . .	—	—	—	8	108	25	—	6	9	—	9	507	31	25	728
247. <i>Alchemilla vulgaris</i> . .	—	—	—	—	6	—	—	2	—	—	1	82	3	2	96
248. <i>Galium verum</i>	—	—	—	2	2	—	—	—	—	19	1	49	4	—	77
249. <i>Galium boreale</i>	—	—	—	—	1	1	—	—	2	—	2	25	—	—	31
250. <i>Galium saxatile</i>	—	—	—	—	3	—	—	4	—	—	1	29	1	—	38
251. <i>Galium Aparine</i>	—	—	—	—	3	—	—	—	—	—	—	2	—	—	5
252. <i>Galium palustre</i>	—	—	—	—	—	—	—	—	—	—	4	6	—	—	10
253. <i>Arenaria sedoides</i> . . .	—	—	—	—	1	—	—	—	—	—	—	17	1	4	23
Total	2	10	2	12	179	159	6	13	16	65	88	1169	150	87	1958
Percentages	·10	·51	·10	·61	9·15	8·13	·31	·66	·82	3·32	4·50	59·73	7·67	4·45	

TABLE XLIX.

To show how great a proportion of injurious insects go to Class A.

	<i>Available.</i>		<i>To Class A.</i>	
	<i>No.</i>	%	<i>No.</i>	%
Decidedly desirable	1,763	10·19	25	1·28
Desirable	1,277	7·37	106	5·41
Indifferent . . .	12,993	75·08	1,390	70·98
Injurious	1,273	7·36	437	22·32

TABLE L.

Insects visiting Class A in different seasons classed by desirability.

	<i>Spring.</i>		<i>Summer.</i>		<i>Autumn.</i>	
Decidedly desirable	—	—	22	1·66	3	·53
Desirable	2	3·02	95	7·18	9	1·58
Indifferent . . .	59	89·39	936	70·75	395	69·42
Injurious	5	7·57	270	20·41	162	28·47
Total	66		1,323		569	

TABLE LI.

Percentages of different groups of insects visiting Class A in different seasons.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>
Spring	—	—	—	4.54	—	—	1.51	—	1.51	89.39	—	3.03
Summer	.15	.60	.15	15.94	.45	.90	.52	4.91	6.50	54.72	10.65	4.45
Autumn	—	.35	—	23.90	—	.17	1.40	—	.17	67.83	1.58	4.56

TABLE LII.

Desirability of the visitors to flowers of Class A, according to colour, in percentages.

	<i>Yellow.</i>	<i>White.</i>	<i>Green.</i>
Decidedly desirable	1.26	2.03	.94
Desirable	5.03	12.91	2.24
Indifferent	66.76	68.61	75.68
Injurious	26.95	16.45	21.13

TABLE LIII.

Percentages of different groups of insects visiting flowers of different colours in Class A.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>
Yellow	—	1.11	.13	26.25	.83	.13	.55	9.07	4.32	52.52	4.32	.69
White.	.50	.50	.25	3.44	—	1.01	.75	—	11.89	47.34	21.26	12.91
Green .	—	—	—	17.47	—	.94	1.06	—	1.18	71.54	4.13	3.65

Hymenoptera; among the Diptera, in Syrphidae, of one species of *Eristalis*, of *Sericomyia*, of *Chilosia*, and of *Chrysogaster*, of three species of *Syrphus*, and one of each of the following: *Platychirus*, *Syritta*, *Sphaerophoria*, and *Ascia*; in Empidae, of eight species of *Empis*, and of the same number of short-tongued Empids; in Tachinidae, only of *Echinomyia* and *Gymnochaeta viridis*, and not of *Siphona*; in Muscidae, of three species of *Calliphora* and one each of *Lucilia*, *Mesembryna*, and *Pollenia*; in Sarcophagidae, of two species of *Cynomyia* and one *Sarcophaga*; in Anthomyiidae, of twenty-seven species, including *Drymia hamata*; in Tipulidae, of two species; in Bibionidae, of four; in Cordyluridae, of two species of *Scatophaga*; and of thirty-two species of the smaller flies, including almost all the Doli-chopids observed; among Coleoptera, of twenty species; among Hemiptera, of five species; among Neuroptera, of two; among Thysanoptera, of one; among Collembola, of one; in Acarina, of one; and in Araneida, of two.

A brief review of the insects visiting the massed flowers of Class A may be found earlier.

CLASS PO. A, § 70. A-LIKE TYPE.

254. *Chenopodium Bonus-Henricus*, Linn. [Lit. *N.C.E.* 1, 14, 18, 21 b, 34; Warming 2490.

Visitor. **Coleoptera.** (1) *Oxytelus* sp., ?fp. 19. VI. 99, 800 ft.

The only visitors to Class Po. § A were two individuals of a beetle.

TABLE LIV.

Total number of insect visitors to A-like flowers of Class Po., and total of visitors to B-like, AB-like, and A-like flowers, taken together.

<i>Class Po. (A).</i>	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Entom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
254. <i>Chenopodium Bonus-Henricus</i>	—	—	—	—	—	—	—	—	—	—	—	—	2	—	2
Total of all flowers of B-like, AB-like, and A-like Po. . . .	56	14	2	1	1	1	1	—	1	18	23	344	5	6	473
Percentages	11.84	2.96	.42	.21	.21	.21	.21	—	.21	3.81	4.86	72.73	1.06	1.27	

TABLE LV.

Decidedly desirable insects visit honeyless flowers (for pollen) in rather more than the class's share ; injurious insects are rare on them.

	<i>Available.</i>		<i>To Po. (all forms).</i>	
	<i>No.</i>	<i>%</i>	<i>No.</i>	<i>%</i>
Decidedly desirable	1,763	10.19	70	14.80
Desirable	1,277	7.37	26	5.50
Indifferent	12,993	75.08	368	77.80
Injurious	1,273	7.36	9	1.90

TABLE LVI.

Insects visiting Class Po. (all three divisions taken together) in different seasons by desirability.

	<i>Spring.</i>		<i>Summer.</i>		<i>Autumn.</i>	
Decidedly desirable	12	5.50	58	23.67	—	—
Desirable	3	1.37	23	9.39	—	—
Indifferent	203	93.11	155	63.27	10	100.00
Injurious	—	—	9	3.67	—	—
Total	218		245		10	

TABLE LVII.

Percentages of different groups of insects visiting honeyless flowers (Class Po.) in the different seasons.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>
Spring .	3.67	1.84	—	—	—	—	—	—	1.38	95.12	—	—
Summer	19.59	4.08	.82	1.22	.41	—	.41	7.35	8.16	53.47	2.04	2.45
Autumn	—	—	—	—	—	—	—	—	—	100.00	—	—

TABLE LVIII.

Desirability of visitors to honeyless flowers (Class Po.) according to colour, in percentages.

	<i>Rose- purple.</i>	<i>Yellow.</i>	<i>White.</i>
Decidedly desirable	17.85	2.52	19.12
Desirable. . . .	10.71	11.76	2.77
Indifferent . . .	60.71	84.78	76.52
Injurious	10.71	.84	1.53

TABLE LIX.

Percentages of different groups of insects visiting honeyless flowers (Class Po.) of different colours.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Phyt. Entom. Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>
Rose-purple	—	17.85	—	—	—	—	—	—	10.71	60.71	—	10.71
Yellow . .	1.68	.84	1.68	.84	—	—	.84	10.08	9.24	74.70	—	—
White . .	16.66	2.46	—	.61	.30	—	—	1.85	2.77	73.45	.92	.92

Class Po. was visited by a Tortrix and by *Eriocephala calthella*; among Hymenoptera, by *Apis*, by three species of *Bombus*, by one of *Andrena*, one wasp, one ant, one Tenthredine, and one Chalcidid; among Diptera, in Syrphidae, by two species of *Eristalis*, by one each of *Syrphus*, *Chrysogaster*, *Ascia*, and *Sphaerophoria*, and by three of *Platychirus*; in Empididae, only by *Empis tessellata*, and then only on a single occasion; in Muscidae, by a *Calliphora* and a *Lucilia*; by thirteen species of Anthomyiidae; by two species of *Scatophaga*, a *Dilophus*, and by four other small flies; by three Coleoptera; one Neuroptera; and in Thysanoptera, by Thrips.

CLASS W, § 71.

255. *Plantago lanceolata*, Linn. [Lit. *N.C.E.* 23, Darwin 485; *N.C.E.* 1, 3 a, 3 b, 3 c, 4, 8, 9, 10, 11, 12, 14, 18, 21 a, 21 b, 30, 33, 34.]

Visitor. **Hymenoptera.** Aculeata: *Vespidæ*: (1) *Vespa sylvestris* Scop., seeking h. 4. VII. 95, 900 ft.

256. *Urtica dioica*, Linn. [Lit. *N.C.E.* 1, 3 a, 3 b, 3 c, 4, 8, 9, 10, 11, 12, 14, 18, 34.) Vegetative reproduction seems to continue uninterruptedly.

Visitors. **Diptera.** *Syrphidæ*: (1) *Chrysogaster hirtella* Lw., sitting on flowers, 15. VII. 95, 800 ft. *Cordyluridæ*: (2) *Scatophaga stercoraria* L., on flowers, 24. VI. 95, 800 ft. *Anthomyiidæ*: (3) *Azelia* sp., fp. 21. VI. 95, 800 ft. **Coleoptera.** (4) *Brachypterus urticae* F., fp. 21.-24. VI. 95, 8-900 ft. freq.

257. *Betula alba*, Linn. [Lit. *N.C.E.* 14, 18.]

Visitor. **Diptera.** *Syrphidæ*: (1) *Syrphus punctulatus* Verrall, fp. 10. V. 97 800 ft.

258. *Carex dioica*, Linn.

Visitors. **Diptera.** (1) One short-tongued fly, fp. **Coleoptera.** (2) One sp., fp. Both 22. V. 96, 1,100 ft.

259. *Carex glauca*, Murr.

Visitor. **Diptera.** *Anthomyiidæ*: (1) *Anthomyia sulciventris* Ztt., fp. 22. V. 97, 600 ft.

260. *Alopecurus pratensis*, Linn. [Lit. *N.C.E.* 14, 18, 34.]

Visitor. **Diptera.** *Syrphidæ*: (1) *Platychirus manicatus* Mg., fp. 15. VI. 99, 800 ft.

261. *Abies excelsa*, Poiret. [Lit. *N.C.E.* 34.]

Visitor. **Lepidoptera.** Rhopalocera: (1) *Pieris napi* L., once hovering about young female cones, apparently seeking h., 11. VI. 99, 900 ft.

TABLE LX.

Total number of individuals visiting wind-fertilized flowers, Class W.

	<i>Apis.</i>	<i>Bomb.</i>	<i>Hm.</i>	<i>Tenth.</i>	<i>Eutom.</i>	<i>Ants.</i>	<i>Wasps.</i>	<i>Lep. l.</i>	<i>Lep. m.</i>	<i>Lep. s.</i>	<i>Dm.</i>	<i>Ds.</i>	<i>Col.</i>	<i>Etc.</i>	<i>Total.</i>
255. <i>Plantago lanceolata</i>	—	—	—	—	—	—	1	—	—	—	—	—	—	—	1
256. <i>Urtica dioica</i> . . .	—	—	—	—	—	—	—	—	—	—	1	5	53	—	59
257. <i>Betula alba</i> . . .	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
258. <i>Carex dioica</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	2	—	3
259. <i>Carex glauca</i> . . .	—	—	—	—	—	—	—	—	—	—	—	1	—	—	1
260. <i>Alopecurus pratensis</i>	—	—	—	—	—	—	—	—	—	—	1	—	—	—	1
261. <i>Abies excelsa</i> . . .	—	—	—	—	—	—	—	1	—	—	—	—	—	—	1
Total . . .	—	—	—	—	—	—	1	1	—	—	3	7	55	—	67
Percentage . .	—	—	—	—	—	—	1.49	1.49	—	—	4.48	10.45	82.09	—	—

The flowers of Class W deceived into visiting them one butterfly and one wasp; they also received the visits, among Diptera, of three Syrphids, a Scatophaga, an Anthomyia, and an Azelia; and among Coleoptera, of two species.

We abstain in this paper from comparing our results with those of Müller, MacLeod, and others; the comparison will follow in the last part of our paper, wherein too we shall discuss fully the results of our work.

Willis, J. C. and Burkill. I. H. 1908. "Flowers and insects in Great Britain part IV." *Annals of botany* 22, 603–649.

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