

Article XI.—THE NORTH AMERICAN SPECIES OF *DIASTROPHUS* AND THEIR GALLS.

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PLATES XXVI-XXIX.

The genus *Diastrophus* contains at present thirteen known species, including *Gonaspis potentillæ*, two of which are found in Europe (*D. mayri*, and *D. rubi*). The genus was first analytically described by Hartig as follows: Maxillary palpi 5-jointed, labial palpi 3-jointed, last joint appendiculate, with *Cynips rubi* as the type. Osten Sacken states that the characters taken from the number of joints of the palpi are, in his opinion, of little practical value, as anybody can satisfy himself by trying to count them, and as for the number of joints of the antennæ, it seems to vary. Osten Sacken, Mayr, Ashmead and other writers have given us detailed descriptions of *Diastrophus*, and Ashmead erected the genus *Gonaspis* for *Diastrophus scutellaris* (= *potentillæ*). Kieffer also places *D. cuscuteformis* in this genus, with which I do not concur. The galls of the species of *Diastrophus* occur on blackberry and raspberry (*Rubus* spp.), *Potentilla* and *Smilax*, and they are as follows:

Galls on the stems or branches of blackberry and raspberry:

- Abrupt, irregularly rounded, or elongate swellings, sometimes with four or five deep longitudinal furrows (on *Rubus villosus*) *D. nebulosus*.
- Abrupt elongate, soft pithy swellings sometimes more or less covered with spines (on *Rubus strigosus*) *D. turgidus*.
- Similar in shape to *turgidus* externally, but completely filled with oval, hard larval chambers (on *Rubus nutkanus*) *D. kincaidi*.
- Small, round, seed-like bodies surrounding a branch in clusters, more or less spined (on *Rubus villosus*, *canadensis* and *cuneifolium*). *D. cuscuteformis*.

On or at the roots:

- Irregular, rounded swellings usually in clusters or forming a confluent mass around the root stalk (on *Rubus canadensis*) *D. radicum*.
- Irregularly rounded or ball-like, fleshy swelling at the root or on the stalk close to the ground (on *Rubus canadensis*) *D. bassetti*.

Galls on *Potentilla*:

- Elongate, fusiform swelling of the stalk. Polythalamous *D. fusiformans*.
- Elongate, oval abrupt or blister-like swellings of the stalk and midribs. Polythalamous *D. niger*.
- A rounded, oval gall or enlargement of a bud, containing an oval larval chamber *Gonaspis potentillæ*.

Galls on *Smilax*:

- Irregular or rounded swellings on the stems *D. smilacis*.

Diastrophus Hartig.

Cynips (in part) BOUCHÉ, Natur. Ins., 1834, p. 163.

Diastrophus HARTIG, Zeitsch. für Ent. Germar, Vol. II, 1840, p. 186; *ibid.*, Vol. IV, 1843, p. 410; OSTEN SACKEN, Proc. Ent. Soc. Phila., Vol. II, 1863, p. 33; MAYR, Gen. Gallenb. Cynip., 1881, p. 25; CRESSON, Synop. Hymen. N. Am., pt. I, 1887, pp. 26, 31; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294; Psyche, Vol. X, 1903, p. 212; PROVANCHER, Add. Faun. Ent. Can., Vol. II, 1889, p. 158; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, pp. 91, 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, pp. 45 and 73.

Male and female. Head with fan-shaped striæ in front, and a medium elevation, maxillary palpi 5-jointed, labial palpi 3-jointed. Antennæ of female 13-14-jointed, male distinctly 14-15-jointed. Third joint in both sexes longer than the fourth, excised beneath in the male. Head behind the eyes scarcely widened. Mesothorax polished, with the two parapsidal grooves very distinct and usually slightly converging at the scutellum. Scutellum rugose or rugoso-striate with two foveæ at the base; tip of scutellum rounded or obtusely pointed. Metathorax with two straight parallel grooves. Abdomen not petiolate, not compressed, the second segment scarcely covering one half, in the male one third or slightly more than half the abdomen. Ventral spinule scarcely as long as broad. Ventral sheath short scarcely produced. Tarsal claws bidentate. Wings with radial area open at the margin, short or moderately long. Areolet present or wanting.

Type. *Cynips rubi* BOUCHÉ.

Diastrophus nebulosus (Osten Sacken).

Cynips (*Diastrophus* ?) *nebulosus* OSTEN SACKEN, Ent. Zeit. Stettin, Vol. XXII, 1861, p. 415.

Diastrophus nebulosus OSTEN SACKEN, Proc. Ent. Soc. Phila., Vol. II, 1863, p. 36; MAYR, 20 Jahr. Oberrealsch. I Bez. Wien, 1881, p. 26; WALSH, Am. Ent., Vol. I, 1869, p. 188; RILEY, Johnson's Univ. Encyclop., 1894, p. 659; Am. Ent., Vol. II, 1870, p. 159, fig. 103; FULLER, Am. Ent., Vol. III, 1880, p. 63, fig. 18; PROVANCHER, Can. Nat., Vol. XII, 1881, p. 235; Fauna Ent. Can. Hymen., 1883, p. 550; SAUNDERS, Ins. Inj. Fruits, 1883, p. 318, fig. 332; *ibid.*, 2d edit. 1889, p. 318, fig. 332; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294; *ibid.*, Vol. XIV, 1887, pp. 134 and 148; Bull. 1, Col. Biol. Assoc., 1890, p. 38; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist., Vol. IV, 1892, p. 249, pl. X, fig. 2; Am. Mus. Journ., Vol. IV, 1904, p. 95, fig. 11; Ins. Galls Vicin. N. Y., 1904, p. 9, fig. 11; DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 107; SLOSSON, Ent. News, Vol. VII, 1897, p. 237; WEBSTER, Bull. 45, Ohio Agri. Exp. St., 1893, p. 157; BRIDWELL, Trans. Kan. Ac. Sc., Vol. XVI, 1899, p. 203; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser. 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73; COOK, Ohio Nat., Vol. IV, 1904, p. 119, figs. 143a, b and 129a; 29th Rep. Dept. Geol. & Nat. Hist. Res. Indiana, 1904 (1905), p. 820, fig. 15; JARVIS, Rep. Ent. Soc. Ont., 1906 (1907) p. 72.

Female. Head pitchy black, sometimes tinged with reddish, face sculptured with fine fan-shaped scratches, convergent toward the mouth, along the middle is an elongate, shining, smooth elevation; sides of head and above smooth. Antennæ reddish, sometimes darker at the tips. Mesothorax shining black, smooth, collar

and pleuræ usually reddish, finely aciculated, pleura with a smooth shining area. Parapsidal grooves very deep and prominent, punctate, continuous from the collar to the posterior edge, where they are convergent, but widely separated; median lines wanting. Scutellum with a groove like depression along the middle rounded at apex, very rugoso-striate, subopaque, foveæ at base finely rugose. Abdomen rufous, black terminally, smooth shining. Legs and coxæ yellowish red. Wings hyaline, cross-veins and basal radial vein infuscated. Areolet moderately large, triangular.

Male similar to the female but blacker and wanting the infuscation on the veins. Length, male, 1.50 to 2 mm.; of female 2-3 mm.

Gall. (Plate XXVI, Figs. 1, 2.) On stems of blackberry (*Rubus villosus*). Very variable in shape and size. Round, elongated, or irregular, sometimes with deep longitudinal furrows which divide the gall more or less completely into four or five parts. Dark green, turning reddish as the season advances. Hard, corky or pithy inside with many larval cells. Length 25-75 mm. and diameter about 25-40 mm.

Habitat: Canada (Ontario); New England and Middle States; D. C.; Maryland; Delaware; Virginia; North Carolina, south to Florida; Ohio; Illinois; Indiana; Missouri; Iowa; Wisconsin; Michigan; Oklahoma; Colorado.

Very common and widely distributed. The galls are usually very common and are very irregular in size and shape. The types are in the Museum of Comparative Zoölogy, Cambridge, Mass.

***Diastrophus turgidus* Bassett.**

Diastrophus turdigus BASSETT, Can. Ent., Vol. II, 1870, p. 99; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294.

Diastrophus turgidus ASHMEAD, Trans. Am. Ent. Soc., Vol. XIV, 1887, p. 134; Bull. 1, Col. Biol. Assoc., 1890, p. 38; DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 108; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73; JARVIS, Rep. Ent. Soc. Ont. 1907 (1908), p. 89, pl. B, fig. 2; FLETCHER and GIBSON, Rep. Ent. Soc. Ont., 1907 (1908), p. 128.

Rhodites radicum RILEY, Am. Ent., Vol. II, 1870, p. 181, fig. 110; SAUNDERS, Rep. Ent. Soc. Ont., 1873 (1874), p. 7, fig. 1; Ins. Inj. Fruits, 1883, p. 304, fig. 314; *ibid.*, 2d edit., 1889, p. 304, fig. 314; GILLETTE, 27th Rep. Agricul. Mich., 1888, p. 467.

Female. Head pitchy brown black or entirely black, upper part of face rugose, lower part aciculate, much less so than in *nebulosus*, median elevation smooth, broad, impunctured, cheeks and vertex smooth. Antennæ pitchy brown. Mesothorax jet black, smooth, shining; parapsidal grooves deep, very widely separated at the collar, converging at the scutellum and less widely separated than in *nebulosus*. Collar and pleuræ black, sometimes pitchy brown, finely aciculated, pleuræ with a very large polished area. Scutellum, rounded at tip, rugose, foveæ large, deep, smooth. Abdomen pitchy brown or black, sometimes somewhat rufous beneath. Legs dark amber yellow. Wings hyaline veins brown, cross-veins broad, stout, basal radial vein infuscated. Areolet small.

Male. Similar to the female in color.

Length of female 2 to 3 mm.; of male 1.50 to 2 mm.

Gall. (Plate XXVI, Figs. 3, 4, 5, 6, 7, 8, 9; Plate XXVII, Fig. 1). On the stalk of wild red raspberry (*Rubus strigosus*) and probably allied species. Polythalamous. Abrupt pithy swellings surrounding the stem. Irregular in shape, smooth or more or less covered with short spines. Length 25 to 75 mm.; width 15 to 30 mm.

Habitat: Canada (Ontario); New England States to Massachusetts; Ohio; Colorado.

The adult of *D. turgidus* somewhat resembles that of *D. nebulosus*. It differs in having the parapsidal grooves not so widely separated as in *nebulosus*, and the face less coarsely aciculate. It is also as a rule darker in color. *Turgidus* is hardly distinct from *nebulosus*, and may ultimately prove to be the same. The types are in the American Museum of Natural History and American Entomological Society.

Diastrophus kincaidi Gillette.

Diastrophus kincaidii GILLETTE, Can. Ent., Vol. XXV, 1893, p. 110.

Diastrophus kincaidi KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2nd ser. 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Male and female. Head black, face coarsely aciculated, median elevation shining, smooth and rather broad, cheeks, occiput and vertex smooth. Antennæ very dark rufo-piceous, almost black. Mesothorax shining black, parapsidal grooves distinct, widely separated at scutellum, but less so than at collar, median groove distinct, but extending only a short distance from scutellum, lateral grooves at base of wings, distinct. Collar and pleuræ aciculated, the latter with a large shining area. Scutellum evenly rugose, much less so than in any other known species of *Diastrophus*, foveæ large, distinct and very finely rugose. Abdomen black, sheath brown. Leg yellowish brown. Wings hyaline, veins brown, cross-veins scarcely infuscated. Areolet large, distinct. Length of male 1.25 to 1.50 mm.; of female 2 to 2.50 mm.

Gall. (Plate XXVII, Figs. 2, 3). On the stalk of blackberry (*Rubus nutkanus*). Polythalamous. Abrupt enlargements surrounding the stalk, very much resembling the galls of *Diastrophus turgidus*, externally. Inside they are literally filled with hard larval cells, which are divided by thin hard partitions and a thin layer of soft pithy substance forms the external portion of the gall. Length 25 to 60 mm.; diameter 12 to 25 mm.

Habitat: California (Alameda Co.); Washington (Olympia; Seattle); Idaho (Cedar Mts.).

This species is allied to *D. turgidus* but is abundantly distinct. It may be easily known by the rugose scutellum and the median groove on the mesothorax. The gall differs from that of *D. turgidus* by being filled with hard, oval, larval chambers.

The types are with Prof. C. P. Gillette. The galls on Plate XXVII, Figs. 2 and 3, I received from Mr. A. L. Melander.

***Diastrophus radicum* Bassett.**

Diastrophus radicum BASSETT, Can. Ent., Vol. II, 1870, p. 98; MAYR, 20 Jahr. com. Oberrealsch. I Bez. Wien, 1881, p. 26; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294; *ibid.*, Vol. XIV, 1887, pp. 134 and 148; Bull. 1, Col. Biol. Assoc., 1890, p. 38; GILLETTE, Psyche, Vol. V, 1889, p. 183. DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 107; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2nd ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73; BEUTENMÜLLER, Am. Mus. Journ., Vol. IV, 1904, p. 95, fig. 12; Ins. Galls Vicin. N. Y., 1904, p. 9, fig. 12.

Rhodites radicum GILLETTE, 27th Rep. Agricul. Michigan, 1888, p. 467; GIBSON, Rep. Ent. Soc. Ont., 1905 (1906), p. 122.

Male and female. Color same as *D. turgidus*. Head with face distinctly aciculate, median elevation very narrow, somewhat carinate, sides and posterior part smooth. Antennæ rufous, darker terminally. Mesothorax smooth, shining, parapsidal grooves distinct, subparallel, widely separated at scutellum, less so than at collar. Pleuræ and collar pitchy black or brown, distinctly, but finely aciculated, the former with a large shining area. Scutellum bluntly pointed, rugose, foveæ large, shallow, and finely rugose. Abdomen black or pitchy brown. Legs yellowish. Wings hyaline, veins brown, and rather heavy. The brown color of the radial vein is wanting before reaching the second cross vein, giving the appearance of being broken. Areolet large, distinct. Length of male 1.50 to 2 mm.; of female 2 to 2.50 mm.

Gall. (Plate XXVII, Figs. 4, 5). On the roots of running blackberry or dewberry (*Rubus canadensis*), and probably allied species. Polythalamous. Brown, pithy and irregular in shape, varying in size from the shape of a pea of two inches or more in length and nearly an inch in diameter. Sometimes the entire root stalk above and below the surface of the ground, is surrounded by almost a solid mass of galls, measuring about three inches in diameter.

Habitat: Canada to North Carolina; Michigan, Colorado.

The fly is allied to *D. turgidus*, but may be readily separated by the absence of the brown color of the radial vein before reaching the second cross-vein. I have taken galls on the roots of the black raspberry or blackcaps (*Rubus occidentalis*) which may prove to be the same as *D. radicum*. According to Bassett the galls also may be found on the roots of the high bush blackberry (*Rubus villosus*). The types are in the American Museum of Natural History and American Entomological Society.

***Diastrophus bassetti* Beutenmüller.**

Diastrophus bassetti BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist., Vol. IV, 1892, p. 248, pl. IX, Fig. 7; Am. Mus. Journ., Vol. IV, 1904, p. 94, fig. 9; Ins. Galls Vicin. N. Y., 1904, p. 8, fig. 9.

Diastrophus bassetti KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser. 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Female. Head jet black, shining, jaws rufous, front coarsely aciculate, median ridge exceedingly fine and linear, cheeks and posterior part shining, smooth. Antennæ rufous. Collar and pleuræ rather strongly aciculate, pubescent. Mesothorax black, shining, with a few punctures each containing a microscopic hair, finely aciculate on the posterior edge between the parapsidal grooves and usually along the inner edge of the latter. Parapsidal grooves subparallel, widely separated at the scutellum. Scutellum very rugose. Abdomen pitchy black, sometimes brownish. Legs very dark rufous, finely punctate and distinctly hairy. Wings dusky hyaline, veins dark brown, cross veins and basal vein of radial area distinctly infuscated. Areolet large. Length 2 to 2.50 mm.

Male. Same as the female in color.

Gall. (Plate XXVIII, Figs. 1, 2, 3, 4, 5). On the stems at the roots, or partly below the surface of the ground, on trailing blackberry (*Rubus canadensis*) and probably allied species. Polythalamous. Irregularly rounded or somewhat elongated or almost globular in shape. Composed of a fleshy substance when fresh and pithy when dry and mature. Greenish or yellowish green, tinged with red or sometimes almost entirely red. Diameter from 12 to about 25 mm.

Habitat. New York; New Jersey; Connecticut; Massachusetts; Rhode Island; North Carolina (Black Mts.).

The adult may be known from its congeners by the strong aciculations and the fine linear elevation on the face, the aciculations on the mesothorax, and dark rufous legs and antennæ. It is allied to *D. radicum*. The gall is sometimes quite common locally, reaching maturity late in autumn. The types are in the American Museum of Natural History and American Entomological Society.

***Diastrophus cuscutæformis* Osten Sacken.**

Diastrophus cuscutæformis OSTEN SACKEN, Proc. Ent. Soc. Phila., Vol. II, 1863, p. 39; MAYR, 20 Jahr. Oberrealsch. I Bez. Wien, 1881, p. 26; WALSH, Am. Ent., Vol. I, 1869, p. 188; SAUNDERS, Ins. Inj. Fruits, 1883, p. 319; *ibid.*, 2d edit., 1889, p. 319; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294; *ibid.*, Vol. XIV, 1887, p. 134; Bull. 1, Col. Biol. Assoc., 1890, p. 38; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist., Vol. IV, 1892, p. 249, pl. x, fig. 1; Am. Mus. Journ., Vol. IV, 1904, p. 95, fig. 10; Ins. Galls Vicin. N. Y., 1904, p. 9, fig. 10; WEBSTER, Bull. 45 Ohio Agric. Exp. St., 1893, p. 156; DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 107; COOK, 29th Rep. Dept. Geol. and Nat. Hist. Res. Indiana, 1904 (1905), p. 820, fig. 14; JARVIS, Rep. Ent. Soc. Ont., 1907 (1908), p. 89; FLETCHER and GIBSON, Rep. Ent. Soc. Ont., 1907 (1908), p. 128.

Gonaspis cuscutæformis KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Insect. Hymen. Fam. Cynip., 1902, p. 76.

Female. Head pitchy brown or almost black, sometimes dull rufous, especially the mouth parts, face finely aciculate, with a slight elevation along the middle, labrum smooth, shining, cheeks and vertex smooth, posterior part of head finely punctate. Antennæ rufous. Collar and pleuræ rufous, finely aciculate, the latter

with a large shining area. Mesothorax jet black, shining. Parapsidal grooves, subparallel somewhat converging posteriorly. Scutellum bluntly pointed at tip, rufous or piceus, rugoso-punctate with the two foveæ at base very prominent and sometimes shining. Abdomen smooth, shining pitchy brown. Legs and coxæ rufo-testaceous. Wings hyaline, cross vein stout, and infuscated, basal radial vein infuscated. Areolet wanting.

Male: Color and sculpture as in the female.

Length of female 2 to 2.50 mm.; of male 1 to 1.50 mm.

Gall. (Plate XXVIII, Figs. 7, 8, 9, 10). On stalk of blackberry (*Rubus villosus*, *R. canadensis* and *R. cuneifolium*). Monothalamous. Consists of numerous small, globular, woody, seed-like bodies, pressed closely together, each provided more or less with spines or filament. Dark green, turning red as the season advances.

Habitat: Canada (Ontario); New England and Middle States; probably southward to Florida; Illinois; Ohio; Michigan; Iowa; Missouri; Indiana.

The gall is sometimes quite common locally and several hundred are often on a single stalk. It may be readily known by the seed-like bodies, each containing a single larva. Dalla Torre and Kieffer erroneously refer *D. cuscuteformis* to the genus *Gonaspis* of Ashmead. The types are in the Museum of Comparative Zoölogy, Cambridge, Mass.

***Diastrophus fusiformans* Ashmead.**

Diastrophus fusiformans ASHMEAD, Bull. 1, Colorado Biol. Assoc., 1890, pp. 13 and 38; COCKERELL, Entomol., Vol. XXIII, 1890, p. 74; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2nd ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Diastrophus fusiformis DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 107.

Female. "Black, vertex of head, clypeus, mandibles and basal half of abdomen obscure rufous; legs, including coxæ, brownish red. Antennæ 14-jointed, black the 2nd joint one third longer than the fourth. Head closely finely punctate, subopaque; parapsidal grooves broad, deep, complete, with less sharply defined median groove between them. Scutellum rugose. Wings subfuscous, vein black, the areolet large, the cubital cell closed, the vein at base of radial cell arcuated. The abdomen is as long as the head and thorax together, compressed from below and towards apex, the second segment occupying about half its whole surface, smooth and always rufous, the following segments are short and of nearly an equal length, most frequently black, sometimes, though, obscurely rufous toward the tip, and delicately reticulated; the ventral valve prominent, acute. W. H. Ashmead."

Gall. (Plate XXIX, Figs. 15, 16.) On the stems of *Potentilla*. Polythalamous. An elongate, fusiform swelling, sometimes curved, or otherwise deformed. Length 15 to 45 mm. Diameter 5 to 8 mm.

Habitat: Colorado (West Cliff, T. D. A. Cockerell); Washington (Pullman); Garrison, New York (T. D. A. Cockerell); Massachusetts, Miss Cora H. Clark.

This species is unknown to me and Ashmead's description of the adult is here reproduced. The galls occur on different kinds of *Potentilla*. Prof.

T. D. A. Cockerell collected a gall on this plant at Garrison on the Hudson, New York, which in appearance is the same as *D. fusiformans*, and Miss Cora H. Clark sent me fusiform swellings on *Potentilla canadensis* which may also prove to be *D. fusiformans* when the adults are bred from them. The records New York and Massachusetts, therefore are doubtful. The types are in the United States National Museum.

***Diastrophus niger* Bassett.**

Diastrophus niger BASSETT, Trans. Am. Ent. Soc., Vol. XXVI, 1900, p. 324; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Diastrophus minimus BASSETT, Trans. Am. Ent. Soc., Vol. XXVI, 1900, p. 325; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Female. Head jet black, shining, mouth parts rufous, face finely aciculate, median elevation broad, smooth, sides and vertex smooth. Antennæ stout, pitchy brown black, first and second joints usually rufous. Mesothorax smooth, shining, varying from rufous to rufo-piceous or black. Parapsidal grooves distinct, widely separated anteriorly, subparallel, suddenly converging at the scutellum, where they are widely separated. Median groove very short when present. Collar shining, slightly aciculate. Pleuræ smooth, shining, rufous. Scutellum varying from rufous to black, rugose, foveæ large, deep, and separated by a fine ridge. Abdomen rufous usually darker dorsally. Legs pale yellowish or rufo-testaceous. Wings hyaline, veins dark brown, first and second cross-veins heavy with a dark cloud at base of radial area. Areolet wanting or scarcely evident. Length, 1 to 1.50 mm.

Male. Head, thorax, antennæ and abdomen piceous or black. Otherwise like the female. Length .50 to 1 mm.

Gall. (Plate XXIX, Figs. 4-13). On the stems, or midribs of the leaves of *Potentilla canadensis*. Monothalamous when single and polythalamous when in numbers. Round, oval or elongate, smooth swellings (Fig. 6) sometimes involving the whole stem. Sometimes in nodules, singly, (Fig. 11) or in numbers, especially when on the midribs (Figs. 13, 14). Green when fresh and brown and pithy when dry.

Habitat: New York; New Jersey; Connecticut; Rhode Island; Massachusetts.

This species will probably be found everywhere locally, within the distribution of its host plant (*Potentilla canadensis*), which is distributed from Canada to Georgia and to Minnesota and Indian Territory. Through the kindness of Miss Cora H. Clark I received a number of galls on the midribs of the leaves and upon the stems, from which I raised many examples of the adults of *D. niger*. *D. minimus* I cannot separate from *D. niger*. This was bred by Bassett from blister-like galls which he supposed to be distinct from the double or confluent galls of *D. niger*. The types of *niger* and *minimus* are in the American Museum of Natural History and the American Entomological Society.

***Diastrophus smilacis* Ashmead.**

Diastrophus smilacis ASHMEAD, Proc. U. S. Nat. Mus., Vol. XIX, 1896, p. 135; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 73.

Female. Head jet black, face very finely aciculated at the mouth, finely punctate above, sides and vertex smooth; median elevation very narrow, smooth. Antennæ rufous. Mesothorax, jet black, polished, parapsidal grooves, distinct, median grooves wanting; collar very finely aciculated anteriorly, sides and pleuræ smooth. Scutellum pointed posteriorly, rugoso-striate, foveæ at base large, finely rugose. Abdomen pitchy brown black, paler beneath, rufous at tip. Legs rufo-testaceous. Wings hyaline, basal radial vein and cross vein infuscated. Areolet large. Length 2.75-3 mm.

Gall. (Plate XXVIII, Fig. 6). On stems of smilax (*Smilax rotundifolia*, *S. herbacea* and *S. havanensis*). Polythalamous. Irregularly rounded, abrupt, swellings usually surrounding the stems, sometimes resembling the gall of *Rhodites globuloides*. Green when fresh and of a pithy structure. Diameter 16 mm.

Habitat: Illinois; Florida.

The type galls of this distinct species sometimes resemble those of the rose gall, *Rhodites globuloides* Beut. Figure 6 on Plate XXVIII was made from a gall found on *Smilax havanensis* collected by Dr. E. Bessey at Miami, Florida.

The types of *D. smilacis* are in the United States National Museum, and one female cotype in the American Museum of Natural History.

***Gonaspis* Ashmead.**

Gonaspis ASHMEAD, Psyche, Vol. VIII, 1897, p. 68; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 91; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 76.

Closely allied to *Diastrophus*. Scutellum prolonged, pointed, pyramidal in outline and projecting far over the metathorax; mesopleuræ coarsely sculptured; antennæ of female 13-jointed, of male 14-jointed. Cubitus of wing, disappearing before reaching the first cross-vein. Areolet large and distinct.

Type: *Diastrophus scutellaris* GILLETTE.

***Gonaspis potentillæ* Bassett.**

Diastrophus potentillæ BASSETT, Proc. Ent. Soc. Phila., Vol. III, 1864, p. 689; MAYR, 20 Jahr. Comm. Oberrealsch. I, Bez. Wien, 1881, p. 26; ASHMEAD, Trans. Am. Ent. Soc., Vol. XII, 1885, p. 294; *ibid.*, Vol. XIV, 1887, p. 134; COCKERELL, Entomol., Vol. XXIII, 1890, p. 74; BEUTENMÜLLER, Bull. Am. Mus. Nat. Hist., Vol. IV, 1892, p. 250; Am. Mus. Journ., Vol. IV, 1904, p. 96, fig. 13; Ins. Galls Vicin. N. Y., 1904, p. 10, fig. 13; DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 107; Cook, Ohio, Nat., Vol. IV, 1904, p. 120, fig. 87; JARVIS, Rep. Ent. Soc. Ont., 1907

(1908), p. 89, pl. B, fig. 5; FLETCHER and GIBSON, Rep. Ent. Soc. Ont., 1907 (1908), p. 128.

Gonaspis potentillæ ASHMEAD, Psyche, Vol. VIII, 1897, p. 68; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Insect. Hymen. Fam. Cynip., 1902, p. 76.

Male and female. Head black, finely aciculated in front, median elevation, smooth. Antennæ rufo-piceus. Mesothorax black, smooth, parapsidal grooves finely punctured, slightly converging at the scutellum, median groove from the scutellum extending well forward, the two grooves from the collar reaching the middle of the thorax. Collar and pleuræ tomentose, finely aciculated, including the usual polished area of the pleura. Scutellum pointed at the tip, rugose, foveæ large, shining. Abdomen pitchy brown black. Legs rufo-testaceous. Wings hyaline, basal radial vein and cross-vein infuscated, cubitus disappearing before reaching the first cross-vein. Areolet large and distinct. Length of male 2 to 2.25 mm.; of female 2 to 3 mm.

Gonaspis potentillæ var. *scutellaris* GILLETTE.

Diastrophus scutellaris GILLETTE, Bull. Ill. Lab. Nat. Hist., Vol. III, 1891, p. 191; DALLA TORRE, Cat. Hymen., Vol. II, 1893, p. 108.

Gonaspis scutellaris ASHMEAD, Psyche, Vol. VIII, 1897, p. 68; KIEFFER, Bull. Soc. Hist. Nat. Metz, Vol. X, 2d ser., 1902, p. 92; DALLA TORRE and KIEFFER, Gen. Ins. Hymen. Fam. Cynip., 1902, p. 76.

Differs from *potentillæ* by having the abdomen red or yellowish red instead of black.

Gall. (Plate XXIX, Figs. 1, 2, 3). On the axils of leaves of *Potentilla canadensis*. Monothalamous. Spherical or oblong, usually pointed at the base. Green in summer and brown, pithy in winter. Inside it is soft, spongy and contains an oval, hard, larval cell. Diameter 8 to 12 mm.

Habitat: Ontario, Nova Scotia, Canada; New England States; Middle States; Ohio; Illinois.

I have bred *Gonaspis scutellaris*, which is nothing more than a variety of *G. potentillæ*. I have bred *scutellaris* from galls identical with those of *potentillæ*. The types of *potentillæ* are in the American Museum of Natural History and the American Entomological Society. The type of *scutellaris* is in the Laboratory of Natural History at Urbana, Illinois.

Diastrophus piceus Provancher.

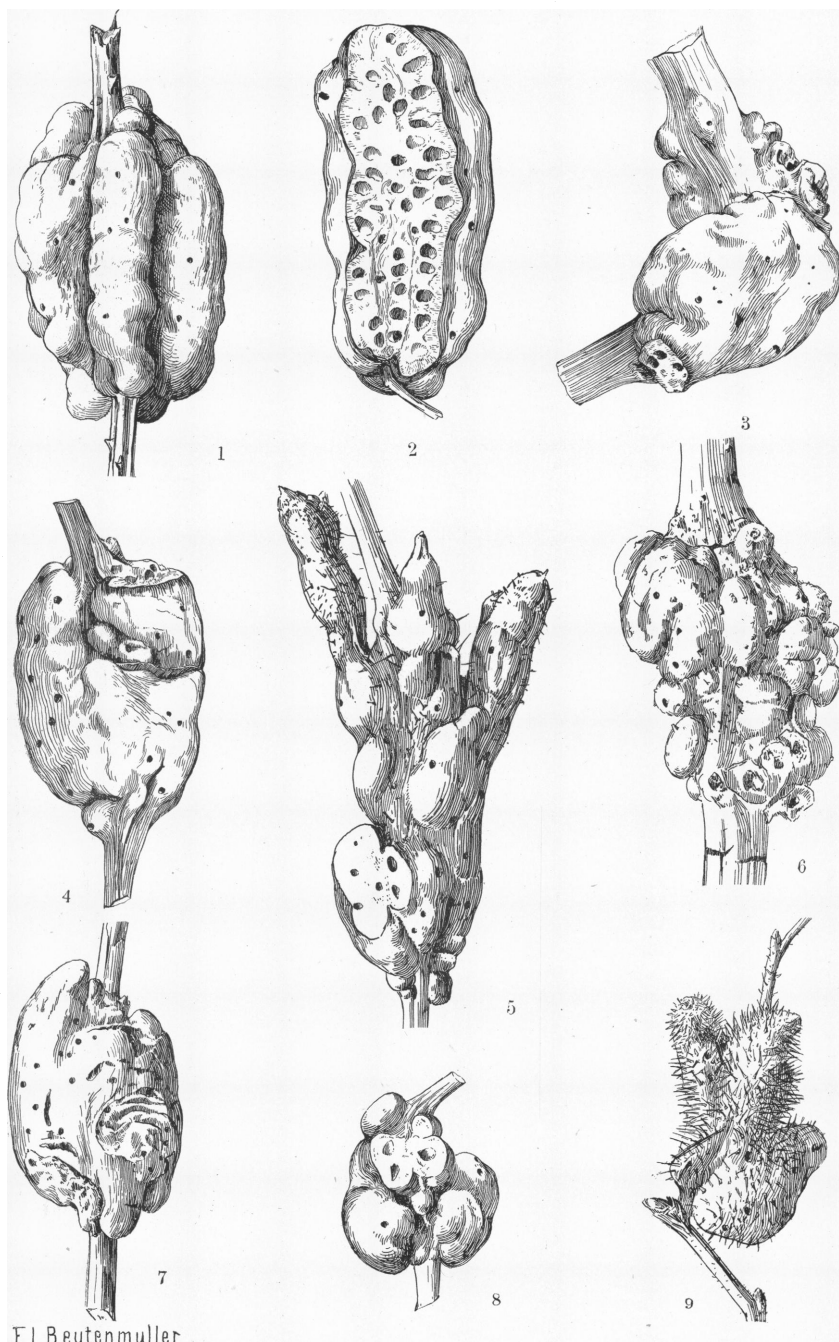
Diastrophus piceus PROVANCHER, Add. Fauna Can. Hymen., 1886, p. 161.

Male and female. Pitchy black, face large, rough and shining, vertex finely punctate. Antennæ rufous at base, third joint as long as the fourth and fifth together, moniliform toward the extremity. Pronotum polished, moderately shining. Parapsidal grooves very pronounced. Median groove at base very short. Scutellum very strongly rugose, as much as the metathorax, and without very marked foveæ at the base. Sides rugose, not shining. Wings partly infuscated, veins

black, radial area quite short, three cubital cells, but the cubitus partly effaced at base. Areolet or second cubital distinct, but with the anterior vein slightly marked. Legs reddish, darker at base. Abdomen short, black, polished, ventral segments becoming reddish. Sheath scarcely projecting. Length 2.50 mm

Habitat: Ottawa, Canada.

I am unable to recognize this species from Provancher's description, a translation of which is given above. It is probably the same as *D. nebulosus*, *D. turgidus* or *D. radicum*.



E.L. Beutenmüller

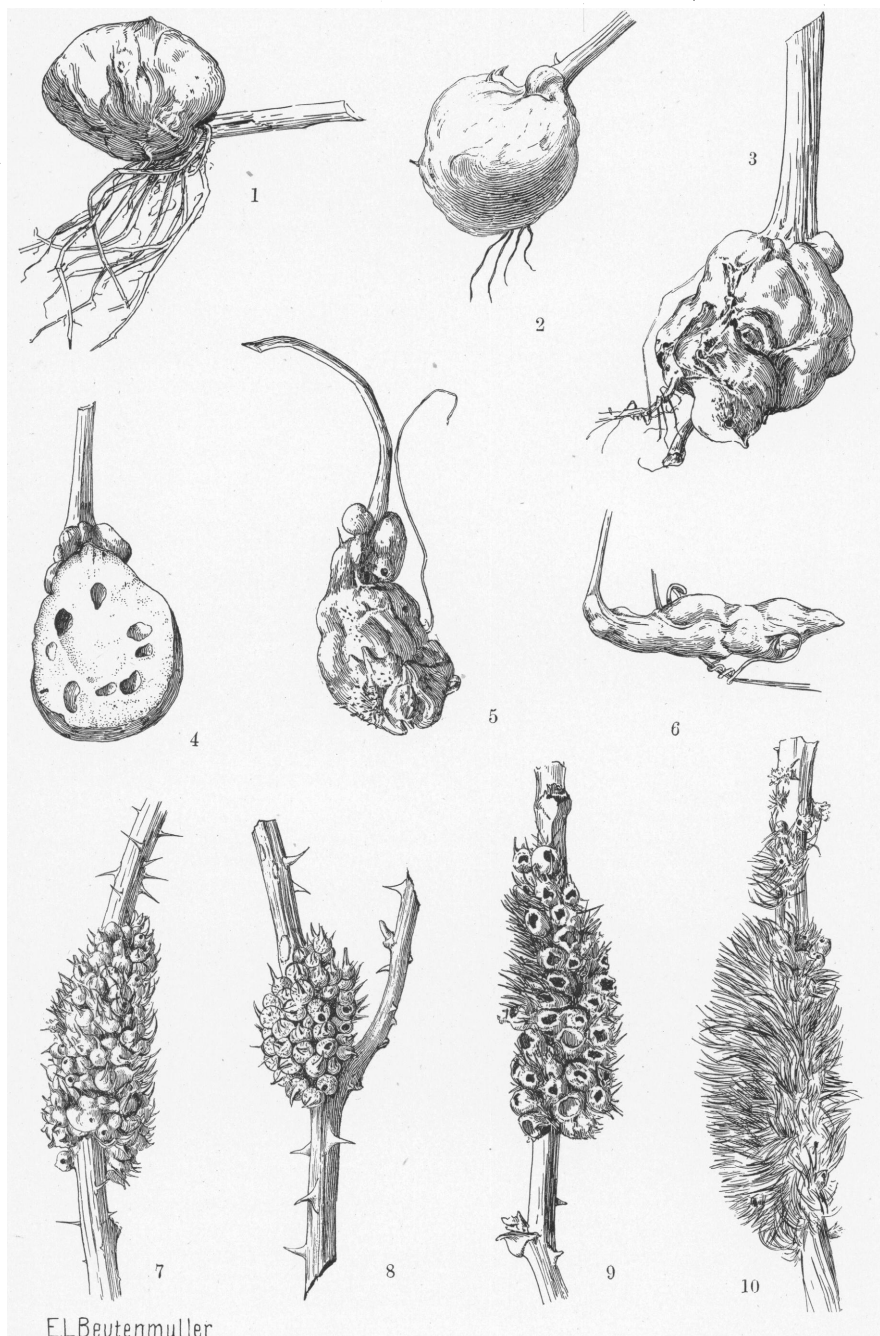
1, 2. *Diastrophus nebulosus* O. S.

3-9. *Diastrophus turgidus* Bass.



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1. *Diastrophus turgidus* Bass. 2, 3. *Diastrophus kincaidi* Gill.
4, 5. *Diastrophus radicum* Bass.

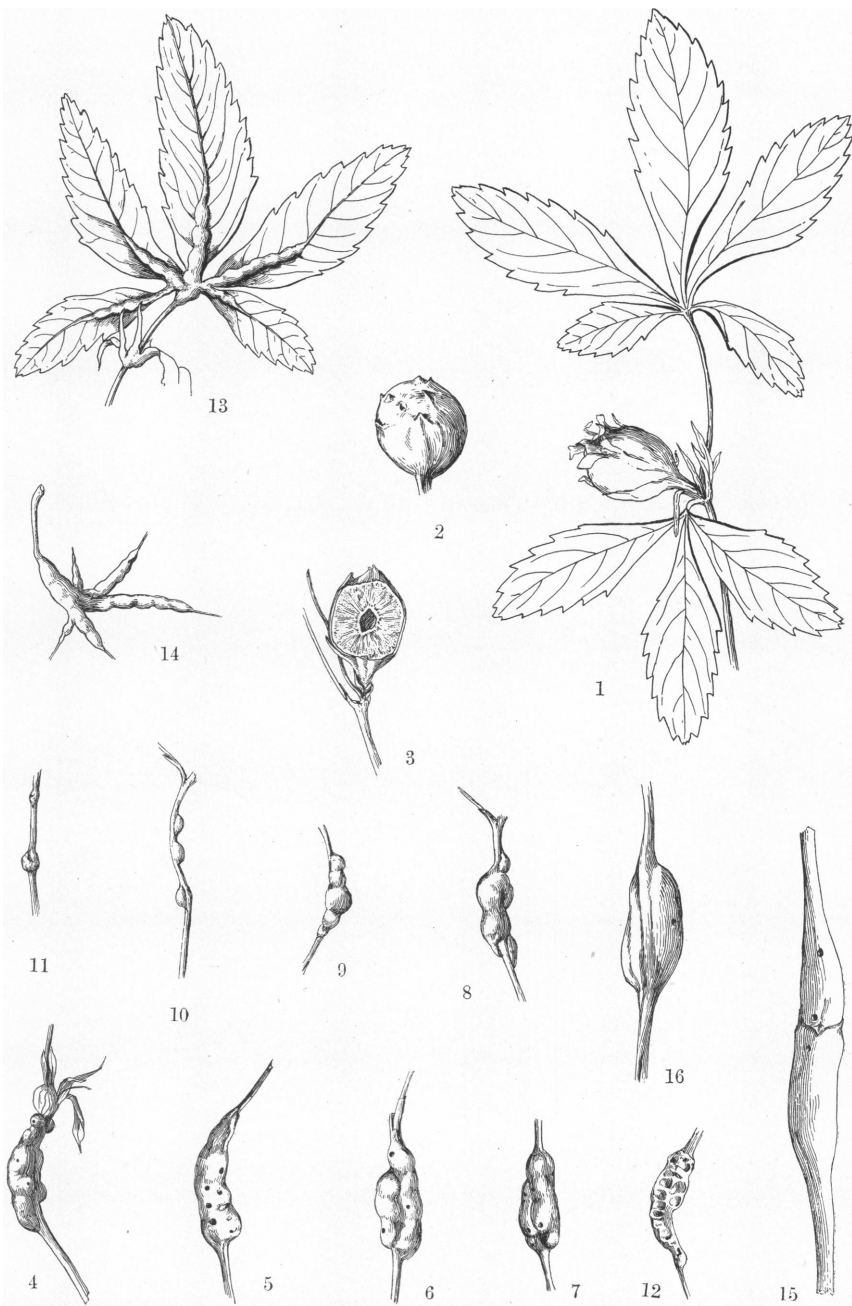


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1-5. *Diastrophus bassetti* Beut.

6. *Diastrophus smilacis* Ashm.

7-10. *Diastrophus cuscuteformis* O. S.



EL Beutenmuller

1-3. *Gonaspis potentillae* Bass.

4-14. *Diastrophus niger* Bass.

15, 16. *Diastrophus fusiformans* Ashm.

