

Article XV.—CATALOGUE OF GALL-PRODUCING
INSECTS FOUND WITHIN FIFTY MILES OF NEW
YORK CITY, WITH DESCRIPTIONS OF THEIR
GALLS, AND OF SOME NEW SPECIES.

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This catalogue is based mainly upon specimens of galls in the collection of the American Museum of Natural History, which were gathered by me during 1889-92 inclusive, when collecting entomological material for the Museum and for the Jesup Collection of 'Economic Entomology.' To make the catalogue as complete as possible I have also added such species as have already been recorded, or reported to me as having been taken within the area specified. It was originally my intention to also incorporate the descriptions of the gall-flies, whenever known, but for various reasons I have omitted them from the present catalogue.

The vegetable deformations called galls are produced by insects. Generally an egg is inserted in a bud, a leaf, a root, or some other part of the plant, and the presence of this foreign body among the vegetable cells causes an abnormal growth of a definite shape. The variety of galls in respect to structure and substance is very great. Every species of gall-producing insect attacks its own particular plant and a particular part of that plant, and produces a gall of a definite and uniform structure.

The galls enumerated in this catalogue are produced by insects belonging to the following orders: (1) Hymenoptera (Cynipidæ and Tenthrenidæ); (2) Diptera (Cecidomyidæ and Trypetidæ); (3) Hemiptera (Aphidæ and Psyllidæ); (4) Arachnida (Mites). Besides these groups, which are the principal gall-producers, some few species of other insects also produce gall-like excrescences.

I am fully aware that this catalogue is incomplete, and that a considerable number of species will yet be added as soon as we have a better knowledge of the species of gall-insects found in the vicinity of New York City.

The figures accompanying this catalogue were drawn from nature by Mr. R. Weber, and are all natural size.

HYMENOPTERA.

CYNIPIDÆ.

Rhodites bicolor (*Harris*).

PLATE IX, FIG. 1.

Cynips bicolor HARRIS, *Ins. Inj. Veget.* 1841, p. 399.

Rhodites bicolor OSTEN SACKEN, *Proc. Ent. Soc. Phil.* Vol. II, pp. 43, 48.

Round, covered with numerous long prickly spines, almost as long as the diameter of the gall. In summer the gall is yellowish green, and is sometimes tinged with red. The perfect insect was briefly described by Harris (l. c.), and a detailed description was given by Osten Sacken (l. c.). Harris's types are in the collection of the Boston Society of Natural History. The species is common on the twigs of different kinds of wild roses, growing in clusters of two or more. Common.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

Rhodites ignota *Osten Sacken*.

PLATE IX, FIG. 2.

Rhodites ignota OSTEN SACKEN, *Proc. Ent. Soc. Phil.* Vol. II, pp. 43, 49.

This gall is round, about the size of a pea, and covered with a white mealy substance. Sometimes two or three of these galls coalesce, thus forming an elongated mass of more irregular shape. In texture the gall is hard and woody, and each contains several cells. I have taken it plentifully on the leaves of *Rosa carolina*, in September, at West Farms, New York City.

Two examples. Coll. Am. Mus. Nat. Hist.

Rhodites radicum *Osten Sacken*.

PLATE IX, FIG. 3.

Rhodites radicum OSTEN SACKEN, *Proc. Ent. Soc. Phil.* Vol. II, pp. 42, 46.

Found at the roots of various kinds of wild roses. The gall is irregularly rounded, and with a deep depression above and below at the place of attachment to the roots. It is smooth and red-

dish brown in color. The inside is composed of a pithy substance, and contains numerous cells. Taken on Staten Island by Mr. Wm. T. Davis and myself.

Six specimens. Coll. Am. Mus. Nat. Hist.

Rhodites globulus, n. sp.

PLATE IX, FIG. 4.

This is certainly the unnamed gall described by Osten Sacken (Proc. Ent. Soc. Phil., Vol. II, p. 42).

The gall is smooth, rounded and rises at each end abruptly from the branch. In substance it is rather soft and corky, with numerous cells inside. In form it is sometimes more or less oblong or is almost round, and measures from three-quarters of an inch to an inch and a half in length and is about three quarters of an inch in diameter. Found on Swamp Rose (*Rosa carolina*) on Staten Island.

GALL-FLY. *Male*.—Head jet black, not shining, rugosely punctate. Antennæ black. Thorax deeply corrugated, jet black above and below. Legs black with joints and tarsi yellowish brown. Body shining black, finely punctured. Length, 3 mm.

Female.—Differs from the male by having only the posterior pair of legs marked with black and the two other pairs wholly yellowish brown. It is also larger, with the anal valve considerably longer. Length, 5 mm.

Described from one male and one female. Types Coll. Am. Mus. Nat. Hist.

Rhodites dichlocerus (*Harris*).

PLATE IX, FIG. 5.

Cynips dichlocerus HARRIS, Ins. Inj. Veget. 1841, p. 399.

Rhodites dichlocerus OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. II, pp. 41, 46.

This gall is an elongated, hard, woody swelling, gradually tapering at both ends. It occurs on the branches of *Rosa carolina*. The originator of the gall was briefly described by Harris (l. c.) and accurately characterized by Osten Sacken (l. c.). Taken at Kingsbridge, N. Y., and on Staten Island. Not common. I have examined the type specimen of the gall in the Museum of the Boston Society of Natural History.

Several examples. Coll. Am. Mus. Nat. Hist.

Rhodites verna *Osten Sacken.*

PLATE IX, FIG. 6.

Rhodites verna OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. II, pp. 41, 47.

Taken by me on Staten Island on the Wild Rose (*Rosa lucida*). The gall is somewhat allied to *Rhodites dichlocerus* Harr. It is oblong or rounded, and about one-third of an inch long. Sometimes there is a series of three or four such swellings attached to each other, and in this respect differs from *R. dichlocerus*. The figure here given was drawn from an authentic specimen in the Museum collection.

Rhodites rosæ (*Linn.*).*Cynips rosæ* LINN. Syst. Nat. 10th Edit. Vol. I, p. 533.*Rhodites rosæ* OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. II, p. 47; HARTIG, Zeitschr. f. d. Ent. II, 1840, p. 194.

This gall, according to Osten Sacken, is identical with the European species, where it is well known under the name of 'Bedeguar,' said to mean rose apple. In this country it occurs on the Sweet Briar (*Rosa carolina*). It is composed of an agglomeration of hard cells around a branch, and is wholly covered with long and dense green filaments, forming a moss-like mass an inch and a half or more in diameter. I have taken a gall of a similar nature on the leaves and stems of the common Blackberry (*Rubus villosus*) and which probably is identical with *Rhodites rosæ* Linn. Not common.

One example. Coll. Am. Mus. Nat. Hist.

Diastrophus bassettii, n. sp.

PLATE IX, FIG. 7.

The gall of this species was found by Mr. W. T. Davis on Staten Island, on the stems of the Trailing Blackberry (*Rubus canadensis*?). It is irregularly rounded or somewhat elongated, and grows near the ground, but not beneath the surface as does *D. radicum* Bass. In color it is greenish, and is tinged with red. Inside there are numerous rounded cells in the pithy substance of which the gall consists. Mr. H. F. Bassett informs me that he also found this gall many years ago on the stems of the 'Trailing Blackberry,' but did not secure the gall-flies and therefore

did not describe it. The gall is very different from that of *D. radicum* Bass., under which name it has been known to me for some time past, but comparing it with type specimens of *D. radicum*; kindly sent me by Mr. Bassett, I find it totally different. In cutting open one of the galls I found two mature flies and several partly-developed specimens.

The flies may be described as follows :

Head jet black, very shining, with a number of shallow punctures, in each of which is a very short yellowish hair. Mouth parts pitchy brown. Thorax shining, smooth, jet black, with two deep longitudinal grooves; scutellum less shining and deeply corrugated, as are also the sides and extreme anterior portion of the thorax. Antennæ testaceous, thirteen-jointed; first joint elongated, much thicker at the extreme end than at the base; second joint almost globular and about one-half as long as the first; third joint slender, longer than the first, becoming slightly thicker toward the apex; fourth to sixth joints about the same size and shorter than the third; the remaining joints are still somewhat smaller, but are about the same size; last joint, bud-shaped. The antennæ are also sparsely covered with short yellowish hair. Body jet black, shining. Legs, testaceous. Two males. Length, 4 mm.

Types of gall and flies in Coll. Am. Mus. Nat. Hist.

***Diastrophus cuscutæformis* Osten Sacken.**

PLATE X, FIG. 1.

Diastrophus cuscutæformis OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. II, pp. 39, 45.

This gall infests the branches of the common Blackberry (*Rubus villosus*), and consists of globular, woody, seed-like bodies. They are pressed closely together, and each is provided with more or less spines. Not common.

Two specimens. Coll. Am. Mus. Nat. Hist.

***Diastrophus nebulosus* Osten Sacken.**

PLATE X, FIG. 2.

Diastrophus nebulosus OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. II, p. 36; RILEY, Am. Ent. Vol. II, p. 159; FULLER, Am. Ent. Vol. III, p. 63; SAUNDERS, Ins. Inj. Fruit, p. 318.

This large swelling is found on the canes of the Blackberry (*Rubus villosus*). It is about two or three inches long, and when immature is dark green, turning red or reddish brown as the season advances. It is oblong in form, with the surface some-

what uneven, with deep longitudinal furrows, which divide the gall more or less completely into four or five parts. Inside there are numerous oblong cells, each containing a single larva, which is about one-tenth of an inch long, white, with the mouth parts and the spiracles and an oval spot on each side behind the head of the same color. The perfect insect emerges in spring the following year. Very common.

Numerous examples. Coll. Am. Mus. Nat. Hist.

Diastrophus potentillæ *Bassett.*

Diastrophus potentilla BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 689.

Found on the axils of the leaves of *Potentilla canadensis*. In summer the gall is green, and when dry is of a spongy substance. Each gall contains a single cell. It is round or oblong in shape and measures about one-third of an inch in diameter. Not common. Taken at Fort Lee, N. J., Astoria, L. I., and Staten Island.

Amphibolips confluentus (*Harris*).

PLATE X, FIG. 4.

- Cynips confluentus* HARRIS, Rep. Ins. Inj. Veget. 1st Ed. 1841, p. 397.
Cynips confuens HARRIS, Rep. Ins. Inj. Veget. 2d Ed. 1852, p. 433; *ibid.* 3d Ed. 1862, p. 546; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 53; WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 481.
Cynips aciculata OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 56, 245; *ibid.* Vol. IV, p. 354; WALSH, Proc. Ent. Soc. Phil. Vol. II, pp. 443, 462, 481; Am. Ent. Vol. II, p. 330; WALSH & RILEY, Am. Ent. Vol. I, p. 103.
Cynips coccineæ OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, pp. 243, 248; *ibid.* Vol. IV, p. 354; WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 481.
Amphibolips coccineæ ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 104.
Cynips spongifica OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, pp. 244, 248; *ibid.* Vol. IV, p. 347; WALSH, Proc. Ent. Soc. Phil. Vol. II, pp. 443, 452; Am. Ent. Vol. II, p. 330; WALSH & RILEY, Am. Ent. Vol. I, p. 103.
Amphibolips spongifica ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 104.

This well-known gall is very common in this vicinity, and makes its appearance early in May, as soon as the leaves put forth, on different kinds of oaks, belonging to the red oak group, and is fully grown in a few weeks. It is popularly known as 'Oak-apple' or 'May-apple,' owing to its resemblance to a small apple. The gall measures from one to two inches in diameter, and is more or less smooth and globular, sometimes slightly

elongated. Inside it is filled with a spongy substance in the centre of which is a hard kernel containing the larval cell. When fresh the gall is a pale green, soft and succulent, with the contents whitish. But later in the season the shell becomes brown, hard and brittle, with the kernel woody and the spongy substance dark brown, but remaining soft.

From a certain number of these galls emerge, by the middle of June, both male and female gall-flies. These have been named by Osten Sacken, *Cynips (Amphibolips) spongifica*. The gall-flies which emerge in October or the following spring are all females, and have been named *Cynips (Amphibolips) aciculata* by the same author, but they have been proven by the late B. D. Walsh to be merely a dimorphous female of the former. *A. aciculata* and *A. spongifica* were supposed by Osten Sacken to be two different species and to occur on the Black Oak (*Quercus tinctoria*) only. I have, however, bred specimens of the autumnal form (*A. aciculata*) from galls which I found on Red Oak (*Quercus rubra*), Scarlet Oak (*Quercus coccinea*), Black Oak (*Quercus tinctoria*) and Black-jack Oak (*Quercus nigra*), which I am unable to separate from an authentic specimen of *A. aciculata* deposited in the Museum by Baron Osten Sacken some years ago. I have also examined Harris's type of *C. confluentus* in the collection of the Boston Society of Natural History, and find it to be identical with *A. aciculata* O. S., over which the name *A. confluentus* has precedence.

A. coccinea O. S. was described from the gall only, and Walsh (Proc. Ent. Soc. Phil., Vol. II, p. 447), was certainly correct in uniting it with *A. spongifica*.

***Amphibolips inanis* (Osten Sacken).**

PLATE X, FIG. 5.

Callaspida confluens FITCH, 5th Rep. Nox. Ins. in Trans. N. Y. State Agricul. Soc. 1858, p. 817.

Cynips inanis OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 58, 242, and Vol. IV, p. 354; WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 457; Am. Ent. Vol. II, p. 331; WALSH & RILEY, Am. Ent. Vol. I, p. 105.

Amphibolips inanis ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 104.

The outside of this gall shows no difference from that of the preceding species, except in being considerably smaller. The

internal structure, on the contrary, distinguishes it at once. Instead of being filled with the spongy substance, as in *A. confluentus* Harr., this gall is almost empty; the larval cell being kept in its central position by a certain number of whitish filaments which radiate from it to the shell. Found in May on the leaves of the Scarlet Oak (*Quercus coccinea*) and Red Oak (*Quercus rubra*). Not common. West Farms, N. Y., Fort Lee, N. J., and Staten Island.

Two examples. Coll. Am. Mus. Nat. Hist.

***Amphibolips ilicifoliae* (Bassett).**

PLATE X, FIG. 6.

Cynips ilicifolia BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 681.

Amphibolips ilicifoliae ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

Occurs on the leaf or petiole of *Quercus ilicifolia*. It is elongated and fusiform, tapering at both ends, with the apex somewhat longer and more slender than the basal portion, and is sometimes considerably curved. The gall is green or brownish, thin and brittle when dry, with an elongated kernel inside, held in position by radiating fibres. Rare in the vicinity of New York. Taken by W. T. Davis at Tottenville, S. I., and by the late Hy. Edwards at Vineland, N. J.

Three examples. Coll. Am. Mus. Nat. Hist.

***Amphibolips prunus* (Walsh).**

Cynips prunus WALSH, Proc. Ent. Soc. Phil. Vol. III, p. 639; WALSH & RILEY, Am. Ent., Vol. I, p. 104.

Amphibolips prunus ASHMEAD; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

In the latter part of August and early in September this gall may be found fully developed, and growing from one side of the acorn of the Red Oak (*Quercus rubra*) and Black Oak (*Quercus tinctoria*). It is globular, smooth, and fleshy, but is solid, and somewhat resembles a plum. Outside it is of a bright crimson and internally it is pinkish shading into yellow towards the middle. The larva lives singly in a cell in the centre of the gall, and the perfect insect emerges in May the following year. According to Walsh (Am. Ent., I, p. 104) it sometimes remains in

the larva state for two years and does not eat its way out until the end of the third year. The gall measures from a half to one inch in diameter. Not rare in this vicinity. I have taken it in abundance at Fort Lee, N. J.

Andricus (Callirhytis) cornigerus (Osten Sacken).

PLATE X, FIG. 3.

Cynips cornigera OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 251, and Vol. IV, p. 358.

Andricus (Callirhytis) cornigera BASSETT, Am. Nat. Vol. XVI, p. 246.

Andricus (Callirhytis) cornigerus ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

This is one of the most common galls found in the vicinity of New York City. It infests the branches of the Pin Oak (*Quercus palustris*) and is often found by the hundreds upon a single tree. The gall is irregularly rounded and is composed of a woody substance, with numerous horn-like protuberances, through which the gall-flies make their escape. Internally there are numerous cells, each containing a single larva. The perfect insect emerges from the gall early in spring. The gall also occurs on the Scrub Oak (*Quercus ilicifolia*) and Black-jack Oak (*Quercus nigra*), but very rarely.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) punctatus (Bassett).

Cynips punctata BASSETT, Proc. Ent. Soc. Phil. Vol. II, p. 324; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 358.

Andricus (Callirhytis) punctata BASSETT, Am. Nat. Vol. XVI, p. 246.

Andricus (Callirhytis) punctatus ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

Closely allied to *Andricus cornigerus* O. S., but may be readily separated from this species by the absence of the horn-like protuberances. It is one of the most conspicuous galls, and by its abundance, wherever it occurs, it deforms the trees and does considerable injury. Sometimes the gall is found singly, but often a number of them may be seen, in more or less proximity, on the same twig. It is composed of a woody substance and internally there are a number of cells, as in *A. cornigerus* O. S. I have taken the gall in abundance at Cold Spring Harbor, L. I., on

the Black-jack Oak (*Q. nigra* L.). It is also found on the Scarlet Oak (*Q. coccinea*), Red Oak (*Q. rubra*), and Scrub Oak (*Quercus ilicifolia*).

Two examples. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) seminator (Harris).

Cynips seminator HARRIS, Rep. Ins. Inj. Veget. 1st Edit. p. 399; FITCH, 5th Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1858, p. 813; WALSH & RILEY, Am. Ent. Vol. I, p. 250, and Vol. II, p. 71.

Andricus seminator OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379.

Andricus (Callirhytis) seminator BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

This gall is found in June growing on small twigs of the White Oak (*Quercus alba*). It is composed of a woolly substance, and is irregularly rounded. Inside are numerous seed-like bodies adhering around the twig, and very much resembling canary seeds. The gall is pure white or white tinged with red, but towards the middle of the summer assumes a rusty brown shade. It measures from one inch to about two inches and a half in diameter. Common.

Two examples. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) futilis (Osten Sacken).

PLATE XI, FIG. I.

Cynips futilis OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 63.

Andricus futilis OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379.

Andricus (Callirhytis) futilis BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

This gall is a pale green, rounded, somewhat flattened, and projects on both sides of the leaf. Inside there are two or three seed-like, oblong kernels, kept in position by some whitish filaments. It appears early in May on the leaves of the White Oak (*Quercus alba*) and is fully grown about the middle of the month or early in June. The perfect insect emerges in the latter part of June or early in July, when the gall becomes dry and changes to a light brown color. Very common.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) papillatus (Osten Sacken).

Cynips papillata OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 64, and Vol. IV, p. 352.

Andricus papillata OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379.

Andricus (Callirhytis) papillatus ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 295; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

Occurs in numbers on the same leaf on the Chestnut Oak (*Quercus prinus*). The gall is rounded and projects on both sides of the leaf; it is somewhat nipple-shaped, and is enclosed in a reddish aureola on the under side, which is very characteristic and by means of which it can be separated from the preceding species. Inside the gall are two or three kernels each containing a single larva. It is found in May and the perfect insect emerges in June. Probably this and the preceding species are the same, attacking two kinds of oaks. Not common.

Several examples. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) similis (Bassett).

PLATE XI, FIG. 2.

Cynips similis BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 685.

Andricus (Callirhytis) similis BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

In general appearance this gall very much resembles that of *C. tuber* Fitch, as does also the perfect insect, but, according to Mr. Bassett, it is evidently a different species. The gall is club-shaped and woody, growing at the ends of small limbs. The apex is blunt and generally turned to one side, covered in summer with a few leaves. The gall is rare in this vicinity and is found on *Quercus ilicifolia*. It has been taken by W. T. Davis at Tottenville, S. I., and by myself at Tom's River, N. J.

Several examples. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) clavula (Bassett).

PLATE XI, FIG. 3.

Cynips arbor FITCH, 5th Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1858, p. 809; BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 686.

Cynips clavula BASSETT, Proc. Ent. Soc. Vol. IV, p. 351; OSTEN SACKEN, Proc. Ent. Soc. Vol. IV, p. 379.

Andricus (Callirhytis) clavula BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

Forms a club-shaped gall at the tips of the twigs of the White Oak (*Quercus alba*). Early in summer it is green; in winter it is of the same color as the twig, and is very hard and woody. Very common.

Numerous examples. Coll. Am. Mus. Nat. Hist.

Andricus (Callirhytis) palustris (Osten Sacken).

Cynips palustris OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 62, and Vol. III, p. 359; Trans. Am. Ent. Soc. Vol. III, p. 54.
Andricus (Callirhytis) palustris BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 294; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

The shell of this gall is green and succulent. Inside it is hollow, with a small whitish globular body of about one-tenth of an inch in diameter, containing the larva, and rolls freely about, not being fastened to the shell. The gall is globular, measures about one-half inch in diameter, and occurs on the buds and young leaves of the Pin Oak (*Quercus palustris*) early in May. The perfect insect emerges about the middle of May. Very common in Central Park and at Astoria, L. I.

Andricus singularis (Bassett).

PLATE XI, FIG. 4.

Cynips singularis BASSETT, Proc. Ent. Soc. Phil. Vol. II, p. 326; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 355.
Andricus singularis BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 295; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

This gall may be found in the early part of June, infesting the leaves of the Red Oak (*Q. rubra*). It is smooth, thin, and varies in diameter from a quarter to one-half an inch. Each gall has an oblong cell in the centre, which is held in place by radiating fibres. There is seldom more than one gall on each leaf, although two and even three are occasionally met with. The gall reaches its full development with the leaf, and the perfect insect emerges in July. At first the gall is green and succulent, but turns brown and becomes brittle later in the season. In general appearance this gall resembles *Amphibolips inanis* O. S., but may be readily distinguished by its small size.

Several examples. Coll. Am. Mus. Nat. Hist.

Andricus petiolicola (Bassett).

PLATE XIII, FIG. 2.

Cynips petiolicola BASSETT, Proc. Ent. Soc. Phil. Vol. II, p. 325.*Andricus petiolicola* OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379 ;
BASSETT, Am. Nat. Vol. XVI, p. 246 ; ASHMEAD, Trans. Am. Ent. Soc.
Vol. XII, p. 295 ; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

This gall affects the petiole at the base of the leaf and sometimes also the mid-rib. It is found on the White Oak (*Quercus alba*), Chestnut Oak (*Quercus prinus*), Swamp White Oak (*Quercus bicolor*) and Post Oak (*Quercus obtusiloba*). It is rounded or club-shaped, and is of a woody texture ; contains a number of cells. Early in the season it is green, but later becomes brown. Common.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

Andricus lana (Fitch).

PLATE XI, FIG. 5.

Cynips lana FITCH, 5th Rep. Nox. Ins. Trans. N. Y. State Agricul. Soc. 1858, p. 814.*Andricus lana* ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 295 ; PACKARD, 5th Rep. U. S. Ent. Com. p. 105.

The oak-wool gall is found upon the principal veins on the undersides of the leaves of the White Oak (*Quercus alba*). It very much resembles a small mass of wool, and is white or buff colored. Internally this mass is composed of numerous small seed-like capsules of a bright chestnut color, crowded together and attached by their lower ends to the vein of the leaf. Common.

Coll. Am. Mus. Nat. Hist.

Cynips (?) prinoides, n. sp.

PLATE XI, FIG. 6.

A number of galls of this species were collected by me at Tom's River, New Jersey, from the upper sides of the leaves of the Dwarf Chestnut Oak (*Quercus prinoides*) in the latter part of August and early in September. The gall is globular and about one-half inch in diameter, and is covered with numerous cone-like projections. When fresh it is light green tinged with red.

[December, 1892.]

Inside is a single cell in which the larva lives. I did not succeed in raising any flies from the galls, but have found in cutting open one of them an apparently mature female specimen, which I describe as follows :

Sub-apterous ; head, pitchy black, opaque, rugosely punctured ; eyes also pitchy black, finely reticulated, and surrounded with a rather broad reddish brown ring. Antennæ black, thirteen jointed, with the first four joints elongated and about the same length ; the remaining joints gradually decrease in size. Thorax dull reddish brown, darker in color at the sides, and deeply but finely punctate. Legs shining, reddish brown, with a few short yellowish hairs, which are also present on the head and thorax. Body jet black, very shiny ; ovipositor with a few light-colored hairs. On the underside of the body, a little beyond the middle and in close proximity, are two bunches of rather long yellowish hairs. A few very short hairs of the same color are also present on the underside of the body at the base. Length, 3.5 mm.

I place the species only provisionally in the genus *Cynips*.

Cynips strobilana Osten Sacken.

PLATE XII, FIG. 6.

Cynips strobilana OSTEN SACKEN, Proc. Ent. Soc. Phil. I, p. 254 ; BASSETT, Proc. Ent. Soc. Phil. III, p. 690 ; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 295.

This gall consists of a number of wedge-shaped bodies, closely packed together, with their pointed bases attached to a common centre. These wedges are hard and corky, and break off very easily when the gall is dry. Each of them contains a hollow kernel with a plump larva inside. According to Osten Sacken this gall is evidently produced by the sting of the insect on the single leaves of a bud, each leaf growing into the shape of a wedge. It occurs on the tip of the twigs of the Swamp Oak (*Q. bicolor*), and is rare in this neighborhood.

One specimen. Coll. Am. Mus. Nat. Hist.

Cynips pisum Fitch.

Cynips pisum FITCH, 5th Rep. Nox. Ins. N. Y. Trans. N. Y. Agri. Soc. XVIII, p. 818 ; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 59 ; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 303.

Common on the veins of the upper or underside of the leaves of the White Oak (*Q. alba*). The gall is about the size of a pea,

which it very much resembles in general appearance. Its surface is finely netted with fissures or cracks and intervening elevated points, like the surface of a strawberry. Inside there are usually two cavities divided in the centre by a thin partition. The gall is pale greenish yellow tinged on one side with red. It may be found fully developed in June and July.

Several examples. Coll. Am. Mus. Nat. Hist.

***Acraspis erinacei* (Walsh).**

PLATE XII, FIG. 1.

Cynips erinacei WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 483.

Acraspis erinacei MAYR, Genera der Gallbew. Cynipid. p. 29; BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 295; PACKARD, 5th Rep. U. S. Ent. Com. p. 106.

This gall appears in June and July on the leaves of the White Oak (*Quercus alba*), and is fully developed in August and September. It is attached by a single point to the leaf, and generally grows on one of the principal veins on the upperside. When fully grown the gall is rounded and is finely netted with fissures and covered with rather long spines. It is yellow or greenish yellow with the spines bright red, especially so when young.

Six specimens. Coll. Am. Mus. Nat. Hist.

***Biorhiza forticornis* (Walsh).**

PLATE XIII, FIG. 3.

Cynips ficus FITCH, 5th Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1858, p. 812; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 368.

Cynips (Biorhiza) forticornis WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 490.

Teras forticornis OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379.

Acraspis forticornis BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 107.

These galls occur in a dense cluster around the young twigs or tender shoots of the White Oak, and each is moulded to the shape of those pressing against its sides, and somewhat resembles preserved figs packed in boxes, hence the name 'Fig-gall.' The gall is soft, bladder-like, and inside contains a single cell, held in place by radiating fibres. It is pale yellow, often beautifully tinged with bright red. In winter the gall is of the color of a faded

oak leaf. It is fully grown in August. The gall and guest-fly have been named by Fitch *Cynips ficus*. But the true gall-maker was discovered later by Walsh who named the species *Biorhiza forticornis*.

Several examples. Coll. Am. Mus. Nat. Hist.

***Biorhiza hirta* (Bassett).**

Cynips hirta BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 688; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 353.

Teras hirta OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. IV, p. 379.

Biorhiza hirta ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 106.

This gall measures about one-quarter of an inch in diameter. It is hard, round, with a fine papillose surface and a solid radiating cellular structure. It usually grows on the underside of the leaf attached to one of the larger veins by a very short pedicel, but is also sometimes found on the upperside. It is very rare in this vicinity and is found on Rock Chestnut Oak (*Q. monticola*). A single specimen, so named, is in the Museum collection from West Point, N. Y., collected by Baron Osten Sacken.

***Holcaspis globulus* (Fitch).**

PLATE XII, FIG. 4.

Callaspidia globulus FITCH, 5th Rep. Nox. Ins. N. Y. State Agricul. Soc. 1858, p. 811; PACKARD, 5th Rep. U. S. Ent. Com. p. 111.

Cynips globulus OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 67; BASSETT, Proc. Ent. Soc. Phil. Vol. II, p. 328.

Holcaspis globulus MAYR, Genera der Gallbew. Cynipid. p. 35; BASSETT, Am. Nat. Vol. XVI, p. 246; PACKARD, 5th Rep. U. S. Ent. Com. p. 106.

These bullet-like galls are common on the White Oak (*Quercus alba*), and grow singly or in clusters of two, three or more on the terminal twigs. Internally the gall is of a corky texture and contains in its centre a single worm, lying in an oval, whitish shell, resembling a minute egg. In summer the gall is yellow or tinged with red, and when the colder weather sets in it turns brown. The gall is also found on the Post Oak (*Quercus obtusiloba*) and Chestnut Oak (*Quercus prinus*).

Several examples. Coll. Am. Mus. Nat. Hist.

Holcaspis duricoria *Bassett*.

PLATE XII, FIG. 5.

Holcaspis duricoria BASSETT, Trans. Am. Ent. Soc. Vol. XVII, p. 64; Am. Nat. Vol. XVI, p. 246.

Somewhat resembles the gall of *H. globulus* Fitch, but may be readily distinguished by being much rougher outside and less regularly globular, with the base flattened and the apex extended into a cone-like process. Internally the substance is similar, but much harder than that of *H. globulus*. It also contains a free larval cell. Occurs on the Swamp Oak (*Q. bicolor*). Rare in the vicinity of New York.

A few specimens. Coll. Am. Mus. Nat. Hist.

Dryophanta polita (*Bassett*).

PLATE XII, FIG. 3.

Cynips polita BASSETT, Can. Ent. Vol. XIII, p. 99.

Dryophanta polita BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 106.

This gall is globular, and is found in August and September on both surfaces of the leaves of the Post Oak (*Quercus obtusiloba*) at or near the summit of young and thrifty shoots, from one to twenty occurring on a single leaf. It is one-quarter to three-quarters of an inch in diameter, and pale green, but when exposed to the sun becomes red or reddish brown. When dry the shell is very thin and brittle, and contains a single round larval cell, held in a central position by radiating branching fibres which extend to the outer shell. The perfect insect, according to Mr. Bassett, becomes mature in October but remains in the gall over winter.

Common at Tom's River, New Jersey. Taken by Mr. W. T. Davis and myself.

One fine example. Coll. Am. Mus. Nat. Hist.

***Neuroterus batatus* (Fitch).**

PLATE XIII, FIG. I.

- Cynips batatus* FITCH, 5th Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1858, p. 810; OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. I, p. 71; BASSETT, Proc. Ent. Soc. Phil. Vol. III, p. 684.
Neuroterus batatus BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 107.

Abundant, especially on the branches of young trees. The gall is generally large and uneven, and often resembles a potato in shape. It is hard and woody, with the surface coated with a glaucous, pale bluish bloom. Internally it is of a dense corky texture with numerous larval cells. The gall grows on the White Oak below the terminal shoot, and is sometimes quite injurious by deforming the young twigs of the tree.

Numerous examples. Coll. Am. Mus. Nat. Hist.

***Neuroterus noxiosus* (Bassett).**

- Cynips noxiosa* BASSETT, Can. Ent. Vol. XIII, p. 108.
Neuroterus noxiosus BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 107.

Found on the terminal twigs of the Swamp White Oak (*Quercus bicolor*). It very much resembles that of *Neuroterus batatus* in shape and size. But according to Mr. Bassett the flies that produce this gall are distinct. Taken by me in Central Park. Rare. Two type specimens of the summer form and three of the winter form were given to the Museum by Mr. H. F. Bassett.

***Neuroterus floccosus* (Bassett).**

PLATE XII, FIG. 2.

- Cynips floccosa* BASSETT, Can. Ent. Vol. XIII, p. 111.
Neuroterus floccosus BASSETT, Am. Nat. Vol. XVI, p. 246; ASHMEAD, Trans. Am. Ent. Soc. Vol. XII, p. 296; PACKARD, 5th Rep. U. S. Ent. Com. p. 107.

Very common on the under surface of the terminal leaves of the Swamp Oak (*Quercus bicolor*). Sometimes as many as two hundred galls are often found upon a single leaf, and which cause the leaf to become deformed and to curl up. The gall is hemi-

spherical and covered with white hairs. On the upperside of the leaf its position is indicated by a small, smooth, shining blister-like elevation. I have found the gall fully grown in July, and others in various stages of growth, as well as the perfect insect ovipositing.

Numerous examples. Coll. Am. Mus. Nat. Hist.

Neuroterus umbilicatus *Bassett, MS.*

Occurs in considerable numbers on the underside of the leaves of the Swamp White Oak (*Quercus bicolor*). The gall is rounded, much depressed, with a deep circular cavity on top, in the centre of which is a small nipple. It is brown, and measures about one-tenth of an inch in diameter. Its position is indicated on the upper surface of the leaf by a circular spot. Taken by me on Staten Island. Not rare.

Three type specimens were kindly presented to the Museum by Mr. H. F. Bassett.

Aulax tumidus *Bassett.*

Aulax tumidus BASSETT, Trans. Am. Ent. Soc. Vol. XVII, p. 92.

This gall forms a thick swelling on the main stalk of Wild Lettuce (*Lactuca*). It is usually found near the summit of the stalk, often in the panicle itself and then covered with the short flower stems. The gall varies greatly in size from a slight, knotty and irregular enlargement of the stalk to a large and more or less ovate swelling, two or three inches long and an inch in diameter. The larvæ are imbedded in the soft pitchy matter which fills the gall.

Two specimens. Coll. Am. Mus. Nat. Hist.

TENTHRENIDÆ.

Nematus pomum *Walsh.*

Nematus pomum WALSH, Proc. Ent. Soc. Phil. Vol. VI, p. 255; WALSH & RILEY, Am. Ent. Vol. II, p. 45 (fig.).

Found on several species of bush Willows (*Salix*). It makes its appearance early in spring and is fully matured in July and August. The gall is yellowish green, usually with a rosy cheek,

and measures about one-half inch in diameter. It is rounded and somewhat resembles a miniature apple. Common.

***Euura ovum* Walsh.**

Euura ovum WALSH, Proc. Ent. Soc. Phil. Vol. VI, p. 251; WALSH & RILEY, Am. Ent. Vol. II, p. 49 (fig.).

This gall is found on the stems of the Willow (*Salix*), and is an oval or elongated swelling, about one-half an inch long, placed lengthwise on one side of the twig. Not common.

DIPTERA.

CECIDOMYIDÆ.

***Cecidomyia serrulata* Osten Sacken.**

PLATE XIII, FIG. 4.

Cecidomyia serrulata OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 198.

The gall is a deformation of the terminal bud of the common Alder (*Alnus serrulata*), which appears enlarged and rounded, with the apex pointed. In autumn it is greenish; in winter, brown, and often covered with a whitish efflorescence. Each gall contains from two to six reddish larvæ, which leave the gall late in fall to complete their transformation in the earth. The fly emerges the following spring. Common at Ravenwood, Long Island, and Mosholu, N. Y.

Six specimens. Coll. Am. Mus. Nat. Hist.

***Cecidomyia verrucicola* Osten Sacken.**

Cecidomyia verrucicola OSTEN SACKEN, Can. Ent. Vol. VII, p. 200.

This gall is found in July and August on the leaves of the Linden (*Tilia americana*). It occurs in numbers upon the same leaf, and is wart-shaped, round, pale green, and measures about one-fifth of an inch in diameter. In autumn the gall becomes brown, hard and woody, and springs open on the underside, a circular piece detaching itself and either falling to the ground or remaining fastened to the gall at one edge, in the shape of a lid.

Taken by me near Yonkers, N. Y., and by Baron Osten Sacken, near West Point, N. Y.

***Cecidomyia tulipiferæ* Osten Sacken.**

Cecidomyia tulipifera OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 202.

Taken by me at Short Hills, New Jersey, on the Tulip-tree (*Liriodendron tulipifera*). The gall infests the mid-rib of the leaf, and is a small rounded swelling. Rare.

***Cecidomyia liriodendri* Osten Sacken.**

Cecidomyia liriodendri OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 202.

Forms brown spots with a yellow or greenish aureole on the leaves of the Tulip-tree. These spots are about one-third of an inch in diameter, and a number of them may be found upon a single leaf. Common.

Several specimens. Coll. Am. Mus. Nat. Hist.

***Cecidomyia cerasi-serotinae* Osten Sacken.**

Cecidomyia cerasi-serotinae OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. III, p. 346.

The gall is an enlargement of the terminal bud of young shoots of the Wild Cherry (*Prunus serotina*), and makes its appearance in May. It is bright red, more or less rounded, with one or two leaves growing from its sides. The consistency of the gall when young is fleshy; the cavity on the inside occupies about one-half of the diameter of the gall and is filled with bright yellow larvæ, which, according to Osten Sacken (l. c., p. 347) have the power of leaping by the contraction of their bodies. Found in Tarrytown, N. Y., by Osten Sacken. I have also taken it in Central Park, New York City. Rare.

***Cecidomyia pellex* Osten Sacken.**

Cecidomyia pellex OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 199.

Taken at Fort Lee, New Jersey, in June, on the Ash (*Fraxinus americana*). The gall occurs on the ribs of the leaf, is rounded oblong on the upperside, and on the underside it is indicated by the surface being somewhat swollen. It is pale green, succulent, subpellucid, and sometimes is tinged with brown.

***Cecidomyia gleditschiæ* Osten Sacken.**

Cecidomyia gleditschiæ OSTEN SACKEN, Proc. Ent. Soc. Phil. Vol. VI, p. 219.

Taken in Central Park, New York City, in June and July, on the leaves of the Honey-locust (*Gleditschia triacanthos*). The gall is formed of a single leaflet, folded in such a way as to assume the shape of a pod. Sometimes nearly all the leaves on the terminal twigs are deformed in this way. The fly completes its transformations within the gall and emerges in July and August.

Five examples. Coll. Am. Mus. Nat. Hist.

***Cecidomyia holotricha* Osten Sacken.**

PLATE XIV, FIG. I.

Cecidomyia holotricha OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 193 ;
GLOVER, MS. Notes from my Journ. pl. xi, fig. 23.

This gall may be found through the summer on the underside of the leaves of the Shell-bark Hickory (*Hickoria ovata*), and also all other kinds of Hickories. Sometimes they cover the entire under surface of the leaf, which becomes deformed and gradually shrivels up from the injury done by the galls. The gall is sub-globular, onion-shaped, and covered with a pubescence which is pale when the gall is young and growing, and becomes rust-colored when mature. It is hollow, and contains a single larva. Abundant everywhere in this vicinity.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

***Cecidomyia caryæcola* Osten Sacken.**

PLATE XIV, FIG. 2.

Cecidomyia caryæcola OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 192 ;
GLOVER, MS. Notes from my Journ. Dipt. pl. xi, fig. 24.

Pale green, smooth, elongated, onion-shaped, with the tip prolonged into a point. Found in clusters on the undersides of the leaves of different kinds of Hickories. Common.

Several examples. Coll. Am. Mus. Nat. Hist.

***Cecidomyia tubicola* Osten Sacken.**

PLATE XIV, FIG. 4.

Cecidomyia tubicola OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 192 ;
GLOVER, MS. Notes from my Journ. Dipt. pl. xi, fig. 25.

These narrow, cylindrical, tube-like galls infest the underside of the leaves of different kinds of Hickories. They are inserted in a small protuberance on the leaf and break off very easily. When immature they are green, and when ripe they are blackish brown. Very common.

Four specimens. Coll. Am. Mus. Nat. Hist.

***Cecidomyia sanguinolenta* Osten Sacken.**

Cecidomyia sanguinolenta OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 192.

This gall occurs in numerous clusters on the leaves of different species of Hickories. It is conical, somewhat narrowed at the base, and is of a blood-red or purplish color. Not common ; at Fort Lee, N. J., in July.

***Cecidomyia persicoides* Osten Sacken.**

PLATE XIV, FIG. 3.

Cecidomyia persicoides OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 193.

These curious excrescences are found on the underside of the leaves of different kinds of Hickories. The galls are variable in size and shape and are clothed with a delicate down like that of a peach, and look like a very diminutive fruit of this kind. Sometimes the galls grow along the mid-rib from one end to the other ; they then assume irregular shapes and entirely deform the leaf. They may be found fully developed in August. Common.

Three examples. Coll. Am. Mus. Nat. Hist.

***Cecidomyia strobiloides* Osten Sacken.**

PLATE XV, FIG. 1.

Cecidomyia strobiloides OSTEN SACKEN, Mon. Dipt. pt. I, p. 203 ; WALSH &
RILEY, Am. Ent. Vol. I, p. 105 ; PACKARD, Guide to Study of Insects,
p. 377 ; GLOVER, MS. Notes from my Journ. pl. xi, fig. 15.

Found plentifully in different localities in this vicinity, on the terminal twigs of various kinds of low Willows ; it is formed of

closely imbricated leaves, assuming the shape of a cone. The gall makes its appearance in April and May and is fully grown in July.

Several examples. Coll. Am. Mus. Nat. Hist.

***Cecidomyia brassicoides* Walsh.**

Cecidomyia brassicoides WALSH, Proc. Ent. Soc. Phil. Vol. III, p. 577 ;
WALSH & RILEY, Am. Ent. Vol. I, p. 105 ; PACKARD, Guide to Study of
Insects, p. 377.

Found on Willow (*Salix longifolia*). The gall infests the tips of the twigs and consist of a more or less close-set bunch of leaves. The larva and perfect insect were described by Walsh (l. c.). Not common.

***Cecidomyia rigidæ* Osten Sacken.**

PLATE XV, FIG. 2.

Cecidomyia salicis FITCH, Journ. Agricul. & Sc. Vol. I, p. 263 (*name preoc.*).
Cecidomyia rigidæ OSTEN SACKEN, Mon. Dipt. N. Am. pt. 1, p. 189.
Cecidomyia siligua WALSH, Proc. Ent. Soc. Phil. Vol. III, p. 591 ; RILEY,
Am. Ent. Vol. II, p. 214 ; GLOVER, MS. Notes from my Journ. pl. xi,
fig. 19.

This gall grows on the tips of the twigs of different kinds of Willows. It is a woody, elongated swelling, tapering to a point at the apex, and with a number of small terminal buds growing from it. It contains a single larva, which channels the gall from one end to the other. Common, especially on *Salix discolor*.

Six specimens. Coll. Am. Mus. Nat. Hist.

***Cecidomyia batatas* Walsh.**

Cecidomyia batatas WALSH, Proc. Ent. Soc. Phil. Vol. III, p. 601.

The gall of this species infests the branches of the Willow (*Salix discolor*) and other species of Willow belonging to this group. It is hard and woody and varies considerably in size and shape ; sometimes the different forms are strung together, one after the other, in more or less close proximity on the same twig. The shape of the gall is usually hemispherical, or irregularly ovate. Internally are numerous cells with orange-colored larvæ, which may be found from July to about March. Not common.

Four specimens. Coll. Am. Mus. Nat. Hist.

Cecidomyia clavula, n. sp.

PLATE XV, FIG. 5.

Found on the terminal twigs of the Dog-wood (*Cornus florida*). The gall is a club-shaped swelling about an inch long. Inside is an elongated channel, which is inhabited by a single orange-colored larva. In July I have taken this gall with the larva nearly fully grown, but did not succeed in raising it. The gall is very common on Staten Island. Also taken at Nyack, N. Y., by Rev. J. L. Zabriskie, who informs me that he also failed to rear the insect. In summer the gall is green and in winter it assumes the color of the bark of the twig.

Eight specimens. Coll. Am. Mus. Nat. Hist.

Cecidomyia impatientis Osten Sacken.

Cecidomyia impatientis OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 204; GLOVER, MS. Notes from my Journ. pl. xi, fig. 16.

Produces a round, succulent swelling at the base of the flower of *Impatiens fulva* in August. The gall is green, semitransparent and contains a number of cells inside. Not common. Taken at Mosholu, N. Y.

Cecidomyia sambuci-umbellicola Osten Sacken.

Cecidomyia sambuci-umbellicola OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. III, pp. 52, 347.

Taken by Osten Sacken near South Orange, N. J., and at Tarrytown, N. Y., in June among the umbels of the common Elder (*Sambucus canadensis*). The gall is an enlargement of the buds of the flowerlets, and inside of each such bud is an orange larva. The perfect insect is unknown.

Cecidomyia pilulæ (Walsh).

PLATE XV, FIG. 3.

Cynips pilulæ WALSH, Proc. Ent. Soc. Phil. Vol. II, p. 481.

Cecidomyia pilulæ WALSH & RILEY, Am. Ent. Vol. II, p. 29; RILEY, 5th Rep. U. S. Com. p. 206.

This gall is often so abundant that almost every leaf of the tree bears at least from five to seventy-five or more individuals.

and sometimes nearly all the leaves are studded with them. In the vicinity of New York it chiefly occurs on the Pin Oak (*Quercus palustris*) and Red Oak (*Quercus rubra*); but is also found on the Black-jack Oak (*Quercus nigra*), Scrub Oak (*Quercus ilicifolia*) and other species belonging to the Red Oak group. The gall when ripe is fleshy, but still solid, and when dry it is very hard and woody. Inside there are several cells inhabited by bright orange-red larvæ. The gall makes its appearance in May before the leaves are fully developed; it is then blister-like, yellow or pale brown, and is surrounded by a light green ring. When fully developed in August and September it is bright red or reddish brown. The gall varies greatly in size, shape and color. On the Red Oak, Scarlet Oak, and Black Oak (*Q. rubra*, *Q. coccinea* and *Q. tinctoria*) it is usually quite small, rounded and deep red, while on the Pin Oak (*Q. palustris*) it is much larger, greenish in color and looks almost like a different gall. On the Scrub Oak (*Q. ilicifolia*) the gall resembles that on Red Oak, but is much lighter in color. Frequently two or more galls are confluent and assume a very irregularly rounded or elongated form. The differences in appearance in this gall is accounted for by the behavior of the gall on different kinds of Oaks. On the under surface of the leaf the gall is indicated by a green nipple.

Cecidomyia symmetrica O. S., an authentic specimen of which I have before me, differs only from *C. pilulæ* by protruding symmetrically on both sides of the leaf, and probably after the gall maker is known will have to be referred to this species; for the present, however, it must stand as distinct until we have further knowledge on the subject. *Cecidomyia symmetrica* is, as far as I can ascertain, only found on the Spanish Oak (*Quercus falcata*), and has not yet been found in the vicinity of New York. It was described from the vicinity of Washington, D. C., by Osten Sacken (Mon. Dipt. N. Am., pt. I, p. 200), who also mentions *C. pilulæ*, but characterizes *C. symmetrica* as the species.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

Cecidomyia poculum *Osten Sacken.*

PLATE XV, FIG. 4.

Cecidomyia poculum OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 201 ;
GLOVER, MS. Notes from my Journ. pl. xi, fig. 27.

The so-called Oak Spangles (*C. poculum*) are saucer-like outgrowths, which may be found in the latter part of the summer on the undersides of the leaves of the White Oak (*Quercus alba*), and, according to Osten Sacken, also on the Post Oak (*Quercus obtusiloba*). They vary in color from pale reddish to a light lavender, and generally occur in clusters, sometimes nearly covering the entire underside of the leaf. No insect has as yet been raised from the Oak Spangles in this country. Common.

Ten specimens. Coll. Am. Mus. Nat. Hist.

Cecidomyia niveipila *Osten Sacken.*

Cecidomyia niveipila OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 199.

Collected by me at Watchogue, Staten Island, in May, on the young leaves of the Red Oak (*Quercus rubra*). The gall consists of a large fold lined with a white pubescence on the inside. Sometimes the entire leaf is folded with the edges curled up, the underside of the leaf being the inside of the gall. I have found as many as fifteen larvæ in a single gall. The perfect insect is not known. Not common.

Cecidomyia solidaginis *Loew.*

Cecidomyia solidaginis LOEW, Mon. Dipt. N. Am. pt. I, p. 194 ; GLOVER, MS.
Notes from my Journ. pl. XII, fig. 32.

Infests the Golden-rod (*Solidago*), and is produced by the arrest of the stalk, which causes the leaves to accumulate, thus forming a globular bunch, consisting of several hundred leaves. Very common.

Numerous examples. Coll. Am. Mus. Nat. Hist.

Cecidomyia carbonifera *Osten Sacken.*

Cecidomyia carbonifera OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 195 ;
GLOVER, MS. Notes from my Journ. XII, pl. 29, fig. 27.

Found in August on the leaves of Golden-rod (*Solidago*). The gall is a pale yellowish brown circular spot, surrounded by a blackish ring. The perfect insect is unknown. Common.

***Cecidomyia anthophila* Osten Sacken.**

Cecidomyia anthophila OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. II, p. 302.

Taken in September, 1867, near Brooklyn, L. I., by Baron Osten Sacken, among the racemes of Golden-rod (*Solidago*). The gall is elongated-conical, blunt at the end and about one-third of an inch long. The surface is pale green, covered with a white down. Inside the gall is hollow and divided in two compartments by a delicate, somewhat funnel-shaped membrane, placed between about the middle of the cavity, point upward. The larva may be found at the bottom of the lower compartment.

***Cecidomyia viticola* Osten Sacken.**

Cecidomyia viticola OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 202; WALSH, Am. Ent. Vol. II, p. 28; RILEY, 5th Rep. Nox. Ins. Mo. p. 119; SAUNDERS, Ins. Inj. Fruit, p. 292.

This gall is green or bright red, and narrow-elongate or conical in shape. It grows in numbers on the upper or lower side of the leaves of various kinds of Wild Grapes. Taken at Yonkers, N. Y., in July and August.

***Cecidomyia vitis-pomum* Walsh & Riley.**

Cecidomyia vitis-pomum WALSH & RILEY, Am. Ent. Vol. I, p. 106 (fig.); RILEY, 5th Rep. Nox. Ins. Mo. p. 114; PACKARD, Guide to Study of Insects, p. 378; SAUNDERS, Ins. Inj. Fruit, p. 296; GLOVER, MS. Notes from my Journ. pl. xi, fig. 17.

This gall grows on the stems of the Wild Grape, and is variable in size and shape; it is usually rounded, flattened at the base and pointed at the tip. When mature, it often has eight or nine longitudinal ribs as in a musk-melon, and is much smoother than when young. Inside are numerous longitudinal cells which are divided by a transverse partition. Not common.

***Lasioptera vitis* Osten Sacken.**

Lasioptera vitis OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 202; RILEY, 5th Rep. Nox. Ins. Mo. p. 117 (fig.).

Found on stems and leaf-stalks of the Wild Grape (*Vitis cordifolia*). The gall consists of a bunch of irregular swellings of various rounded shapes. The substance of the gall is soft, juicy, translucent; color yellowish green tinged with red or entirely of this color. Taken at Parkville, L. I., in June.

Lasioptera farinosa *Osten Sacken.*

Lasioptera farinosa OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 204.

Produces a small, rounded woody swelling at the base of the leaflets or on the mid-rib of the common Blackberry (*Rubus villosus*). Not common.

Asphondylia monacha *Osten Sacken.*

Asphondylia monacha OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. II, p. 299.

Collected in September, 1867, near Brooklyn, L. I., on *Solidago altissima*, by Baron Osten Sacken, according to whom this gall is like that of *Cecidomyia solidaginis*, consisting of an accumulation of leaves upon a stem or branch, the growth of which has been stunted by the operation of the insect. But it may be separated from it by difference in the inner structure. The leaves forming the inner part of the gall of *A. monacha*, although stunted in their growth, have none of the characteristic appearance of the numerous narrow ribbon-like leaves surrounding the central cell in the gall of *Cecidomyia solidaginis*. (See Mon. Dipt. N. Am., Loew, pt. I. pl. i, figs. 9 and 10.)

Asphondylia rudbeckiæ-conspicua *Osten Sacken.*

Asphondylia rudbeckiæ-conspicua OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. III, p. 51.

Taken at Mosholu, N. Y., in the latter part of July on the flower-heads of the Ox-eye Daisy (*Rudbeckia hirta*). Rare.

Sciara ocellaris (*Osten Sacken*).

Cecidomyia ocellaris OSTEN SACKEN, Mon. Dipt. N. Am. pt. I, p. 199;
GLOVER, MS. Notes from my Journ. pl. xi, fig. 29.
Sciara ocellaris COMSTOCK, Rep. U. S. Dept. Agricul. 1881, p. 202.

Common on the leaves of the Red Maple (*Acer rubrum*). The gall is an eye-like, circular spot, light yellow in color with a red central dot. Sometimes it is entirely green or yellow. The perfect insect and earlier stages were described and figured by Prof. Comstock (l. c.). Common.

Two specimens. Coll. Am. Mus. Nat. Hist.

[December, 1892.]

TRYPETIDÆ.

Trypeta polita Loew.

Trypeta polita LOEW, OSTEN SACKEN, Trans. Am. Ent. Soc. Vol. II, p. 301.

The gall of this species is very common on *Solidago altissima* and other species of Golden-rods. It is caused by the arrest of the side branches and consists of a small bunch of accumulated, aborted leaves. Inside, at the base of the gall, is a hollow space in which the larva lives. The gall is a little over half an inch long, and sometimes as many as twenty-five occupy the end of the stalk.

Trypeta solidaginis (Fitch).

PLATE XV, FIG. 6.

Acinia solidaginis FITCH, 1st Rep. Nox. Ins. Trans. N. Y. State Agricul. Soc. Vol. XIV, p. 771.

Trypeta solidaginis LOEW, Mon. Dipt. N. Am. p. 82; GLOVER, MS. Notes from my Journ. pl. xl, fig. 33.

This species produces a round gall on the stalk of the Golden-rod (*Solidago*). Inside it is of a pithy substance, in the centre of which the larva lives in a round cell. The gall is fully developed in August. Common.

Several specimens. Coll. Am. Mus. Nat. Hist.

HEMIPTERA.

PSYLLIDÆ.

Pachyphylla venusta Osten Sacken.

PLATE XVI, FIG. I.

Pachyphylla venusta OSTEN SACKEN, Stett. Ent. Zeit. 1861, p. 422; RILEY, 5th Rep. U. S. Ent. Com. p. 617 (fig.); Can. Ent. Vol. XV, p. 158.

Generally globular, but often more or less irregularly ovoid and very variable in size. The gall occurs on the petiole of the leaf of the Hackberry (*Celtis occidentalis*), and consists of an outer shell and an inner core which can be easily separated upon cutting the gall open. The apical portion of the gall has on one side a slit which is deepest and widest at the tip. The inner core

consists of thin brittle walls of the irregular cells which fill the inside of the outer shell. Taken by me near Peekskill, N. Y. Rare.

One specimen. Coll. Am. Mus. Nat. Hist.

***Pachypsylla celtidis-gemma* Riley.**

PLATE XVI, FIG. 3.

Pachypsylla celtidis-gemma RILEY, 5th Rep. U. S. Ent. Com. p. 618.

This gall occurs on the branches of the Hackberry (*Celtis occidentalis*), and is a deformation of the young bud which would form a new twig the ensuing year. It is variable in size and of irregular shape, but always bud-like and looking as if formed by the conglomeration of a number of rounded nodules. The gall is hard and woody with a number of cells inside. Common.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

***Pachypsylla celtidis-vesiculum* Riley.**

Pachypsylla celtidis-vesiculum RILEY, 5th Rep. U. S. Ent. Com. p. 618.

This gall appears on the upperside of the leaf merely as a flat, rounded blister of a yellowish or greenish color. On the underside, when fully grown, it is somewhat convex, with a small nipple in the center. The galls often occur in large numbers on the same leaf. Very common on the Hackberry (*Celtis occidentalis*).

Numerous specimens. Coll. Am. Mus. Nat. Hist.

***Pachypsylla celtidis-mamma* Riley.**

Pachypsylla celtidis-mamma RILEY, Johnson's Universal Encyclopedia, 1876; Can. Ent. Vol. XV, p. 158; 5th Rep. U. S. Ent. Com. p. 620 (fig.); FLETCHER, Rep. Ent. Soc. 1882, p. 79, 80.

Found on the leaves of the Hackberry (*Celtis occidentalis*). The gall on the upperside of the leaf is represented by a cup-shaped impression and on the underside is about 7 mm. high and about 5 mm. wide. In shape the gall is subcylindrical, with the apex bluntly rounded. Very common.

Several examples. Coll. Am. Mus. Nat. Hist.

Pachypsylla celtidis-cucurbita *Riley.*

PLATE XVI, FIG. 2.

Pachypsylla celtidis-cucurbita RILEY, 5th Rep. U. S. Ent. Com. p. 621.

Very common in various localities in this vicinity on the leaves of the Hackberry (*Celtis occidentalis*). On the upperside of the leaf the gall forms a cup-shaped impression and on the underside a rounded swelling, truncated at the top and concave in the center at the apex with a very small nipple. Around the top of the gall there is usually an acute rim which surrounds the concave depression, and at the sides near the top is furnished with short ribs, which are sometimes nearly obliterated.

Numerous specimens. Coll. Am. Mus. Nat. Hist.

APHIDÆ.

Hormaphis hamamelidis *Fitch.*

PLATE XVI, FIG. 5.

Brysocrypta hamamelidis FITCH, 4th Rep. State Cab. Nat. Hist. N. Y. p. 69.

Produces a conical gall on the upperside of the leaf of the Witch Hazel (*Hamamelis virginica*). Very common.

Hormaphis spinosus (*Shimer*).

PLATE XVI, FIG. 4.

Hamamelistes spinosus SHIMER, Trans. Am. Soc. Vol. I, p. 284.

Hormaphis spinosus RILEY, Bull. U. S. Geo. Sur. (Hayden), Vol. V, p. 14 ; THOMAS, 3d Rep. Nox. Ins. Illinois, p. 207.

This gall is a deformation of the fruit-bud of the Witch Hazel (*Hamamelis virginica*) and is covered with a number of rather long spines. It is green and has at the base a funnel-like exit. Central Park, N. Y. City, in July and August. Not common.

Four examples. Coll. Am. Mus. Nat. Hist.

Colopha ulmicola (*Fitch*).

Byrsocrypta ulmicola FITCH, 5th Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1858, p. 843.

Thelaxes ulmicola WALSH, Proc. Ent. Soc. Phil. Vol. I, p. 305 ; Am. Ent. Vol. I, p. 108.

Colopha ulmicola MONELL, Can. Ent. Vol. IX, p. 102.

Glyphina ulmicola THOMAS, 3d Rep. Nox. Ins. Ill. p. 142.

Colopha ulmicola RILEY, Bull. U. S. Geo. Sur. (Hayden), Vol. V, p. 9.

This species forms a cock's-comb-like gall on the upperside of the leaves of the White Elm (*Ulmus americana*) in June when the leaves are yet young. Common.

***Pemphigus rhois* Fitch.**

PLATE XVI, FIG. 6.

Pemphigus rhois WALSH, Am. Ent. Vol. I, p. 108; THOMAS, 3d Rep. Nox. Ins. Ill. p. 152; PACKARD, Guide to Study of Insects, p. 524.

The gall of this species occurs on the underside of the leaves of the Smooth Sumac (*Rhus glabra*) and Staghorn Sumac (*Rhus typhina*). It somewhat resembles a tomato in shape, and is of a yellowish green color tinged with red. It is fully grown in August, and the insects inside are fully developed in September. Common.

Two examples. Coll. Am. Mus. Nat. Hist.

***Pemphigus populicaulis* Fitch.**

Pemphigus populicaulis FITCH, 5th Rep. Nox. Ins. N. Y. Trans. Agricul. Soc. 1858, 845; LEBARON, 3d Rep. Nox. Ins. Ill. 1873, p. 193; THOMAS, 3d Rep. Nox. Ins. Ill. (Trans. Dept. Agricul. 1878), p. 149; WALSH & RILEY, Am. Ent. Vol. I, 2d Ser. 1880, p. 206; PACKARD, 5th Rep. U. S. Ent. Com. p. 471.

This species forms an irregularly rounded, green gall, at the junction of the stem and leaf of the Poplar (*Populus monilifera*). On the underside the gall is provided with a mouth-like orifice. Common at Passaic, N. J.

***Phylloxera caryæcaulis* (Fitch).**

Pemphigus caryæcaulis FITCH, 1st Rep. Nox. Ins. Trans. N. Y. Agricul. Soc. 1854, p. 859.

Phylloxera caryæcaulis THOMAS, 3d Rep. Nox. Ins. Illinois, p. 106; PACKARD, 5th Rep. U. S. Ent. Com. p. 322.

This species is found upon the twigs and leaf-stalks of different kinds of Hickories. It forms a hollow, green, bullet-like gall of a leathery texture. When fully grown it opens and becomes cup-shaped. The gall makes its appearance in May and early in June. Very common.

ARACHNIDA.

Acarus serotinæ, n. sp. (?)

PLATE XVI, FIG. 7.

This gall is produced by a mite (*Acarus*) and is probably undescribed. It occurs on the upperside of the leaves of the Wild Cherry (*Prunus serotina*) and is quite common in this neighborhood. The gall is about two-fifths of an inch long, and is a stem-like tube which expands into a pouch-like sac at the end. It is hollow, with an exit on the underside of the leaf. I name it provisionally *Acarus serotinæ*.

Several examples. Coll. Am. Mus. Nat. Hist.

EXPLANATION OF PLATES.

PLATE IX.

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|---|---|
| <i>Fig. 1.</i> <i>Rhodites bicolor</i> (Harr.). | <i>Fig. 5.</i> <i>Rhodites dichlocerus</i> (Harr.). |
| " 2. " <i>ignota</i> O. S. | " 6. " <i>verna</i> O. S. |
| " 3. " <i>radicum</i> O. S. | " 7. <i>Diastrophus bassettii</i> Beut. |
| " 4. " <i>globulus</i> Beut. | |

PLATE X.

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|---|--|
| <i>Fig. 1.</i> <i>Diastrophus cuscuteformis</i> O. S. | <i>Fig. 4.</i> <i>Amphibolips confluentus</i> (Harr.). |
| " 2. " <i>nebulosus</i> O. S. | " 5. " <i>inanis</i> (O. S.). |
| " 3. <i>Andricus cornigerus</i> (O. S.). | " 6. " <i>ilicifoliæ</i> (Bass.). |

PLATE XI.

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|---|--|
| <i>Fig. 1.</i> <i>Andricus futilis</i> (O. S.). | <i>Fig. 4.</i> <i>Andricus singularis</i> (Bass.). |
| " 2. " <i>similis</i> (Bass.). | " 5. " <i>lana</i> (Fitch). |
| " 3. " <i>clavula</i> (Bass.). | " 6. <i>Cynips</i> (?) <i>prinoides</i> Beut. |

PLATE XII.

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| <i>Fig. 1.</i> <i>Acraspis erinacei</i> (Walsh). | <i>Fig. 4.</i> <i>Holcaspis globulus</i> (Fitch). |
| " 2. <i>Neuroterus floccosus</i> (Bass.). | " 5. " <i>duricoria</i> Bass. |
| " 3. <i>Dryophanta polita</i> (Bass.). | " 6. <i>Cynips strobilana</i> O. S. |

PLATE XIII.

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| <i>Fig. 1.</i> <i>Neuroterus batatus</i> (Fitch). | <i>Fig. 3.</i> <i>Biorhiza forticornis</i> (Walsh). |
| " 2. <i>Andricus petiolicola</i> (Bass.). | " 4. <i>Cecidomyia serrulatæ</i> O. S. |

PLATE XIV.

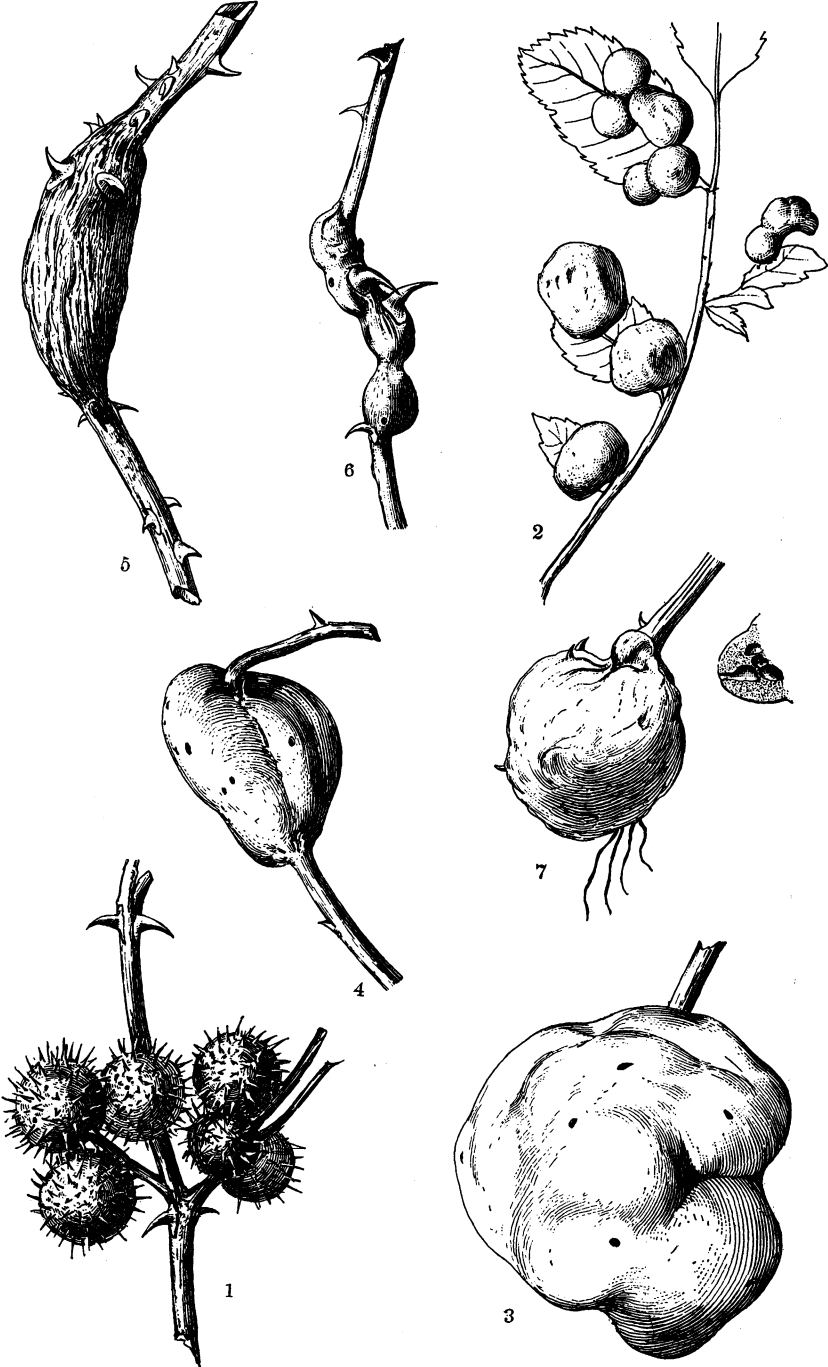
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|---|--|
| <i>Fig. 1.</i> <i>Cecidomyia holotricha</i> O. S. | <i>Fig. 3.</i> <i>Cecidomyia persicoides</i> O. S. |
| " 2. " <i>caryæcola</i> O. S. | " 4. " <i>tubicola</i> O. S. |

PLATE XV.

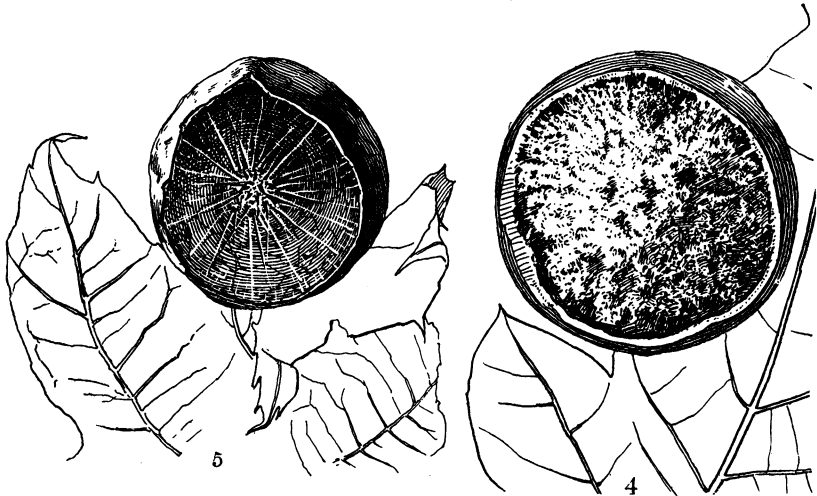
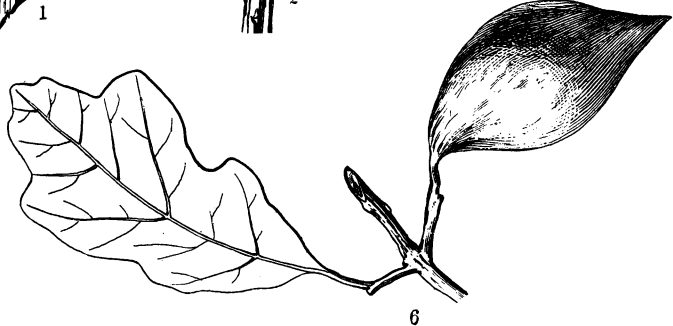
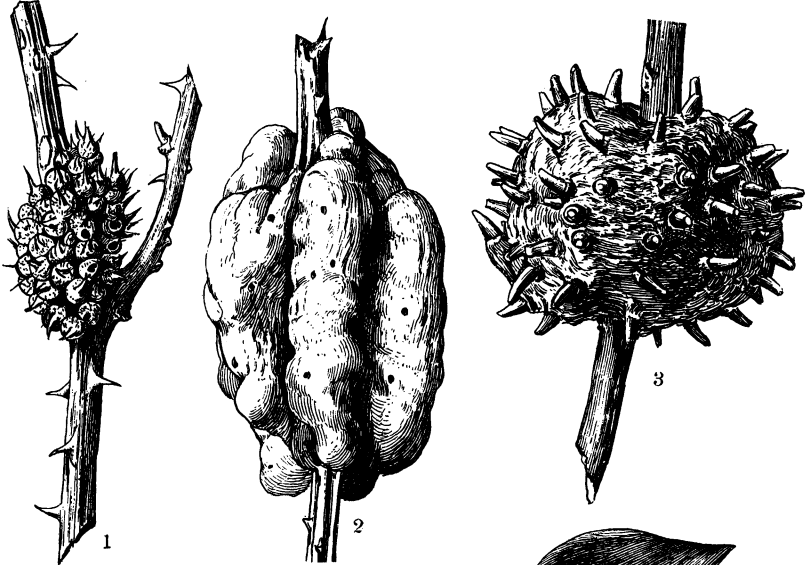
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|---|--|
| <i>Fig. 1.</i> <i>Cecidomyia strobiloides</i> O. S. | <i>Fig. 4.</i> <i>Cecidomyia poculum</i> O. S. |
| " 2. " <i>rigidæ</i> O. S. | " 5. " <i>clavula</i> Beut. |
| " 3. " <i>pilulæ</i> (Walsh). | |

PLATE XVI.

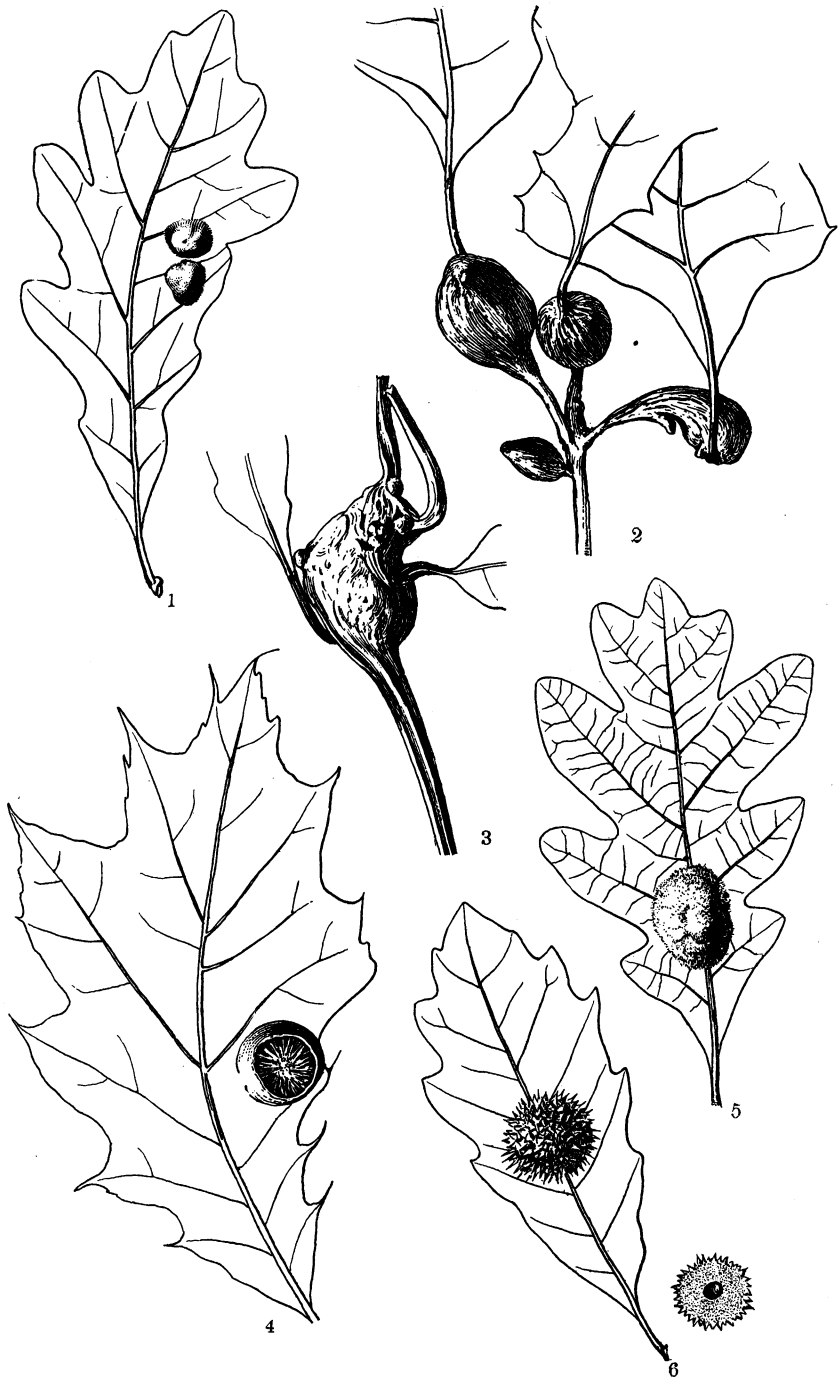
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|---|--|
| <i>Fig. 1.</i> <i>Pachypsylla venusta</i> O. S. | <i>Fig. 5.</i> <i>Hormaphis hamamelidis</i> Fitch. |
| " 2. " <i>cucurbitæ</i> Riley. | " 6. <i>Pemphigus rhois</i> Fitch. |
| " 3. " <i>gemma</i> Riley. | " 7. <i>Acarus serotinæ</i> Beut. |
| " 4. <i>Hormaphis spinosus</i> (Shimer). | |



1. *Rhodites bicolor* Harr.
 2. " *ignota* O. S.
 3. " *radicum* O. S.
 4. *Rhodites globulus* Beut.
 5. " *dichlocerus* Harr.
 6. " *verna* O. S.
 7. *Diastrophus bassettii* Beut.

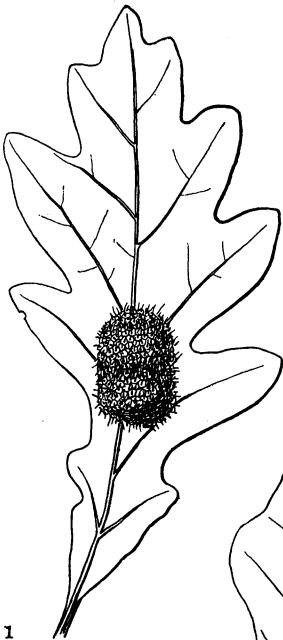


1. *Diastrophus cuscutæformis* O. S.
 2. " *nebulosus* O. S.
 3. *Andricus cornigerus* O. S.
 4. *Amphibolips confluentus* Harr.
 5. " *inanis* O. S.
 6. " *ilicifoliæ* Bass.

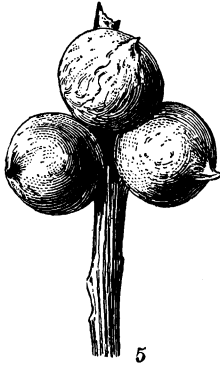


1. *Andricus futilis* O. S.
2. " *similis* Bass.
3. " *clavula* Bass.

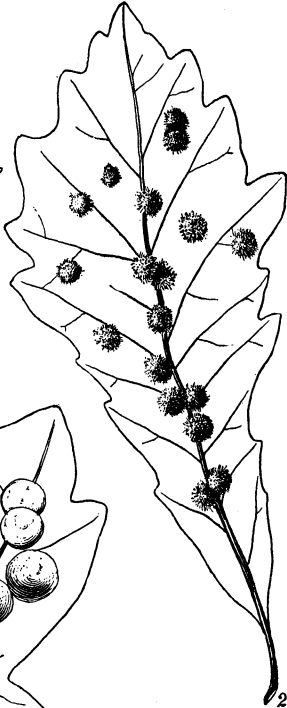
4. *Andricus singularis* Bass.
5. " *lana* Fitch.
6. *Cynips* (?) *prinoides* Beut.



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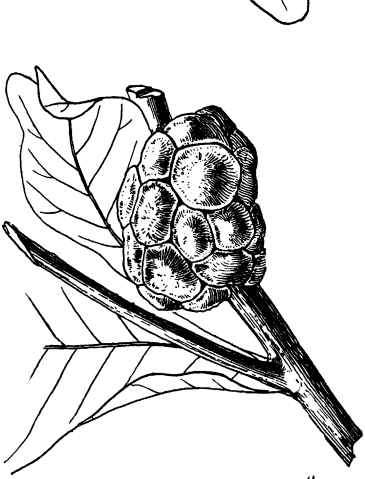
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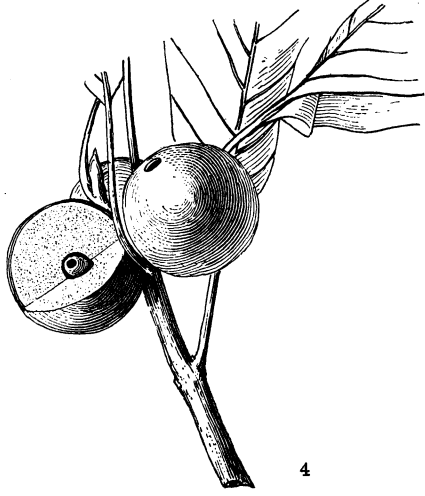
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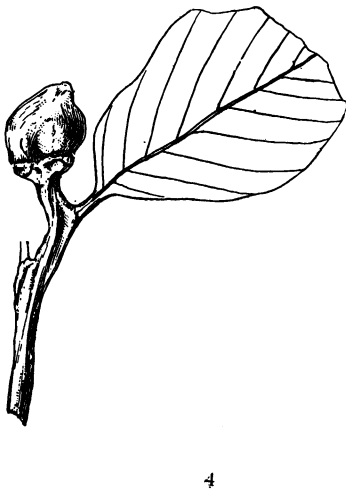
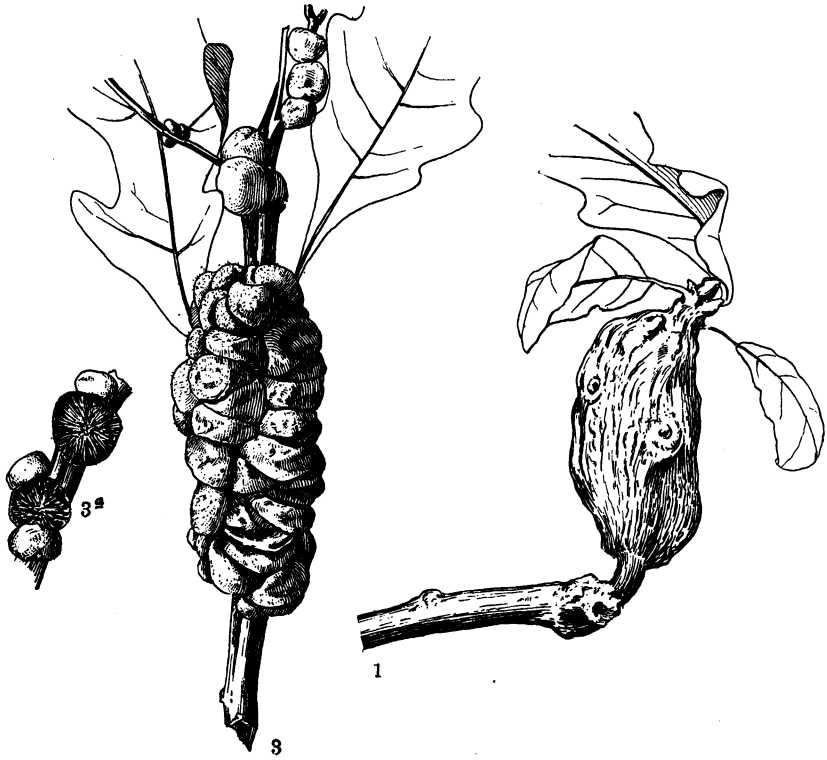
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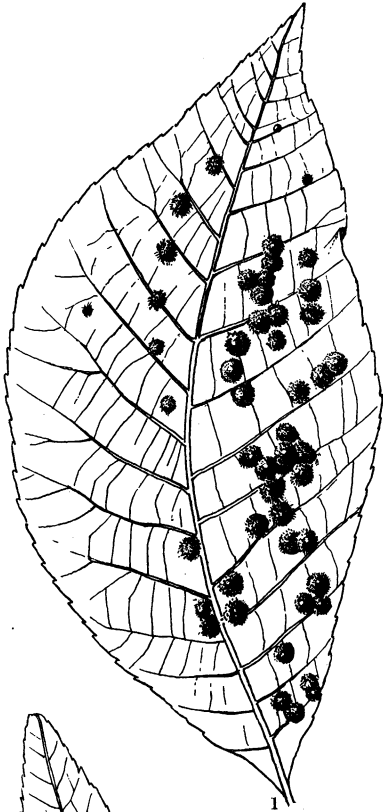
- 1. *Acraspis erinacei* Walsh.
- 2. *Neuroterus floccosus* Bass.
- 3. *Dryophanta polita* Bass.

- 4. *Holcaspis globulus* Fitch.
- 5. " *duricoria* Bass.
- 6. *Cynips strobilana* O. S.

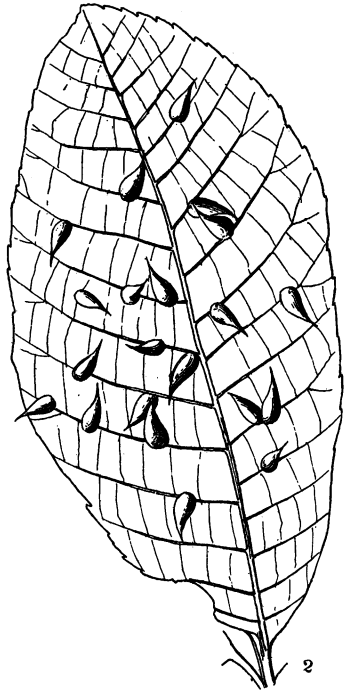


1. *Neuroterus batatus* Fitch.
2. *Andricus petiolicola* O. S.

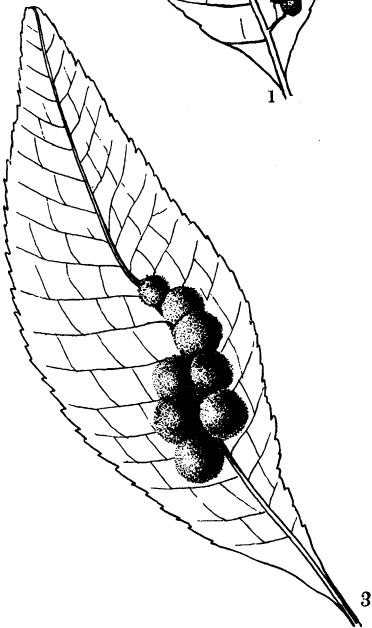
3. *Biorhiza forticornis* Walsh.
4. *Cecidomyia serrulatæ* O. S.



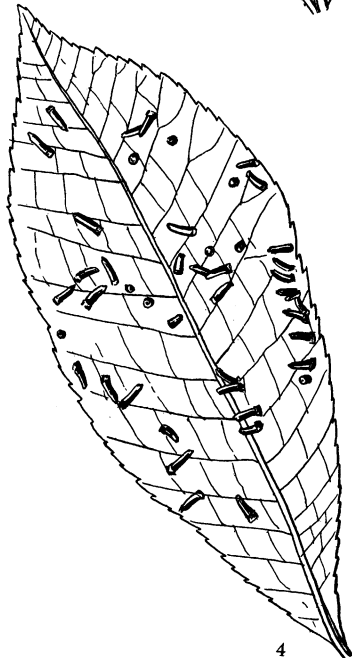
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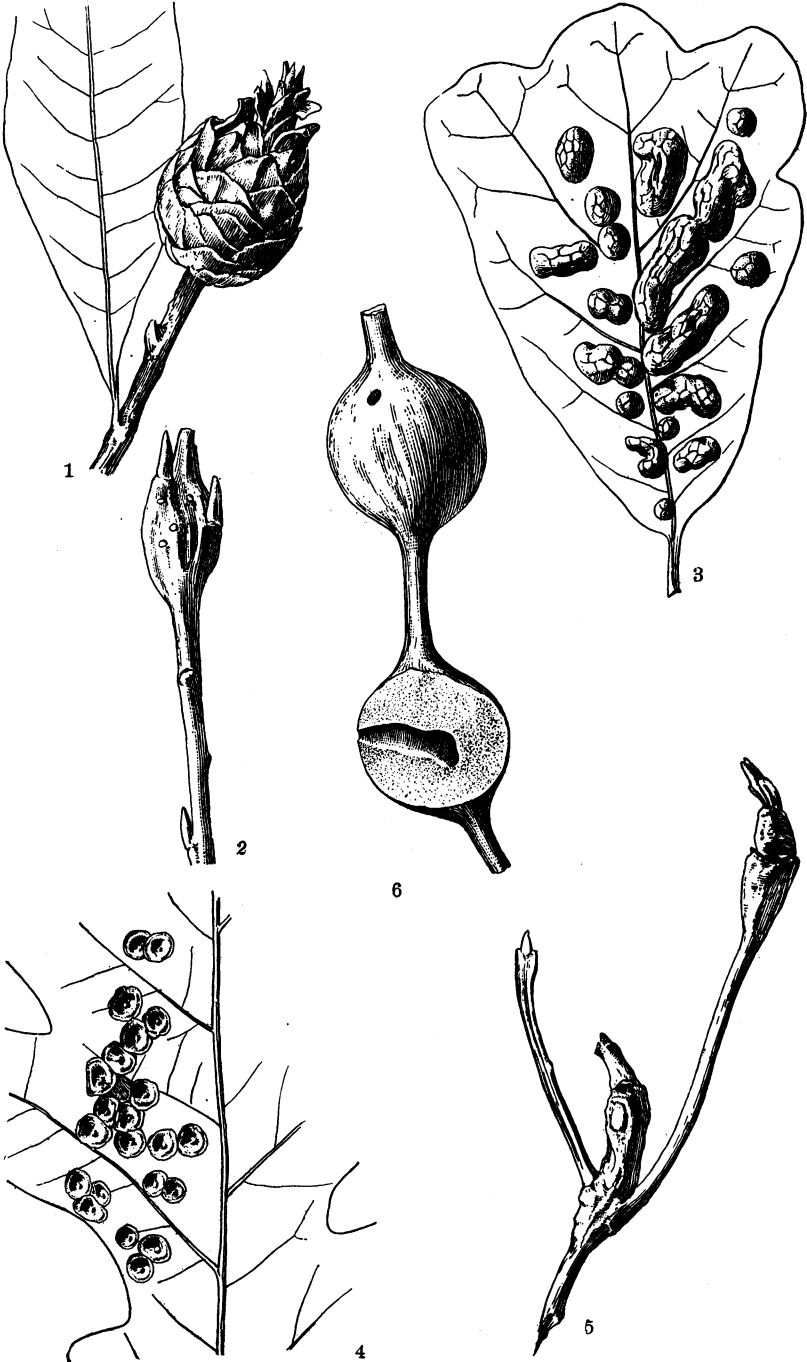
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1. *Cecidomyia holotricha* O. S.
2. " *caryæcola* O. S.

3. *Cecidomyia persicoides* O. S.
4. " *tubicola* O. S.



1. *Cecidomyia strobiloides* O. S.

2. " *rigidæ* O. S.

5. *Cecidomyia clavula* Beut.

3. *Cecidomyia pilulæ* Walsh.

4. " *poculum* O. S.



1. *Pachypsylla venusta* O. S.
2. " *curcurbita* Riley.
3. " *gemma* Riley.

4. *Hormaphis spinosus* Shimer.
5. " *hamamelidis* Fitch.
6. *Pemphigus rhois* Fitch.
7. *Acarus serotinæ* Beut.

