DESCRIPTIONS OF NEW CYNIPIDOUS GALLS AND GALL-WASPS IN THE UNITED STATES NATIONAL MUSEUM.

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THE present paper represents part of a report prepared several years ago entitled "Report upon the Cynipidous Galls and Gall-Wasps in the United States National Museum."

The manuscript of same was handed to the late Dr. C. V. Riley for publication in the Proceedings of the National Museum, but for various reasons it was never submitted by him for publication, and has only been returned to me since his death.

During the time the manuscript was in his hands two other American students of the Cynipidæ, Mr. Homer F. Bassett, of Waterbury, Connecticut, and Prof. C. P. Gillette, of Fort Collins, Colorado, have published descriptive papers upon the family, and I now find many of the species, first described in my manuscript, are preoccupied by these authors.

The following forty-three gall-making species are, however, so far as I know, still undescribed, and may be recognized from the following descriptions:

Genus TRIGONASPIS, Hartig.

1. TRIGONASPIS RADICIS, new species.

Gall.—An irregularly rounded, rugose, fleshy gall, occurring in clusters on the roots of an unknown oak in Utah.

The color of the dried specimen is now brown, although a label says: "Large, soft, white galls, purple on top." They measure 1 cm. in length, by 6 mm. in diameter.

Gallfly.—Female. Length, 4.2 mm. Head yellow; ocelli and eyes black; thorax reddish piceous, varied with dark brown on mesonotum; metathorax, antennæ, middle and posterior tibiæ and abdomen dark brown, the latter almost black; legs reddish yellow.

Stature similar to *T. megaptera*. Head minutely confluently punctate; antennæ long, filiform, pubescent, the third joint not quite twice as long as the fourth, the two basal joints pale. Thorax polished with

two broad parapsidal grooves, the margins of which are rounded. Scutellum coarsely rugose, elevated posteriorly and projecting over the metathorax. Mesopectus black. Mesopleura polished, the triangular part beneath the wing punctate and hairy. Metanotum and metapleura rugoso-punctate. Abdomen smooth, shining, more or less black dorsally, at base and beneath reddish brown; petiole short. Wings large, hyaline, the pubescence short and indistinct, veins brownish, the areolet and cubital cell closed.

Male.—Length, 3.2 mm. It differs from female only as follows: Head, thorax, and abdomen entirely black, the latter being small triangular; the antennæ longer, 15-jointed, the third joint long, slightly bent and excised at the middle, thickened at tips, while all the legs are reddish yellow.

Type.—No. 561, U.S.N.M.

Described from 5 specimens—4 female, 1 male—labeled Utah, June 20, 1885. In my own collection are many specimens of this species collected by Mr. E. A. Schwarz at American Fork Canyon, Alta, Milk Creek, Salt Lake, and Wasatch, Utah, during the month of June, 1893.

Genus DRYOPHANTA, Förster.

2. DRYOPHANTA VESICULOIDES, new species.

Gall.—In size, color, and general appearance exactly similar to the gall produced by *D. vesicula*, Bassett: I can detect no difference, but, whereas that species is developed from the buds of *Q. alba*, this one is developed from the buds of *Q. obtusiloba*. This, in itself, would not be a sufficient reason for considering it a distinct species, but the gallfly which issues therefrom is very distinct and much smaller.

Gallfly.—Female. Length, 1.4 mm. Black, polished, the antennæ yellowish, obfuscated toward tips; legs yellowish, the coxæ at base, all femora in the middle, and posterior tibiæ obfuscated or brownish. Antennæ 14-jointed, long, nearly the length of the body, the third joint one-third longer than fourth, the eight terminal joints short but widened. Thorax short, broad, the parapsidal grooves distinct, slightly converging posteriorly; pleura smooth; scutellum minutely rugose, rounded, convex, the foveæ small but distinct. Abdomen broader vertically than long, compressed, the ventral valve slightly exserted, testaceous. Wings hyaline, pubescent, the veins pale yellowish; the cubital cell is almost closed, but the cubitus is very pale and indistinct.

Male.—Length, 1.8 mm. In colorational detail like the female, but the antennæ are 15-jointed, yellowish, the third joint as long as the two basal joints united, straight, but slightly thickened apically; the scutellum differs in being smooth and polished; while the abdominal petiole is short, and the legs are a little darker or more obfuscated than in the female.

Type.—No. 3057, U.S.N.M.

Four specimens—1 male, 3 females, reared May 10, 1883—received from J. G. Barlow, Cadet, Missouri.

3. DRYOPHANTA EMORYI, new species.

Gall.—A small, brown, thin-shelled, semiglobular gall, attached by a small point to the upper or under surface of a leaf of *Quercus emoryi*. Internally there is a small, central kernel, held in place by delicate filamentary fibers. Diameter, 2 to 3 mm.

Gallfly.—Female, length, 2 mm. Form rather slender, polished black; antennæ and legs dark brown, almost black, the articulations and tarsi dark honey-yellow or slightly reddish. The head and thorax are covered with long sparse pile; lower part of face with some coarse punctures, and a poorly defined median ridge. The antennæ extend to base of the abdomen, pubescent, 14-jointed, the third joint more than one-third longer than the fourth: flagellar joints three, four, five, and six, are rounded at apex; the others are short, slightly widened and truncate at apex, but narrowed and rounded at base, the terminal joint one-third longer than the preceding, fusiform.

The thorax has two broad, distinct, parapsidal grooves; scutellum minutely rugose, elevated and rounded posteriorly, but with a small, smooth, shining spot on the disk; at base it is transversely depressed and apparently without the usual foveæ; if they exist they are small. The mesopleura are smooth, shining, but when carefully examined a few striæ can be detected anteriorly and basally. The abdomen is large, polished, longer than the head and thorax together, compressed, and, when viewed from the side, obovate in outline; the ventral valve projects considerably, and is armed and hairy. Legs rather densely pubescent. Wings long, hyaline, pubescent, the veins strongly developed, dark brown, slightly piceous.

Type.—No. 3058, U.S.N.M.

Three specimens, reared December 13, 1880, from the above-described gall; collected by Mr. H. H. Rusby, at Silver City, New Mexico.

4. DRYOPHANTA PULCHRIPENNIS, new species.

Gall.—The specimens of the gall from which this species was reared can not now be found in the collection, but the following description of it, taken from the department records, may assist in its identification:

Received from Mr. H. H. Rusby, from Arizona, a leaf of an undetermined oak with six galls on its under surface; four of these are in a row in the middle between the midrib and the margin; they are light brown, almost hemispherical, subopaque, reticulate, and with scattered, very minute, reddish tubercles, which have some short white hairs basally.

Gallfly.—Female. Length, 1.8 to 2 mm. Brownish yellow, the second abdominal segment apically dark brown. In one of the two specimens in the collection, the mesonotum, scutellum, and metathorax are brownish; eyes, ocelli, and ungues dark brown. Head, thorax, and pleura smooth, shining; the head much wider than the thorax and thick antero-posteriorly. Antennæ about as in *D. emoryi*, the fourteenth joint, however, not being distinctly separated from the thirteenth,

connate. Mesonotum short, nearly as broad as long, with two parapsidal grooves, but not as distinct as usual in the genus.

Abdomen as long as the head and thorax together, compressed, when viewed from the side, truncate behind; the ventral valve projects very considerably and is armed with an unusually long, hairy spine, half the length of hind femur. Wings hyaline, the front wings being beautifully clouded or spotted with brown blotches as follows: A blotch in the cubital cell near the basal vein, one at the break in the anal vein, one in the cell formed by this vein and the branch of the cubitus which extends to the apical margin, and in the space known as the second submarginal cell are two blotches, one near the apex, the other at the base, the last inclosing the whole tip of the radius. Veins brown, the radius slightly thickened at tip; the vein at base of radial cell slightly clouded.

Types.—No. 3059, U.S.N.M.

Two female specimens, reared during April, 1881.

5. DRYOPHANTA RADICOLA, new species.

Gall.—This gall also could not be found in the collection. The Note Book says:

Received from J. G. Barlow, Cadet, Missouri, one much shriveled gall, found on the roots of scrub oak.

Gallfly.—Female. Length, 3 mm. Brick-red, antennæ pale, brownish toward tips; eyes brown-black.

Head minutely, confluently punctate; collar rugose; disk of mesopleura smooth, polished; mesonotum smooth, polished, the two parapsidal grooves broad and well defined; scutellum cushion-shaped, coarsely, reticulately rugose, with two transverse, nearly confluent, foveæ at base. Wings hyaline, veins blackish, the areolet and cubital cell distinct.

Type.—No. 3060, U.S.N.M.

Described from one female specimen, reared May 21, 1886.

Genus ANDRICUS, Hartig.

6. ANDRICUS MORRISONI, new species.

Gall.—An irregular, globular gall, found at the base of a leaf, projecting about equally above and below; polythalamous. It is of a fleshy consistency and contains numerous larval cells; diameter from 4 to 7 mm.

Gallfly.—Female. Length, 2 mm. Head, thorax, and legs brown; the space surrounding eyes, antennæ, and anterior tibiæ, yellowish, the abdomen black. Antennæ 13-jointed, the terminal joint very long. Head, thorax, pleura, and scutellum minutely, rugosely punctate; parapsidal grooves subobsolete, the short anterior median grooves deeply impressed at tips and the line on the shoulders distinct. Wings hyaline, veins

yellowish, the areolet distinct, while the cubital cell is closed for two-thirds of its length. The black abdomen is delicately, reticulately sculptured.

Male.—Length, 1.6 mm. Entirely black, the antennæ and legs pale yellow. Antennæ long, 15-jointed, the third joint slightly curved; thorax finely, reticulately punctate, without grooves, the abdomen small and pedunculated.

If the female had remained unknown, this species would have been placed in the genus *Neuroterus*, the male agreeing more closely in its structural characters with that genus than with *Andricus*.

Type.—No. 3061, U.S.N.M.

Described from 1 female and 7 male specimens, reared June 28, 1883, from a gall occurring on an unknown oak in Arizona, received from H. K. Morrison.

7. ANDRICUS MURTFELDTÆ, new species.

Gall.—An irregular, hard, pithy, brown, globular gall; externally finely granulated and with a few short blunt spines; interiorly of a hard, pithy, brown substance; polythalamous. Diameter, 8 mm.; length, 10 mm.

Gallfly.—Male. Length, 2.6 mm. Head, thorax, and abdomen black, subopaque, the abdomen along the venter and at apex brownish; antennæ and legs, including coxæ, yellowish brown, the posterior pair slightly obfuscated; ocelli red; eyes brown; tegulæ and veins of wings brown, the basal vein and apical portion of the submarginal from it, and the angulated vein at base of marginal cell, blackish.

Head and thorax finely, confluently punctate, scutellum rugose, pleura punctate and slightly striate. Antennæ 15-jointed, rather long, the third joint longest, the following joints slightly oval, and delicately fluted; the antennæ are more yellowish than the legs. Parapsidal grooves slender but sharply defined; two short median grooves anteriorly and a slight indication of a median groove posteriorly, the groove on the shoulders distinct. Wings hyaline, pubescent, the veins very distinct, the cubital cell and areolet closed.

Type.—No. 3062, U.S.N.M.

Described from 3 male specimens with the gall, labeled simply from Miss Murtfeldt, and probably taken at Kirkwood, Missouri.

8. ANDRICUS DASYDACTYLI, new species.

Gall.—This gall, in structure, is very peculiar, and consists of an oblong or elongated, woody tube, in shape not unlike a date seed; it is 2 centimeters long by from a half to three-quarters of a centimeter in diameter, one end being attached sessilely to the branch and covered with long, brownish-yellow wool. Internally there is a cylindrical hollow, which, however, does not extend its entire length, being interrupted or stopped up by the small larval cell which is situated near its center.

Sometimes three or more of these galls occur close together on the branch, and with their woolly covering present a curious appearance. One specimen in the collection is almost globular, but all the others are as described above.

Gallfly.—Female. Length, 3.8 mm. Clear reddish brown; vertex of head and the extreme tip of abdomen dusky; antennæ and legs brownish yellow.

Head and thorax minutely, finely punctate, the pleura with fine striæ. Antennæ 14-jointed, rather long, the third joint one-third longer than fourth, the following to eighth gradually shortening, beyond this about equal, the terminal joint being slightly lengthened. The parapsidal grooves are only distinct on the posterior half of the mesonotum, entirely wanting anteriorly; anteriorly extending to about the middle of the mesonotum are two median, glabrous lines; posteriorly there is a long median grooved line, while the line on the shoulders is distinct; the scutellum is more coarsely rugose at the apex, the basal foveæ large, ovate, oblique, approximate, glabrous at bottom. The abdomen is slightly longer than the head and thorax together and of the usual shape. Wings glassy hyaline, only slightly pubescent, the veins pale yellowish, except the basal nervure and the vein at base of marginal cell, which are brown; this last vein is arcuate but not angulate. The areolet is large and the cubital cell is not quite closed.

Type.—No. 3063, U.S.N.M.

Described from many female specimens, which issued at various dates between January 18, 1885, and February 11, 1886. The gall occurs in California on *Quercus chrysolepis*, and was sent to the Department of Agriculture by Mr. Albert Koebele.

9. ANDRICUS PACIFICUS, new species.

Gall.—An irregular, globular gall, almost round, or then with the apex acuminate and the base, or where the gall is attached to the twig, narrowed and elongated. It is of a light brownish-yellow color, smooth, and, in two or three specimens, slightly polished; internally it is of a hard, pithy structure with a distinct, large larval cell; diameter variable, from 6 to 16 mm. The great variation in size may be occasioned by the smaller ones being deformed or parasitized specimens.

Gallfly.—Female. In stature, color, and markings this species can not be separated from *A. dasydactyli*, yet the gall produced by it is entirely different, and it must necessarily be distinct, but after the closest study I am unable to seize a single character that will separate the flies, and the gall must be relied upon to separate the two species.

Types.—No. 3064, U.S.N.M.

Two female specimens of the flies, received from Mr. Albert Koebele, Placer County, California, who found them growing in *Quercus chrysolepis*.

10. ANDRICUS WISLICENI, new species.

Gall.—A small, globular gall, with a slight projection at base where it is attached to the twig; it varies in color from a yellow brown to dark brown, and some are mottled with purple and brown. It is hard, and contains in the center a small larval cell; diameter, 3 to 4 mm.

Gallfly.—Female. Length, 3 to 3.4 mm. Pale brownish yellow, almost devoid of pubescence, the abdomen polished and discolored with brown, eyes dark brown, the mandibles black.

Head and thorax finely punctate, shining; in front of the anterior ocellus is a deep transverse fovea, and there are some coarse scattered punctures on the mesonotum. Antennæ 14-jointed, the third joint about one-fourth longer than the fourth, the joints, from seventh to apex, short, about twice as long as wide, dusky, and delicately fluted. Parapsidal grooves distinct, the groove on the shoulders very long, distinct, and a little bent anteriorly. Scutellum cushion-shaped, rugose, the foveæ at base large and distinct, separated only by a slight carina; pleura smooth, but under a high power, showing faint delicate striæ. Wings hyaline, the pubescence short, veins, except the submarginal vein from the portion extending from the basal vein to apex, and the angulated cross vein at base of marginal cell, which are brownish or piceous, yellowish.

Type.—No. 3065, U.S.N.M.

Nine female specimens, reared October 14, 1886, from the galls sent to the National Museum by Mr. Albert Koebele, collected in Sacramento County, California, on *Quercus wisliceni*.

11. ANDRICUS CHRYSOLEPIDIS, new species.

Gall.—A very hard, ovate, or globular gall, with a nipple at apex and a centrally embedded larval cell; externally it is covered with a dense, fine, short pubescence like the pubescence on a peach, although sometimes this is rubbed off. Diameter, 5 to 8 mm.

Gallfly.—Female. Length, 3 to 5 mm. Reddish brown, antennæ and legs brownish yellow, eyes and abdomen dark, reddish brown.

Head and thorax closely punctate, sparsely pubescent. Antennæ 14-jointed, very slightly thickened at tips. The thorax, besides the two parapsidal grooves which are obsolete anteriorly, has a median groove extending anteriorly for more than half the length of the mesonotum, two short median grooves anteriorly on each side of this, and the usual groove on the shoulders. Scutellum cushion-shaped, rugose, the foveæ distinct; pleura finely, minutely rugose, slightly striated at base. Abdomen polished, the short apical segments under a high power show a fine, delicate punctuation, while the ventral valve projects but slightly. Wings glassy hyaline, veins yellowish, areolet small; neither the apex of the submarginal nor the radial vein reach the margin.

Types.—No. 3066, U.S.N.M.

One female, reared from a gall found on *Quercus chrysolepis*, at Colfax, Placer County, California, October 8, 1885, by Mr. Albert Koebele; and two specimens reared January 18 and 29, 1886, from same galls. Other of the galls are No. 3816, U.S.N.M.

12. ANDRICUS APICALIS, new species.

Galls.—Irregular, brownish black globular galls of a dense pithy substance, growing on the roots of *Quercus wislizeni*, sometimes three or four together, pressing each other into irregular shapes. Diameter usually about half an inch.

Gallfly.—Female. Length, 5.8 to 7 mm. Bright brick red, the mandibles black at tips. Head and thorax finely punctate with some larger, coarser punctures scattered over the surface, and almost free from pubescence. Cheeks full, bulging. Antennæ 14-jointed, filiform, the third joint slightly longer than fourth and narrowed toward base, the apical joint twice as long as the preceding, fusiform.

Parapsidal grooves distinct, a more or less distinct medial groove and distinct grooved lines on the shoulders. Scutellum rugose, with two large foveæ at base, separated by a carina; pleura anteriorly slightly rugose, posteriorly nearly smooth, with some very delicate striæ. Abdomen smooth, with a few hairs on the side of second segment; the terminal segments show a fine, delicate punctuation; the spine of the ventral valve is long. Wings hyaline, except the entire apical third, which is smoky or dark brown, the veins stout, black, the angular projection in marginal cell at base being very distinct.

Type.—No. 3067, U.S.N.M.

Three specimens, reared by Mr. Albert Koebele, from galls collected in Sacramento County, California, but the year of collecting and the date of rearing are not given. A single specimen (No. 3714) was reared February 17, 1886. The bright red color and smoky apices of wings will readily distinguish the species.

13. ANDRICUS CONGREGATUS, new species.

Gall.—An irregular, rugose, yellowish brown woody swelling, containing numerous cells growing apparently from the extreme tips of very slender twigs of *Quercus chrysolepis*, the gall appearing to have a long peduncle, or it may be at the apex of the petiole of a leaf, the leaf in consequence being aborted. The gall is more or less contracted in the middle and varies in length from 2 to 4 cm., and in diameter from 1 to 2 cm.

Gallfly.—Female. Length, 2 mm. Pale brown or brownish yellow, the eight terminal antennal joints, the middle and posterior tibiæ, metathorax, abdomen dorsally, and wing veins brown.

Head and thorax closely, uniformly punctate. Antennæ 14 or 15 jointed, depending upon whether the terminal joint, which presents a rather distinct suture, is counted as one or two joints. The terminal

joints all appear delicately fluted. Mesonotum has three distinct grooves, extending its whole length, and the groove on the shoulder is long. Scutellum minutely rugose, the foveæ oblique, distinct, but rather widely separated. Wings hyaline, with short pubescence.

Type.—No. 3068, U.S.N.M.

Seven female specimens, received from Prof. E. W. Hilgard, Oakland, California, and reared November 10, 1876. The gall also occurs on *Quercus agrifolia*, and Professor Riley says: "A woody deformation of staminate aments and quite abundant on some trees."

14. ANDRICUS EXCAVATUS, new species.

Gall.—In the branches of the red oak, *Quercus rubrum*, toward the end of summer, appear long longitudinal slits or fissures, filled with irregularly shaped cells or kernels, which are usually smooth and polished, and generally of an oval, flattened form. These are the larval cells of a Cynipid, which fall to the ground in the fall, where the larvæ within undergo their final transformation.

After the larval cells have fallen to the ground from their matrices, the twigs present broad grooves, fissures, and excavations, the relative length, depth, and appearance depending entirely upon the number of cells they had contained. One twig in the collection of the National Museum from which these larval cells had fallen exhibits a broad excavation over 2 inches long.

The flattened larval cell varies considerably in shape and size, but usually it is from 5 to 6 mm. long by 3 to 5 mm. in diameter.

Gallfly.—Female. Length, 3 to 3.4 mm. Reddish brown, the antennæ, eyes, posterior tibiæ, metathorax, and dorsum of abdomen dark-brown. Head and thorax finely punctate. Antennæ 14-jointed, pubescent; mesonotum with three distinct grooves and anteriorly between the median and lateral grooves are two short grooves, the groove on the shoulders distinct. Scutellum rugose, rounded posteriorly, the foveæ confluent, polished. Wings hyaline, veins brownish yellow.

Type.—No. 3069, U.S.N.M.

Three female specimens, in poor condition, reared June 6, 1883. The gall was collected somewhere in the New England States. I have, however, collected the same gall in North Carolina.

1 ANDRICUS RILEYI, new species.

Gall.—A small brown globular gall, attached by a slender point to the midrib of a leaf. Diameter a little over 3 mm. The shell is very thin and brittle and the larval cell occupies the whole of the interior.

Gallfly.—Female. Length, 3.2 mm. Head, antennæ, and thorax brick red, legs and abdomen pale brown, eyes dark brown, tegulæ yellowish. Antennæ 14-jointed, finely pubescent, more especially toward tips. Head and thorax minutely punctate. Parapsidal grooves distinct, an indication of a median groove and two short median grooves

anteriorly which extend to the middle of the mesonotum, the groove on the shoulders long, distinct. Scutellum rugose, foveæ large, confluent; mesopleura punctate, except a small, smooth, glabrous spot just beneath the insertion of wings. Abdomen shining, with a few hairs on side of the second segment near the base. Wings hyaline, pubescent, veins brown, areolet and cubital cell closed; the radius extends to the margin, but not the apex of the submarginal vein. At base of the marginal cell is a small, slightly dusky cloud.

Type.—No. 3070, U.S.N.M.

One female specimen, reared at St. Louis, Missouri, by Dr. C. V. Riley, July 2, 1877. The gall occurs on *Quercus rubrum*.

16. ANDRICUS PERPLEXUS, new species.

Gall.—A small globular gall, somewhat pointed at apex and covered externally with an exceeding fine, short, grayish pubescence or bloom. Internally the larval cell occupies most of the gall. Diameter, 5 mm.

Gallfly.—Female. Length, 2.8 mm. Head, antennæ, legs—except the middle and posterior tibiæ, which are dark brown—and collar pale brown, eyes and thorax dark brown, pleura and abdomen black, shining. Antennæ 15-jointed, pubescent, the terminal joints slightly incrassated. Head and thorax minutely confluently punctate; parapsidal grooves distinct, two short median grooves anteriorly and the usual groove on the shoulders. Scutellum rugose, rounded, the foveæ at base large, deep, and approximate. The abdomen is of the usual shape with only a few sparse hairs on the side of the second segment. Wings hyaline, pubescent, veins brownish, the submarginal and median veins basally yellowish. The areolet is exceedingly small, contracted, almost obsolete, cubital cell closed, the vein at base of marginal cell a little angulated.

Type.—No. 3071, U.S.N.M.

One specimen, reared November 21, 1877. The gall was found on the ground in O'Fallen Park, Missouri, in October, and the species of oak upon which it grows is unknown.

17. ANDRICUS IMBRECARIÆ, new species.

Gall.—A brownish, hard, globular gall, from 7 to 10 mm. in diameter, issuing, usually several together, from a fissure in a twig of *Quercus imbricaria* and *Q. ilicifolia*. The larval cell is nearly always closely cemented to the thick, hard, outer rind, but in a single instance there are a few fibers separating it.

Gallfly.—Female. Length, 4.6 mm. Variable in color from a pale brown to a reddish brown; eyes dark brown; the antennæ dusky or black toward tips. Head and thorax shining, but with a delicate punctuation. Antennæ 14-jointed, sparsely pubescent, the terminal joints delicately fluted. Parapsidal grooves of mesonotum distinct, broadened posteriorly. The longitudinal median groove posteriorly is

wanting, but anteriorly are two short median grooves, and there is the usual groove on the shoulders. Scutellum coarsely rugose, with two broad, approximate foveæ at base, separated by a slight carina. Pleura punctate. Abdomen polished, but wholly covered with an exceedingly fine, delicate punctuation. Wings glassy, hyaline; veins thick, piceous.

Type.—No. 3072, U.S.N.M.

Three female specimens, collected at St. Louis, Missouri, by Dr. Riley; one reared September 6, 1876; two reared October 12, 1881.

Genus CYNIPS, Linnæus.

18. CYNIPS FLAVICOLLIS, new species.

Female.—Length, 4.4 mm. Head and collar brownish yellow, mesonotum, scutellum, and mesopleura black, abdomen reddish brown, the apices of segments dusky, antennæ and legs dark brown. The head and thorax are finely punctate and the whole insect is covered with long grayish pubescence, the dorsum of the abdomen alone being bare. Head dusky on vertex; mandibles bluntly bidentate. Antennæ 14-jointed, a little thickened at tips, the third joint longer than scape and pedicel together; joints 10, 11, 12, and 13 only slightly longer than thick.

The grooves on the thorax can be distinctly detected through the pubescence; two short median grooves anteriorly and a coarse groove on the shoulders. Scutellum minutely rugose, with two approximate, not deep, foveæ at base. The abdomen is longer than the head and thorax together, much compressed, the ovipositor sheaths projecting black, the spine of the ventral valve not quite as long as the terminal tarsal joint.

Wings hyaline, pubescent, veins dark, piceous or brown; the angulation of the vein at base of marginal cell is long and very acute, areolet large, the cubital cell open at base.

Type.—No. 3073, U.S.N.M.

Described from one female specimen labeled simply "S. V. Summers," and probably collected in Illinois. The brownish-yellow head and collar will readily separate this species from all others in the genus.

19. CYNIPS SULCATUS, new species.

Female.—Length, 3 to 4 mm. Head, thorax, and legs, including coxæ, brownish yellow, abdomen and posterior tibiæ dark brown, eyes black, antennæ amber-colored and slightly dusky toward apex. Head closely punctate, thorax sparsely punctate, with slight wavy aciculations, pubescent. Antennæ 15-jointed, rather long, the third joint very long, one-third longer than the fourth, the following joints gradually subequal, the last being slightly longer than the preceding. The parapsidal grooves are abbreviated anteriorly; two short median grooves anteriorly and the grooves on the shoulders are surrounded by dusky bands. The scutellum, as well as the thorax, the abdomen, and the legs, are well

covered with a glittering whitish pubescence. The abdomen is hardly as long as the head and thorax together, and is closely longitudinally grooved or striated; the ovipositor sheaths are not visible and the spine of the ventral valve is very short. Wings hyaline or very slightly tinged with fuscous, the veins brown, distinct; the areolet is large, triangular, the cubital cell closed, while the basal vein of radial cell is but slightly angulated.

Type.—No. 3074, U.S.N.M.

A dozen or more specimens, reared March 28 to April 4, 1882, from a gall found on the live oak at Fort Grant, Arizona, by H. K. Morrison. Unfortunately the gall could not be found in the collection, and the following is all the Record Book has concerning it:

March 21, 1882.—Received from H. K. Morrison two galls on petiole of live oak; they are irregularly roundish and are about the size and color of a large dried pea.

The longitudinally striated abdomen will at once distinguish the species from all others in our fauna.

20. CYNIPS CHRYSOLEPIDICOLA, new species.

Gall.—An irregular, swollen enlargement, surrounding a twig or branch of *Quercus chrysolepis*, exactly similar to the gall *Andricus medullæ*, Ashmead, and indistinguishable from it. It varies in length from half an inch to one inch and a half or more.

Gallfly.—Female. Length, 2 to 3 mm. Pale brown, eight terminal joints of antennæ, metathorax, eyes and ocelli, and the prosternum black or brown black, the dorsum of abdomen dusky.

Head, thorax, and scutellum finely, closely punctate and sparsely covered with a yellowish pubescence. The antennæ are long, 15-jointed, pubescent, fourth, fifth, sixth, seventh, and eighth joints long, subequal with the long third joint; beyond these the joints are short, about twice as long as thick. The parapsidal grooves are obsolete anteriorly, and between them is a median groove extending nearly the whole length of the mesonotum, and two short, median, glabrous lines anteriorly; the groove on the shoulders is short. The pubescence on the thorax and scutellum is often quite dense, and the cheeks are prominent and bulging. The abdomen is greatly compressed, almost free from pubescence, the second segment not occupying half its length, all the following segments distinctly visible, *the ovipositor curving around upon the middle of the back*. Wings hyaline, veins pale brown, the areolet large, the cubital cell closed, the vein at base of radial cell angulated.

Type.—No. 3075, U.S.N.M.

Many specimens, received from Mr. Albert Koebele, collected at Pine Canyon, California, and bred during January and February, 1883. The position assigned this species is uncertain, and it might easily be placed in either *Holcaspis* or *Callirhytis*.

Genus AMPHIBOLIPS, Rheinhardt.

21. AMPHIBOLIPS TINCTORIÆ, new species.

Gall.—A compressed ovate, brownish gall, the opposite sides of which are keeled; the shell is moderately thick, and internally there is a central kernel held in place by fibrous filaments. Length, 2 cm., diameter less than 1 cm.

Gallfly.—Female. Length, 4.6 to 5 mm. Black, the antennæ and abdomen beneath dark brown, apex of the second segment and apices of the short segments brown; legs reddish yellow.

Antennæ 13-jointed; head rugose; thorax striate-rugose, in one specimen distinctly longitudinally striated; in the other the striæ are often oblique and irregular; parapsidal grooves obliterated by the rugosities, or only slightly indicated anteriorly; scutellum coarsely rugose, with two large deep foveæ at base, separated by a carina. Mesopleura rugose, usually hairy, one specimen with a rased smooth spot. Wings hyaline, veins distinct, dark brown, the areolet large, the cubital cell closed, the vein at base of radial cell angulated and inclosed in a brown blotch.

Type.—3076, U.S.N.M.

Two specimens, reared October 16, 1871. Locality unknown. The Note Book says:

> Found in November, 1870, by L. G. Saffer, under *Quercus coccinea* var. *tinctoria*, a curious gall of same structure as 415, but with two carinated sides and with thicker walls.

This species approaches nearest to *A. spongifica*, Osten-Sacken, but the peculiar striated rugose thorax readily distinguishes it from that species and all others in the genus, except the dimorphic form *A. aciculata*, Osten-Sacken.

22. AMPHIBOLIPS TRIZONATA, new species.

Gall.—A large, globular gall, from an inch to an inch and a quarter in diameter, externally resembling *A. coccineæ*, Osten-Sacken, but internally of a white, pithy, cellular structure.

Gallfly.—Male and female. Length, 5 to 6 mm. Entirely black, antennæ, face, tibiæ, and tarsi dark brown; ocelli red.

Head and thorax coarsely rugose. Antennæ, in female, short, 13-ointed; in male, longer, 15-jointed. Eyes prominent. Parapsidal grooves entirely wanting, except the two short anterior median grooves and the groove on the shoulders. Scutellum very coarsely rugose, the foveæ at base large, distinct, and confluent, separated only by a slight carina. Abdomen globose, polished, the apical portion of the second and following segments finely punctate.

Wings hyaline, with three transverse, smoky bands, the one at the base not as distinct as the one across the middle and the one at the

apex of the wing; veins piceous, the areolet wanting, the cubital cell closed.

Type.—No. 3077, U.S.N.M.

Five specimens, reared during June, 1882, from galls received May 2, 1882, from Mr. H. K. Morrison, collected at Fort Grant, Arizona. The gall is said to grow on the blossoms of an oak.

23. AMPHIBOLIPS ACUMINATA, new species.

Gall.—The mature specimens of this species average considerably over 2 inches long by more than an inch in diameter; they are brownish yellow, subglobular, and acuminated at apex, constructed on the same principle as most of the apple galls, having a central kernel, held in place by a spongy substance, and a very thin shell. Some specimens are much more acuminated than others and what may be termed pepper-shaped, not more than half an inch in diameter and much less than 2 inches in length. The gall is attached to the twigs.

Gallfly.—Female. Length, 5 mm. In stature and color this species approaches nearest to *A. spongifica*, Osten-Sacken, but the sculpture is more coarsely rugose, the parapsidal grooves distinct, while the hind legs are black.

Type.—No. 3078, U.S.N.M.

One female specimen, reared June 24, 1879. The gall occurs in Washington on *Quercus niger*. The specimen from which the fly was reared was taken by Dr. L. O. Howard in Maryland.

Genus HOLCASPIS, Mayr.

24. HOLCASPIS PERSIMILIS, new species.

Gall.—A small, hard, globular gall, occurring on the twigs of the black oak and very similar in structure to other Holcaspid galls. It is, however, smaller, less than 7 mm. in diameter, and exteriorly it is very rough or rugose, with irregular raised lines and ridges.

Gallfly.—Female. Length, 4 mm. Head, antennæ, thorax, and legs brown, covered with fulvous pile. Vertex of head and streaks on thorax black. Antennæ 13-jointed, rather long. Head and thorax punctate; the parapsidal grooves are obsolete anteriorly; anteriorly are two short median grooves, extending posteriorly to more than half the length of the mesonotum, while the groove on the shoulders is long. Mesopleura punctate, the sculpture hidden by the pubescence. Abdomen black, the sides of the large second segment pubescent; apices of the short terminal segments dull rufous. The spine of the ventral valve is as long as the second posterior tarsal joint and very hairy.

Wings hyaline, veins piceo-black, the areolet distinct, but the surrounding veins—except the outer vein, which is thick and angulated—delicate; cubital cell open at base; the vein at base of radial cell angulated.

Type.—No. 3079, U.S.N.M.

Described from a single specimen, labeled simply: "Black-jack oak, issued November 10, 1868."

The angulated outer vein of the areolet in this species at once separates it from all the others.

25. HOLCASPIS TRUCKEENSIS, new species.

Gall.—An irregular, inflated, hard, woody gall, over an inch long and about half an inch in diameter, issuing from a slit in a terminal twig of *Quercus chrysolepis* var. *vaccinifolia*; polythalamous.

Gallfly.—Female. Length, 3.4 mm. This species in color and size closely resembles *H. ficigera*, Ashmead, but differs as follows: The 14-jointed antennæ, except the first two joints, pleura, and metathorax blackish, shining; the rest of the insect—except the dorsum of the second abdominal segment, which is obfuscated—brownish yellow; the head and thorax punctate, and covered with a glittering white pubescence. Abdomen highly polished, bare, except the sides of second segment basally; spine of ventral valve short, stout, hairy. Wings hyaline, veins brown, areolet distinct, cubital cell open at base, while the basal vein of radial cell is only obtusely angular.

Type.—No. 3080, U.S.N.M.

Two specimens, reared December 6, 1880, from galls collected by Prof. J. H. Comstock, in California, October 16, 1880.

26. HOLCASPIS DOUGLASII, new species.

Gall.—The construction of this gall is on the same principle as the other Holcaspian galls, but instead of being globular it resembles a diminutive squash, the ridges surrounding the margin being prolonged into irregular tubercles, usually from 7 to 10 in number.

Gallfly.—Female. Length, 2.6 to 3 mm. Reddish brown, pubescent, the anterior short median grooves of mesonotum and the groove on the shoulders being on a black surface. Antennæ 14-jointed, slightly, gradually incrassated toward tips and apically dusky.

Head and thorax punctate; parapsidal grooves delicate, but distinct throughout; two short median grooves anteriorly and a groove on the shoulders distinct; foveæ at base of scutellum continent, not separated by a carina; pleura shining, but punctate.

Wings hyaline, pubescent, the veins blackish, the radius slightly incrassated at tip, and the vein at base of radial cell angulated. There is a discolored streak below the areolet, and a large brownish mark below the middle of the radius in the apical cell.

In some specimens the tibiæ and tarsi are dark brown and two specimens have the abdomen nearly black.

Type.—No. 3081, U.S.N.M.

Seven specimens, received from Mr. Albert Koebele, collected in Marin County, California, and reared December 19, 21, 24, 1895. The gall occurs on the lower side on the leaves of *Q. douglasii*.

Genus BASSETTIA, Ashmead.

27. BASSETTIA GEMMÆ, new species.

Female.—Length, 1.8 to 2 mm. Black; antennæ and legs—except coxæ and femora—reddish brown; coxæ and femora black. Head rounded in front, antero-posteriorly thick, broader than the thorax, and closely, finely punctate. Thorax strongly, transversely rugulose, the parapsidal grooves obliterated, two short, glabrous, median lines anteriorly, and a glabrous line on the shoulders. The mesonotum and the scutellum are hardly separable, being almost connately joined, and presenting an almost unbroken surface. The mesopleura are smooth and polished posteriorly, but anteriorly they are closely punctate.

The abdomen is much compressed, as deep ventrally as long. The ventral spine is as long as the second joint of the posterior tarsi, while the sheaths of the ovipositor project.

Type.—No. 3082, U.S.N.M.

Described from three female specimens, labeled "From J. G. Barlow, Cadet, Mo., April 27, 1880, ovipositing in buds."

28. BASSETTIA PALLIDA, new species.

Female.—Length, 2 mm. Head, the 13-jointed antennæ, thorax, and legs, brownish yellow; the eyes and posterior tibiæ dark brown, abdomen polished black. In shape it bears a close resemblance to the one just described, but besides the colorational differences the sculpture of thorax is less coarsely rugulose, and the ovipositor sheaths do not project, while there is a transverse grooved line at base of scutellum.

Type.—No. 3083, U.S.N.M.

Described from a single specimen labeled "Savannah, Georgia, April 15, 1884."

COMPSODRYOXENUS, new genus.

This genus is similar to *Bassettia*, but differs in having filiform, 13 or 14 jointed antennæ, the third, fourth, fifth, and sixth joints being of nearly an equal length, those beyond gradually shortening.

The head and thorax are closely, confluently punctate, or slightly rugose; thorax narrowed, the parapsidal grooves delicate but distinct; scutellum rugose, cushion-shaped, separated from the mesonotum by a transverse groove; pleura punctate. Abdomen compressed and shaped as in *Bassettia*, the ventral valve very prominent, pointed plowshare-shaped.

The wings, unlike *Bassettia*, have a distinct areolet, the vein at base of marginal or radial cell arcuate and surrounded by a brown spot or cloud, as in the genus *Amphibolips;* the margins of the basal vein are also clouded, while there is a brown spot before the break in the anal nervure. Claws entire.

29. COMPSODRYOXENUS MACULIPENNIS, new species.

Gall.—The gall produced by this species, and from which the flies were reared, is confused in the collection with *Andricus corii*, Bassett, and the resemblance between them is so close that I am unable to separate one from the other, although it is possible there may exist some difference.

Gallfly.—Female. Length, 2.6 to 4 mm. Head, thorax, and middle tibiæ and posterior femora and tibiæ brown; cheeks, antennæ, and legs, with the above exceptions, pale yellowish brown.

Antennæ 14-jointed, reaching to base of abdomen. Thorax slightly transversely rugulose, the parapsidal grooves entire, the groove on the scapulæ distinct. Wings hyaline, veins brown, the margins of basal vein, a spot before the break in the anal vein, and a large blotch at base of marginal cell, including its basal nervure, brown; other characters as described in the generic description.

Type.—No. 3084, U.S.N.M.

All females, which issued from the galls May 9 to 19, 1883. The galls were taken on a live oak in Arizona by H. K. Morrison.

30. COMPSODRYOXENUS BRUNNEUS, new species.

Gall.—The gall of this species was likewise confused in the collection with a similar gall (*Andricus chrysolepidis*), occurring on *Q. chrysolepis* in California, but I can distinguish two kinds of galls, although both bear the same number (2972). Both are very much alike externally, but one is polythalamous, the other monothalamous, and I believe the latter is the one producing the present gallfly.

Gallfly.—Female. Length, 2 to 2.6 mm. Head, antennæ, thorax, and legs pale or light brown, the antennæ toward tips dusky, the pleura blackish, the abdomen black, polished, the posterior legs dusky or darker than the others. Wings hyaline, marked as in previous species.

The species is closely allied to the preceding, but it is smaller, paler colored, and has but thirteen joints in the antennæ.

Type.—No. 3085, U.S.N.M.

Specimens reared June 9, 1883. Under this number the Record Book contains the following:

January 13, 1893.—Received to-day from Mr. H. W. Turner, of Martinez, California, a lot of elongate, oval twig-galls, found on scrub-oak; some of them were collected January 3 in Pine Canyon, Mount Diablo, Contra Costa County, and some from apparently the same species of oak at Martinez; placed galls from different localities into different bottles to breed.

Genus TRISOLENIA, Ashmead.

31. TRISOLENIA PUNCTATA, new species.

Female.—Length, 5.2 mm. This species in general appearance closely resembles *T. saltata*, but the abdomen is darker, being reddish piceous, more globose, and distinctly finely punctate, the second segment only

half the length of the abdomen (in *T. saltata* it is two-thirds as long): while the antennæ are but 15-jointed, the third joint being not quite twice as long as the fourth. Pleura aciculated; scutellum coarsely rugose, with two large, deep foveæ at base, separated only by a carina.

Wings hyaline, tinged with yellow, basal nervure of radial cell arcuate, the areolet distinct, cubital cell open at base. Legs dark red, the posterior coxæ dusky or black.

Type.—No. 3086, U.S.N.M.

Described from one specimen, received from Rev. J. L. Zabriskie, Nyack, New York, February 6, 1884. The gall made by the fly is unknown.

Genus CALLIRHYTIS, Förster.

32. CALLIRHYTIS VACCINIIFOLIÆ, new species.

Gall.—A thin-shelled, globular gall, with a central kernel held in place by radiating filaments and closely resembling the gall produced by *A. inanis*, Osten-Sacken, but the average size is smaller and the color of the gall darker. It measures from half an inch to a little over an inch in diameter and is found on *Quercus vaccinifolia* in California.

Gallfly.—Female. Length, 2 to 3.2 mm. Red or brownish red (one specimen has the thorax almost black), antennæ and legs brownish yellow, sometimes obfuscated; several terminal joints of the antennæ are dark brown.

Head closely punctate; thorax almost smooth, the parapsidal grooves sharply defined, complete, a short median groove posteriorly and the groove on the shoulders indistinct; scutellum rugose, the foveæ large, broad, distinct, and separated only by a carina; mesopleura smooth, polished, the triangular piece beneath tegulæ alone being punctate. The abdomen is larger than the head and thorax together, the segments oblique, the second segment occupies about two-thirds of the whole surface and is a little pubescent at sides near the base, impunctate, some of the short terminal segments a little dusky; spine of ventral valve rather long, hairy. Wings hyaline, pubescent, the veins pale brown; the vein at base of marginal cell is slightly bent, but not angulate, the marginal cell being very long and narrow, areolet distinct, but the surrounding veins delicate, cubital cell almost closed.

One of the specimens is but 2 mm. long and of a uniform brownish-yellow color, but structurally it does not seem to differ from the others.

Type.—No. 3087, U.S.N.M.

Four specimens, reared October 16 and December 4, 1884, from galls collected by Prof. J. H. Comstock, at Truckee, California, on *Quercus vaccinifolia*.

33. CALLIRHYTIS CRASSICORNIS, new species.

Gall.—A peculiar, irregular, somewhat triangulated, hard, finely rugose, blackish seed-like gall, issuing from the twig, most of them being covered with a whitish efflorescence.

The gall, structurally, is similar to that produced by *A. conifera*, Ashmead, and the part embedded in the twig is triangularly shaved off to a sharp edge. The fly escapes from its larval cell through a hole perforated in the side.

Gallfly.—Length, 2.8 mm. Head and thorax black, abdomen piceous black, antennæ and legs reddish brown.

The head and thorax are shining, but delicately punctulate, pubescent. Head broad, the cheeks bulging. Antennæ 13-jointed, incrassated toward tips; the first joint is almost as long as the third and stout, the third is about one-third longer than the fourth, the following joints to ninth subequal, the rest of the joints—except the terminal, which is twice as long as thick—are as thick as long. The thorax has two sharply defined parapsidal grooves; the two short median grooves anteriorly and the groove on the shoulders appear merely as glabrous lines.

Scutellum rounded, minutely rugose, the foveæ deep but distant. The abdomen is as long as the head and thorax combined, highly polished, the second segment occupying two-thirds its length and pubescent at sides; the spine of the ventral valve is very long, about as long as the first tarsal joint of posterior legs, and a little hairy. Wings hyaline, pubescent, veins brown, areolet distinct but small, the surrounding veins stout, the vein at base of marginal cell slightly angulate, cubital cell closed, but the cubitus pale at base.

Type.—No. 3088, U.S.N.M.

Four female specimens received through Mr. F. B. Hough, reared October 10, 1884.

34. CALLIRHYTIS FRUCTICOLA, new species.

Gall.—This gall consists simply of the white kernel or larval cell embedded in the interior or meaty portion of the acorn, or then on the outside near its base, generally hidden by the cup.

Two or three acorns in Dr. Riley's collection, affected by this species, when cut open, revealed more than a dozen larval cells, closely pressing upon one another, and filling the whole interior of the acorn.

Gallfly.—Female. Length, 3 to 3.6 mm. Brownish red, the eyes and middle and posterior tibiæ dark brown.

Antennæ 13-jointed, filiform, the scape clavate, as long as the third joint, the fourth joint one-third shorter than the third. Head and thorax closely, minutely, rugosely punctate, subpubescent; the parapsidal grooves distinct, entire; anteriorly are two short grooves reaching to near the middle of the mesonotum, and the groove on the shoulders is long. Foveæ of scutellum large, separated only by a carina. Mesopleura punctate, slightly aciculated posteriorly. Abdomen longer than the head and thorax together, gradually rounded off posteriorly and from below a little obliquely rounded, the second segment occupying two-thirds of its whole length, the sutures running obliquely forward to the venter, ventral valve hidden, the sheaths of ovipositor short but slightly projecting. Wings hyaline, veins pale

brown, the cubitus and radius very slender, pale, the vein at base of marginal cell arcuate, the areolet wanting.

Type.—No. 3089, U.S.N.M.

Six female specimens, reared April 5, 1873.

35. CALLIRHYTIS RHIZOXENUS, new species.

Gall.—A large, irregular, more or less globular, fleshy swelling, occurring on the roots of an oak in Arizona, and containing numerous larval cells; some galls measure about 4 cm. in length; others are much smaller.

Gallfly.—Female. Length, 3 to 3.4 mm. Head and thorax dark brown or blackish, antennæ and legs pale brown, the posterior femora and tibiæ dark brown, or at least obfuscated, abdomen red or brownish red. Head and thorax closely punctate or minutely rugose, subpubescent. Antennæ 14-jointed, filiform. Parapsidal grooves entire, two median lines extending to middle of mesonotum anteriorly, and a very distinct groove on the shoulders. Scutellum rugose, the foveæ confluent. Mesopleura punctate, hairy, with a smooth spot posteriorly and an indented line. Abdomen smooth, polished, about as long as the head and thorax combined, with some hairs at sides of second, third, and fourth segments; the second segment occupies about half the length of the abdomen, and the third and fourth segments about one-half of the remaining portion; the spine of the ventral valve is as long as the first tarsal joint of posterior legs. Wings hyaline, subpubescent, veins brown, the areolet and cubital cell distinct, the basal vein of marginal cell angulated.

Type.—No. 3090, U.S.N.M.

Specimens reared June 24 and 28 and July 6, 1882, from galls received from Mr. H. K. Morrison, collected on roots of a live oak at Fort Grant, Arizona.

36. CALLIRHYTIS LASIUS, new species.

Gall.—A hemispherical, hard gall, occurring on the upper or lower surface of the leaves of *Q. chrysolepis*, and covered with a pale, yellowish wool, more or less ringed with ferruginous, some being entirely rust-red; it is polythalamous and in general appearance not unlike *A. flocci*, Walsh, but the larval cells are held closely together, embedded in the hard substance composing the gall. Diameter from 5 to 9 mm.

Gallfly.—Female. Length, 2 to 3.8 mm. Pale brownish yellow, the ocelli, eyes, and usually, but not always, the abdomen dorsally, brown.

Head and thorax minutely, confluently punctate, pubescent. Antennæ 14-jointed, moderately long and slender, the tips dusky and the joints delicately fluted, sparsely covered with white pile; sometimes all but the basal joints are dark brown. The parapsidal grooves are delicate but distinct; there is a delicate median groove and

two short median grooves anteriorly and the usual groove on the shoulders.

Scutellum rounded, punctate, subpubescent, the foveæ small, oblique. Mesopleura closely punctate; metapleura and metanotum densely pubescent. Claws unidentate.

Wings long, hyaline, the veins pale brown, the areolet distinct, the cubital cell open, the vein at base of marginal cell almost straight or but slightly bent.

Type.—No. 3091, U.S.N.M.

Numerous specimens; reared by Mr. Albert Koebele, at Placer County, California, December 19, 1885, from galls on *Quercus chrysolepis;* others reared January 2, 1882, and December, 1885.

Genus AULAX, Hartig.

In this genus I place several gall-makers that agree quite closely with the representatives of the European species of the genus, except that the *marginal cell is distinctly closed.*

37. AULAX MULGEDIICOLA, new species.

Gall.—The gall of this species consists simply of a thin-shelled larval cell, embedded in the pith of a common plant, *Mulgidium acuminatum;* usually there are numerous cells crowded together side by side in the pith, and externally the stem or stalk shows no apparent gall, swelling, or deformation, although occasionally a slight swelling of the stalk occurs.

Gallfly.—Male and female. Length, from 1.4 to 2.6 mm. Head and thorax black, antennæ dark red, the legs, including coxæ, vary from a red to reddish yellow, the abdomen red or sanguineous.

Head and thorax opaque, closely, confluently punctate. Antennæ long, 13-jointed in female (14 in male), the third joint not longer than the fourth, the following joints gradually subequal, the terminal one usually long, sometimes indistinctly divided into two joints; in the male the third joint is slightly excised and shorter than the fourth.

Parapsidal grooves distinct, and between them posteriorly at the base is a very short groove. Mesopleura delicately, longitudinally aciculated. Scutellum rounded, minutely rugose, with two, rather shallow, oblique foveæ at base. Abdomen ovate, polished, the ventral valve and sheaths of ovipositor not projecting, the second segment occupies half its whole surface; the third segment is about half as long as the second, the following segments being very short.

Wings hyaline, pubescent, veins brown, the areolet very small, often entirely wanting, marginal and cubital cells closed.

Type.—No. 3092, U.S.N.M.

Numerous specimens, most of them reared during January and February, 1886, from galls collected in the District of Columbia, labeled No. 3640.

. AULAX CAVICOLA, new species.

Female.—Length, 2.4 to 3 mm. This species bears a very close resemblance to *A. mulgediicola*, but differs as follows: The face is without the median ridge; the short median groove of the mesonotum is longer, extending not quite to the middle; there is a distinct groove on the shoulders, extending from the base forward to at least half their length; the second and third abdominal segments dorsally at base are very dark, almost black, making the abdomen appear as if banded, while the basal joint of posterior tarsi is longer than it is in *A. mulgediicola*.

Type.—No. 3093, U.S.N.M.

Described from two female specimens, labeled Indian Cave, Missouri, April 30, 1878.

39. AULAX SONCHICOLA, new species.

Male and female.—Length, 2.2 to 2.6 mm. This species is likewise closely allied to *Aulax mulgediicola*, but the antennæ in both sexes are distinctly 14-jointed, pale brownish yellow, the two basal joints dusky or black, more noticeable in the male, the terminal joint being very much longer than the preceding. The abdomen in female is reddish brown, obfuscated dorsally, in the male blackish; legs brown, with the posterior tibiæ more or less dusky. Thorax subpubescent, and in addition to the parapsidal grooves there are two short indistinct median grooves anteriorly and a distinct median groove posteriorly, the foveæ shallow, small, the mesopleura finely striated.

Wings hyaline, pubescent, the venation as in *A. mulgediicola*.

Type.—No. 3094, U.S.N.M.

Four specimens, reared during June, 1887, from a gall occurring on the stem of a species of wild lettuce, *Sonchus oleraceus*, found at Asheville, North Carolina, by the writer. In my own collection are specimens collected in Canada.

40. AULAX AMBROSIÆCOLA, new species.

Gall.—The insects from which the following description is drawn up were received from Miss Mary Murtfeldt, of Kirkwood, Missouri, with the statement that they were parasitic on a lepidopterous gallmaker, on *Ambrosia*.

Now there is some mistake here; the flies are unquestionably true gallmakers and evidently form larval cells in the pith of this plant, not observed by Miss Murtfeldt; and, moreover, their structural characters prove conclusively that they are not parasitic. It is also quite probable that the Lepidopteron is inquilinous in the galls produced by this species.

Gallfly.—Male and female. Length, 2 to 2.2 mm. In size, structure, and general appearance this species comes remarkably close to *Aulax mulgediicola*; but with a very high power lens the sculpture appears very distinct, the punctuation being slightly transverse. There is a

short acute median groove between the parapsidal grooves posteriorly, the scutellar foveæ are not so sharply defined, while the color of legs and abdomen will at once distinguish it from that species.

In the female the legs and abdomen are reddish yellow, while the abdomen in the male is black.

Habitat.—Kirkwood, Missouri. Miss Mary Murtfeldt.

Type.—No. 3095, U.S.N.M.

Four specimens, 1 female and 3 males, reared October 18, 1881, and June 13, 1882. It is unfortunate that none of the galls were sent with the flies.

Genus DIASTROPHUS, Hartig.

41. DIASTROPHUS SMILACIS, new species.

Gall.—An irregularly rounded, abrupt, smooth swelling, occurring on and usually surrounding the stems of *Smilax rotundifolia* and *S. herbacea*. It is of a pithy structure, and, in general appearance, exactly similar to the rose gall, *Rhodites ignota*, Osten-Sacken, with which it might easily be confounded in a collection.

It is polythalamous, seldom much over an inch in length by from a half to three-quarters of an inch in diameter.

Gallfly.—Female. Length, 2.6 to 3 mm. Polished black, the antennæ dark red, legs yellowish red. The face, collar, and metathorax punctate or rugulose, pubescent. Antennæ 13-jointed, moderately stout and rather short; the third joint is narrowed at base, about one-third longer than the fourth and about as long as the terminal joint, the following joints a little longer than thick, delicately fluted. Thorax and mesopleura smooth, polished, the two parapsidal grooves distinct. Scutellum rugose, a little prolonged at apex and with two broad foveæ at base, separated by a carina. Abdomen short, compressed below, and a little piceous along the venter, the ventral valve without a spine. Wings hyaline, pubescent, veins dark, the margins of the basal vein and the base of marginal cell a little clouded, areolet large, distinct, cubital cell closed; the radial vein at about two-thirds its length is slightly bent and extends along nearly parallel with the open margin of the radial cell.

Type.—No. 3096, U.S.N.M.

Thirteen females, reared during January and February, 1884, from galls received from Mr. J. C. Arthur Chicago, Illinois. The gall has also been taken by Mr. E. A. Schwarz, in Florida.

Genus RHODITES, Hartig.

42. RHODITES GRACILIS, new species.

Gall.—An irregular, inflated, rounded gall, with the top broadened and somewhat flattened, the edges surrounded with short, blunt tubercles, which are probably the apices of elevated ribs.

Gallfly.—Male and female. Length, 2.2 to 3 mm. In the male the two basal antennal joints and legs are red; in the female the whole abdomen is red; rest of the insect black. Head finely, closely punctate, the vertex almost smooth, thorax, scutellum, and pleura rugose, parapsidal grooves distinct posteriorly, somewhat obliterated by the sculpture anteriorly, the middle lobe with a central longitudinal depression. Antennæ 14-jointed, the third joint very long, more than twice as long as the fourth. Wings hyaline, veins brown, the areolet large, cubital cell almost closed; in the female the basal vein of the closed radial cell and the radius is surrounded with a dusky cloud, which is wanting in the male.

Type.—No. 3097, U.S.N.M.

Described from 4 specimens, 1 female, 3 males, reared May 7, 1870. The name of the rose on which it occurs is unknown. Dr. Riley in his Note Book says:

> A small gall, bearing a general resemblance to a mangel-wurzel seed or large beet seed, occurring on rose trees, and especially on the single wild rose. The galls were first noticed in September.

43. RHODITES SIMILIS, new species.

Gall.—An irregularly rounded, brown or brownish yellow, pithy gall on the smaller stems of an unknown wild rose. They vary greatly in size and shape, from a small pea-like form to a more or less globular or oblong shape, some of them being an inch or more in length. There is no consistency in their shape: some are perfectly round or oblong or of various irregular shapes.

Gallfly.—Female. In stature and color, this species is very near *R. dichloceras*, Harris, but the surface of the thorax is much smoother, shining, the head and lateral lobes of mesothorax are darker, almost black, the median and parapsidal grooves more distinct, broader, the disk of the mesopleura smoother, veins darker, while the vein at base of marginal cell is arcuate.

The male is entirely black, except the basal antennal joints, spots on vertex above base of antennæ, and the legs, which are red, the middle and posterior coxæ being black basally.

It may be distinguished at once from the male of *dichloceras* by its much larger size, broad parapsidal grooves, the smooth shining spot on mesopleura, and the red basal joints of the antennæ.

Type.—No. 3098, U.S.N.M.

Twenty-seven specimens, reared July 27, 1883, from galls collected by Mr. Lawrence Bruner at Point of Rocks, Wyoming.

Two different galls bearing same number are here confused, one being *R. variabilis*, Bassett, the other *R. similis*, Ashmead.