angle which is still more marked and almost dentiform, when viewed laterally. This is most distinct in the females of *bipustulatus*."

I have none of the former species, but my few females of the latter show very clearly the above characters as he describes them.

In connection with this subject, attention is called to an error in the Rhynchophoridae of America North of Mexico, LeConte and Horn, p. 10; under *Attelabus analis* the sex marks should be reversed in the description of the sexual characters. Also in the Family characters on the same page the statement "armed at the tip with two strong hooks" is misleading and should be qualified, because this, as it now reads, applies only to the females and not to the males which have only one hook. This latter statement appears also in the "Classification" and should be restricted likewise.

THE HALICTIDAE OF SOUTHERN MAINE.

BY JOHN H. LOVELL, WALDOBORO, MAINE.

WHILE comparatively few new species of bees have been found in southern Maine, the described species very frequently differ in a greater or less degree from southern and western material. This is especially true of the species of *Halictus*, which present variations in the descriptive characters in consequence of which it is difficult in many instances to determine whether they are of varietal or specific importance. *H. provancheri* D. T. exhibits only slight differences, but the female of *H. lerouxii* Lep. is narrower than the Illinois representative of this species, and has the pubescence of the thorax above ochreous instead of grayish-white. *H. craterus* is a new species allied to *H. similis* and *H. discus*. *H. arcuatus* var. *parisus*, especially the male, differs so widely from typical material that it might well be regarded as a new species. The local specimens of *H. foxii* closely resemble the Illinois form and at most constitute only a race; while *H. divergens* sustains a nearly similar relation to *H. quadrimaculatus*. Maine specimens of *H. pilosus* are usually smaller than those from Indiana; while *H. pilosus* var. *leucocomus* occupies an intermediate position between this species and *H. pruinosis*, and is usually mistaken for the latter species. *H. hortensis* is near to *H. sparsus*, but it may be separated from specimens of the latter species received from Pennsylvania by its larger size, and in the female by the broader and lighter-colored abdomen, and in the male by the more coarsely striated

disc of the metathorax. Opportunity for more extensive comparison would doubtless reveal numerous differences in other species.

Only the females of *Halictus* fly in spring, while the males are found in midsummer and autumn. In the flower records given in this paper an endeavor has been made to give the earliest and latest dates upon which each sex has been captured. The females have been taken from April 30th to Sept. 6th; during the early part of the season they are common on the flowers of the willows, plums and blackberries and later on *Rosa humilis*, *Aralia hispida*, *Rhus typhina* and other plants. The males have been collected from July 19th to Sept. 12th (garden marigold), but chiefly during the month of August. There is no better collecting ground for this sex than the various species of golden-rod, and on a single inflorescence on Sept. 8th I collected nearly a dozen specimens. The males, however, of *H. arcuatus* var. *parisus* have been taken almost exclusively on the flowers of the thoroughwort, or *Eupatorium perfoliatum*, one only having been found on *Solidago*. Late in the season numerous specimens of *Halictus* may be taken on the fall dandelion, or *Leontodon autumnalis*; thus I find in my notes a record that twenty-four specimens, mostly of species of *Halictus*, were collected on this plant on Sept. 6th. The females of *H. lerouxii* and *H. craterus* are very common, and the males are nearly equally abundant, in which respect they differ from the males of all other species of *Halictus* found in this locality. All of the species appear to be polytropic except *H. nelumbonis*, which at Waldoboro has been observed only on *Nuphar advena*. In some instances where only one or two flower-records have been given this is due to the rarity of the species or to an insufficient number of observations. The collecting season in this locality closes for all genera except *Apis* and *Bombus* by the middle of September.

Specimens of many of the species enumerated in this paper have been kindly examined by Prof. T. D. A. Cockerell who has compared them with authentic material, and furnished valuable notes and suggestions.

HALICTUS.

(*Halictus* sens. str.)

Halictus provancheri D. T.

1882 *Halictus constrictus* Prov. (not Sm.), ♂, Nat. Can. 13:202.

1888 *Halictus constrictus* Prov. ♀ ♂, Add. faun. Can. Hym. p. 316.

1895 *Halictus fasciatus* Robt. (not Nyl.), Trans. Am. Ent. Soc. 22:117.

1896 *Halictus provancheri* D. T. Cat. Hym. 10:77.

H. fasciatus Nyl. is a European species and probably does not occur in America. According to Mr. J. C. Crawford "*H. fasciatus*" Robt. is the species described by Provancher as *H. constrictus*. This is also doubtless the bee recently described by Vachal as *H. nearcticus*.

The female has been taken on *Salix Bebbiana*, May 13; *Ogon plum* (to which it is a common visitor), May 29; *Eupatorium perfoliatum*, Aug. 24; and *Leontodon autumnalis*, Sept. 6; the male on *Aralia hispida*, July 27–30; and *Solidago*, Aug. 17. A common and widely distributed species, easily recognized by the dull greenish color, and the length of the third submarginal cell equalling twice that of the second submarginal.

Halictus lerouxii Lep.

1841 *Halictus lerouxii* Lep. ♀, Hist. nat. Insect. Hym. 2:272.

1898 *Halictus lerouxii* Robt. ♂, Trans. Ac. Sci. St. Louis, 8:44.

The female specimens were collected on *Salix discolor*, Apr. 30; *S. Bebbiana*, May 13; garden plum, May 28; *Carduus arvensis*, Aug. 7; *Leontodon autumnalis*, Aug. 8; and many other plants; the male on *Aralia hispida*, July 19; and *Solidago juncea*, Aug. 4–11. A very common species. The females may often be seen on the flowers of *Lonicera Tatarica*, collecting pollen, for their proboscides are not long enough to reach the nectar, which is eagerly sought by bumblebees. This is our largest species of *Halictus*, the females more closely resemble in the color of the pubescence the forms from Colorado and Washington than those of Illinois. *H. parallelus* Say and *H. armaticeps* Cr. do not occur here.

(*Lasioglossum*).

Halictus coriaceus Sm.

1853 *Halictus coriaceus* Sm. ♀, Cat. Hym. Brit. Mus. 1:70.

1853 *Halictus subquadratus* Sm. ♂, Cat. Hym. Brit. Mus. 1:72.

This species is much less common than *H. lerouxii*; in most specimens of the female there are white basal fasciae on abdominal segments 2–3, but not infrequently segment 4 is also fasciate. Female taken on flowers of *Salix Bebbiana*, May 12; garden blackberry, June 19; *Carduus arvensis*, Aug. 7; male on *Carduus arvensis*, Aug. 7; and garden marigold, Sept. 12.

(*Evylaeus*).

Halictus craterus n. sp.

1905 *Halictus similis* Lovell, ♀ ♂, Can. Ent. 37: 299.

♀.—Length 9–10 mm.; a broad, robust bee, entirely black, front and mesothorax subopaque, abdomen shining. Face much longer than broad, the sides nearly parallel; clothed with thin, pale yellowish pubescence; with close, shallow, often indistinct, punctures; clypeus produced, coarsely and sparsely punctured, with an apical fringe of reddish-yellow hair; the labrum is broad, with a central tubercle or prominence, the apex produced into a stout tooth fringed with stiff, fulvous hair; antennae black, the flagellum faintly brownish. Mesothorax closely but very distinctly punctured, the punctures large; the dorsum and pleurae clothed with pale ochraceous hair; metathorax sharply truncate, the area not well-defined, shining, with coarse longitudinal ridges. Wings hyaline, reddened, nervures and stigma dark ferruginous, 3rd submarginal cell larger than the 2nd, but about equal on the marginal nervure; tegulae rufo-piceous or nearly black. Legs black, joints 1–4 of the posterior legs with bright orange fulvous hair on the inner side, the hind spur pale yellow, serrate, with about eight short teeth. Abdomen shining, strongly convex; segment 1 is distinctly but sparsely punctured, segments 2–3 are finely punctured all over; segments 2–3 with white basal fasciae often interrupted on 2, segment 3 is also rarely fasciate; apical fimbria reddish-brown.

♂.—Length 9 mm., narrower and more slender than the female. Face densely clothed with nearly white or pale buff-colored hair; clypeus with a transverse pale yellow mark; antennae long, joint 4 longer than 2 plus 3, black, the flagellum brownish. Pubescence of the mesothorax thinner and lighter colored than in the female, the punctuation similar. Abdominal segments 1–2, sometimes 3, with white basal fasciae interrupted in the middle; otherwise closely resembles the female.

Female specimens taken on *Salix Bebbiana*, May 13; *Iris versicolor*, June 24 to July 5; *Eupatorium perfoliatum*, Aug. 24; *Leontodon autumnalis*, Sept. 6; males on *Aralia hispida*, July 30; *Carduus arvensis*, Aug. 7; and *Leontodon autumnalis*, Sept. 6. A very common species easily separated from all other Maine bees belonging to this genus. It is closely related to *H. discus* Sm., but *discus* has the mesothorax smooth and shining, with the punctures widely scattered; the pubescence of the legs is silvery tinged with yellow; and abdominal segments 2–4 are fasciate. *H. similis* Sm. was described from Hudson's Bay. It differs from *H. craterus* in the finely punctuated mesothorax, the sparsely pubescent pleurae, the pale testaceous

nervures, the testaceous apical margins of the abdominal segments, and the light fulvous apical fimbria. From *H. truncatus* Robt. the Maine species may be separated by the 1st abdominal segment being punctured all over, and by the serrate hind spur. *H. arcuatus* Robt. var. *parisus* n. var.

According to Mr. J. C. Crawford the female differs from typical *arcuatus* in the weaker striae of the metathorax and the less distinct punctures on the 1st abdominal segment; the male in having the whitish mark on the clypeus shorter and less distinct, and the apical joints of the tarsi reddish,—in *H. arcuatus* they are all nearly white. Compared with specimens of both sexes of *H. arcuatus* received from Mr. Crawford, the males of the Maine variety are larger, with the apical margins of the abdominal segments black instead of pale testaceous, and the mandibles are also darker; the females are very similar to those of *arcuatus*, but the apical margins of the abdominal segments are less testaceous, and the fasciae are thinner.

The female was taken almost exclusively on *Rhus typhina*, July 10; and the male on *Eupatorium perfoliatum*, Aug. 25. Descriptions of *H. arcuatus* Robt. will be found in *Trans. Am. Ent. Soc.* 20: 145, 1893, ♀; *Can. Ent.* 34: 247, 1902, ♀ ♂.

Halictus pectoralis Sm.

1853 *Halictus pectoralis* Sm. ♀, *Cat. Hym. Brit. Mus.* 1: 68.

1898 *Halictus pectoralis* Robt. ♂, *Trans. Ac. Sci. St. Louis*, 8: 44.

Female on *Crataegus coccinea*, June 14; garden blackberry, June 21; *Solidago juncea*, Aug. 8; *Leontodon autumnalis*, Sept. 6; male on *Solidago*, Aug. 9–25; *Leontodon autumnalis*, Sept. 6. Not common, the specimens are typical, this species has a great north and south distribution.

Halictus foxii Robt.

1890 *Halictus gracilis* Robt. (not Mor.), ♀ ♂, *Trans. Am. Ent. Soc.* 17: 316.

1895 *Halictus foxii* Robt., *Trans. Am. Ent. Soc.* 22: 117.

1896 *Halictus gracillimus* D. T., *Cat. Hym.* 10: 63.

The Maine bees referred to this species may constitute a distinct variety, but it is doubtful if the differentials prove reliable in a large series. The females differ from typical *H. foxii* in their larger size, area of metathorax larger and with its margin better defined, stigma darker, abdomen blacker and nearly smooth, wings more dusky, tegulae darker. Female specimens taken on *Salix Bebbiana*, May 12; garden plum, May 28; *Crataegus coccinea*, June 14; *Rubus strigosus*, June 16; *Epilobium angustifolium*, July 23; male on *Aralia hispida*, July 30, 1904.

♂.—Length 5 mm. Clypeus produced, apex yellow, labrum black; mandibles

yellowish-red in the middle, darker at base and apex; flagellum testaceous beneath, joint 4 longer than 2 plus 3; tegulae black, nervures and stigma dark brown; legs black, tibiae entirely so, tarsi reddish-brown; area of metathorax rougher than in the female, with many parallel rugae extending to the posterior margin; abdomen entirely black, apical margins of segments very slightly testaceous.

Halictus quadrimaculatus Robt.

1890 *Halictus quadrimaculatus* Robt. (not Schenck), ♀ ♂, Trans. Am. Ent. Soc. 17: 316.

1895 *Halictus macoupinensis* Robt. Trans. Am. Ent. Soc. 22: 117.

1905 *Halictus divergens* Lovell, ♀, Can. Ent. 37: 299.

The female specimens were collected on the garden blackberry, June 24; *Rosa humilis*, July 4; and *Aralia hispida*, July 27. The Maine bees were at first thought to differ from typical material in the longer head and darker wings, but more extended comparison shows that these characters are not constant. At most the local form is only of varietal importance.

Halictus nelumbonis Robt.

1890 *Halictus nelumbonis* Robt. ♀ ♂, Trans. Am. Ent. Soc. 17: 316.

Two females on *Nymphaea* (*Nuphar*) *advena*; an oligotropic visitor of the *Nymphaeaceae*.

(*Chloralictus*).

Halictus pilosus Sm.

1853 *Halictus pilosus* Sm. ♀, Cat. Hym. Brit. Mus. 1: 71.

1895 *Halictus pilosus* Robt. ♂, Trans. Am. Ent. Soc. 22: 117.

Female on *Salix*, May 7; *S. Bebbiana*, May 12; *Epilobium angustifolium*, July 20; male on *Solidago*, Aug. 21–22. Rare in this locality. The Maine specimens are generally smaller than a large series received from Elkhart, Indiana, where it seems to be a common bee.

Halictus pilosus Sm. var. *leucocomus* n. var.

♀.—Length 6 mm. Closely allied to *H. pilosus* in its brassy green color, yellowish wings, punctuation of head and mesothorax, and in the longitudinal striae on the area of the metathorax. It differs from *H. pilosus* and is allied to *H. pruinus* in the color of the pubescence, which is nearly white or only tinged with yellow. The

size is smaller than that of *pilosus*, hardly half as large as specimens from Ind., and in some cases the tegument is much less brassy and more bluish as in *pruinus*, for which species this variety at first is usually mistaken. It is, however, undoubtedly derived from *H. pilosus*.

Female taken on flowers of *Prunus*, May 28; *Crataegus coccinea*, June 14; and *Solidago*, Sept. 6.

Halictus viridatus Lovell.

1905 *Halictus viridatus* Lovell, ♀ ♂, Can. Ent. 37: 300.

The female is very common visiting a great variety of flowers; *Salix Bebbiana*, May 12; *Aralia hispida*, July 28; garden rhubarb, June 12; and *Leontodon autumnalis*, Aug. 8. The male has the apex of clypeus, labrum, mandibles and tarsi yellow, the tibiae are yellow at base and apex with an oblong black spot in the center; taken on *Solidago*, Aug. 20.

Halictus oblongus Lovell.

1905 *Halictus oblongus* Lovell, ♀ ♂, Can. Ent. 37: 40.

1905 *Halictus planatus* Lovell, ♀, Can. Ent. 37: 300.

Only a single specimen of *H. oblongus* ♀ has been taken, and while it differs from *H. planatus* in some minor characters, careful comparison shows that it cannot be separated from the latter species. Both sexes of the bee described as *H. planatus* are common, and the description of the female should be taken as that of typical material. Female on *Salix Bebbiana*, May 12; *Aralia trifida*, May 21; *Rhus typhina*, July 10; *Aralia hispida*, July 27; male on *Solidago*, Sept. 8.

♂.—The head and thorax are bluish-green as in the female, but the disc of the metathorax is more coarsely rugose. From *H. viridatus* it is separated by the entirely black clypeus, labrum, and the black mandibles rufous at tips. The tibiae are wholly black, the tarsi yellow with the apical joints pale brown, the stigma and nervures dark brown, and the antennae brown-black.

Halictus versans Lovell.

1905 *Halictus versans* Lovell, ♀, (not ♂), Can. Ent. 37: 39.

Female taken on *Epilobium angustifolium*, July 23–30. It may be distinguished from *H. oblongus* by the much darker color of the head and thorax, and the numerous fine striae on the disc of the metathorax not extending to the posterior margin, which is slightly gibbous.

♂.—The male described with this species belongs to *H. oblongus*. I have,

however, a male taken on *Epilobium angustifolium*, July 23 (the same flower-record as the female), and which from its close resemblance is undoubtedly the male of this species. Length a little over 5 mm. Head and thorax very dark green appearing almost black; face thinly clothed with white hair; mandibles black, red at apices; flagellum brown-black, joint 4 = 2 + 3. Metathorax with fine radiating raised lines at base of area, not extending to the posterior margin, gibbous at apex; tegulae black, stigma and nervures dark brown; legs and abdomen black.

Halictus nymphaearum Robt.

1890 *Halictus palustris* Robt. (not Mor.), ♀ ♂, Trans. Am. Ent. Soc. 17: 317.

1895 *Halictus nymphaearum* Robt., Trans. Am. Ent. Soc. 22: 117.

1896 *Halictus paludicola* D. T., Cat. Hym. 10: 75.

One female on *Iris versicolor* the latter part of June; two males on *Sagittaria latifolia*. Rare in this locality.

Halictus hortensis Lovell.

1905 *Halictus hortensis* Lovell, ♀, Can. Ent. 37: 39.

Female taken on garden plum, May 28; *Sedum* acre, July 14; *Leontodon autumnalis*, Sept. 6; male on *Sedum* acre, July 18; *Solidago*, Aug. 22; and *Leontodon autumnalis*, Aug. 17. A common species closely allied to *H. sparsus*, but *sparsus* is darker colored and smaller (specimens received from Lehigh Gap, Pa., from Mr. Viereck, are less than 4 mm. in length), with the abdomen obovate, and the pubescence upon the apical segments thinner or sometimes nearly absent. From Washington Co., Wis., through the kindness of Dr. S. Graenicher, I have received specimens of both *hortensis* and *sparsus*; the much darker color of *sparsus*, and the very thin, sparse pubescence on the apical segments easily separates it from *hortensis*. The specimens of *H. hortensis* have the hair on the apical segments inclined to pale buff-color, while in the Maine specimens it is usually white though occasionally varying slightly. Dr. Graenicher informs me, however, that on looking through his material he found several specimens with white pubescence.

♂.—Length 5 mm. Head longer than broad, face clothed with short, white appressed pubescence; mandibles black, rufous at apices; antennae testaceous beneath; mesothorax finely punctured; disc of metathorax coarsely rugose, the rugae extending to the apex; nervures and stigma dark brown; tegulae testaceous, or partly dark; legs black, tibiae at base and apex, and tarsi testaceous; abdomen cylindrical, finely punctured, apical margins testaceous.

Halictus albipennis Robt.

1890 *Halictus albipennis* Robt. ♀ ♂, Trans. Am. Ent. Soc. 17:317.

1905 *Halictus nubilus* Lovell, ♀, Can. Ent. 37:40.

Female on *Sedum acre*, July 12; *Rosa humilis*, July 16; *Solidago*, Aug. 21; male on *Solidago*, Aug. 1-17. The Maine specimens exhibit considerable variation in size.

Halictus cressonii Robt.

1890 *Halictus cressonii* Robt. ♀ ♂, Trans. Am. Ent. Soc. 17:31.

Female on cultivated blackberry, June 24; *Epilobium angustifolium*, July 23; *Rhus typhina*, July 11; *Eupatorium perfoliatum*, Aug. 25. Apparently common throughout New England.

AUGOCHLORA.

While *Augochlora confusa* is not uncommon in this locality, the rarity of bees belonging to the genus *Agapostemon* is shown by the fact that I have collected only four specimens in ten years.

Augochlora confusa Robt.

1897 *Augochlora confusa* Robt. ♀ ♂, Trans. Ac. Sci. St. Louis, 7:324.

Female on Garden plum, May 28; *Solidago*, Sept. 2; *Leontodon autumnalis*, Sept. 6; two males on *Solidago*, Aug. 17.

AGAPOSTEMON.

Agapostemon radiatus Say.

1837 *Halictus radiatus* Say, ♀, Bost. Jour. Nat. Hist. 1:394.

1897 *Agapostemon radiatus* Robt. ♀ ♂, Trans. Ac. Sci. St. Louis, 7:397.

One female on *Rubus strigosus*, June 16; two females on *Cornus alternifolia*.

Agapostemon viridulus Fabr.

1793 *Apis viridula* Fabr. ♀, Ent. Syst. 2:342.

1897 *Agapostemon viridulus* Robt. ♀ ♂, Trans. Ac. Sci. St. Louis, 7:326.

One female taken on *Rosa rugosa* (cultivated), June 18, 1905.