

**Revision of the species of LACHNOSTERNA of
America North of Mexico.**

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Since the publication of the "Revision" by Dr. LeConte, in 1856, practically nothing has been done with the numerous species which have accumulated in our cabinets. As it is never profitable to describe isolated species in troublesome genera, it was thought better to accumulate as large series as possible in order to determine the limits of variation, and thereby fix the value of many described from uniques. Unfortunately, many of the uniques were females, and without the opposite sex it was nearly impossible to fix their correct position in the groups in relation to those whose males were known. The process of accumulation produced at last such an overcrowding and confusion as to render the material of no value without arrangement, and a preliminary study showed that the males were known of all the described species with two exceptions, *æqualis* and *nitida*, while of the vast majority both sexes were present.

Having succeeded thus far with the species, of which the types were accessible to me in the cabinet of Dr. LeConte, there remained the task of correctly identifying those passed over by Dr. LeConte as unknown or unrecognized which had been described by Blanchard, in France, and Burmeister, in Germany. Fortunately the types of the former had been studied by us in the Museum of the Jardin des Plantes with the kind assistance of MM. Blanchard and Lucas. The Burmeister types have not been seen by either of us; however, many if not all the specimens were sent to that author by Dr. Chas. Zimmerman, in whose collection now at Cambridge several species have been found with the number as used by Burmeister. It is inexplicable how three of the species escaped recognition by Dr. LeConte.

In the following pages 81 species are described; of these both sexes are known in 60; 17 have been described from males, and of this number 6 are unique; 4 from females, of which 3 are unique. The material used is as follows:

The Museum of Comparative Zoology, at Cambridge, containing the LeConte series. I have had occasion many times to express my thanks for the kind attention and assistance received.

The National Museum series, through the kindness of Prof. C. V. Riley.

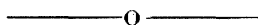
The cabinet of Henry Ulke, at Washington, which has always been open to me without restriction.

The cabinet of Mr. Samuel Henshaw, of Cambridge, including the material of C. P. Austin.

From Mr. Charles Strumberg, of Galesburg, Ill., an exceptionally fine and large local series from that region.

A series kindly loaned by Aug. Merkel, of New York City.

My own cabinet, containing all the described species excepting *æqualis* and *longicornis*, in which are many specimens kindly given by Messrs. Schwarz, Lugger, Fuller and Snow.



At this time it seems hardly necessary to dwell on the reasons for the suppression of the genera formed at the expense of *Lachnosterna* further than to state that the characters are so unimportant that to insist on their strict interpretation would not only divide the genus in a very unnatural manner, but separate very closely allied species. In order to realize this it is simply necessary to refer in the bibliography to the species ranged by Burmeister as *Trichestes*, and to learn that LeConte has described the same species as a *Lachnosterna* and an *Endrosa*. The only possible division of the genus on characters at all constant would be that indicated by the sexual characters of the hind tibial spurs of the male, while a small group might be separated in which the anterior tibiæ have but two teeth. By this means Groups *IV* to *XI*, inclusive, would form *Lachnosterna* proper. Groups *I* to *III* and *XII* to *XVII*, if taken all together would constitute a rather heterogeneous assemblage, while Group *XVIII* is for the present sufficiently distinct. Until the genera of *Rhizotrogini* are more carefully studied with the increased material now at hand, it seems useless to divide any of the genera at present existing.

By the methods in vogue the structure of the claws plays an important roll in the definition of genera, but I have elsewhere shown (Trans. Am. Ent. Soc. 1878, p. 138, *et seq.*) that species which must be associated from the fact that they possess a facies and many struc-

tural characters in common, show such modifications of the claw that some of the species of *Listrochelus* might in one or even both sexes be called *Lachnosterna*, while others have absolutely simple claws. The pectinate claw which should be characteristic of the genus is possessed by not more than half the species, and even then by the males alone.

While the claws of *Lachnosterna* do not vary to the extent shown in *Listrochelus*, there are important modifications. The usual form is that in which there is a median tooth, and in probably the majority of cases the tooth is longer and stronger in the females. In nearly all the species of the aberrant groups (*I* to *III* and *XII* to *XVIII*) the tooth is intra-median and small, although in many of the females the tooth is median and strong. In one species the tooth is distinctly in front of the middle (*hirtiventris*). There is no special form of claw coincident with the modifications of structure of the hind tibial spurs.

A curious monstrosity (?) is shown by the outer anterior claws of the male of *vehemens* (Pl. iii, fig. 9, a, b, c), in which there is a small additional tooth between the apex and the normal tooth. From what we know of genera at present existing, this structure is probably a remnant of some type now extinct.

We owe to Dr. LeConte the observation that two primary series exist in *Lachnosterna*: *first*, those in which the posterior tibial spurs of the male are both free and movable; *second*, those in which the inner spur is fixed, while the outer alone is movable.

In the first series the last abdominal segment is short, sometimes almost linear, and the tooth of the claws usually intra-median, at times almost basal.

In the second the last ventral is longer, in fact nearly as long or even longer than the preceding segment, and the tooth of the claw median.

These characters are by no means constant in the two series. The length of the last ventral segment in the first series is subject to such variation that, from the linear form, it approaches very closely to the length observed in many of the species of the second series. Nor is the position of the tooth on the claw constant, as in very many females the tooth may be strong and median, while in the males it is smaller and within the middle.

In the table the structure of the male hind tibial spurs has been taken as a character of first importance, as there is here no variation.

At this time it is as well to note the fact that the spurs of the female hind tibiae are always movable, and there are always two spurs, while in some of the males of the second series above indicated the fixed spur may be very short or entirely absent, as in *prununculina*, etc. (fig. 16)

From the fact that the arrangement of the species is based almost entirely on sexual peculiarities of the male, it is proposed to pass in review the various members of the body and give, as briefly as possible, the modifications whether sexual or otherwise.

BODY.—The form is usually more robust in the female, more expanded posteriorly and more convex, and when there are differences in color the female is nearly always darker.

VESTITURE.—When the surface is hairy the pubescence is denser and coarser in the female, the erect hairs, if any, are longer (see Group *XII*). The metasternum is nearly always hairy, often densely, the hair often long, but in nearly every instance the hair of the female is shorter and less dense.

HEAD.—In a number of species in various parts of the genus the head is notably broad, with rather large and prominent eyes. In this case the head of the male is perceptibly the larger, while in the female the clypeus is somewhat broader at base, being less crowded between the swollen eyes.

CLYPEUS.—The clypeus is usually more or less emarginate or sub-bilobed (fig. 1), although there are many species with entire clypeus (figs. 2 and 3). At base the clypeus is expanded, forming a portion of the canthus which invades the eye, but in the species of the *tristis* group (fig. 2) the clypeus is coarctate at base, not extending over the eye, and consequently not wider than the front. The margin of the clypeus is always reflexed, in some very widely, in others scarcely at all with all manner of intergrades. It has been observed that those species with the narrowly reflexed border have the punctures denser than those with the widely reflexed border in which the punctures are very often sparse. The extent of emargination sometimes varies sexually, being deeper in the female (*lanceolata*). The punctuation of both clypeus and front often varies between the sexes.

ANTENNÆ.—It may be said, as a general rule, that the antennæ are longer in the male than in the female. In the vast majority of species the club is much longer in the male, although in some members of the *crenulata* group the difference is hardly perceptible.

The most important modification is in the number of joints, the usual number is ten (fig. 4), while sixteen have 9-jointed (fig. 11) antennæ. This character must be used with extreme care, and in no case should a species be said to have 9-jointed antennæ when but one specimen is at hand. Instances are by no means rare of specimens of well known 10-jointed antennæ species with but nine joints and others will have the two antennæ unequal in the number of joints. It must not be forgotten that the tendency is toward a reduction of the number of joints by a coalescence and never to an increase of the number, that is, the 10-jointed species have occasionally individuals with 9-jointed antennæ, but in no 9-jointed species has an individual ever been seen with ten joints. The coalescence may go still further in the 9-jointed species, as specimens are before me in which not more than eight joints can be counted. In one species (*errans*) all the males seen have 10-jointed antennæ, while the four females seen have them 9-jointed.

MAXILLARY PALPI.—The terminal joint varies in length between the species as well as in its form, being either cylindrical and obtuse, fusiform or ovate, often with a flattening or impression on the outer side, but neither peculiarity seems to be confined to, or characteristic of any group.

THORAX.—This member varies in form as will be seen by reference to the descriptions. In every case the form described is that seen when viewed directly from above. Nearly all the species have the lateral margin more or less ciliate, but the hairs are so apt to be lost that no mention is made of them unless conspicuous.

ELYTRA.—There is no great difference in the form or sculpture of the elytra, except in *cribrosa*, in which the surface is subsulcate, the intervals forming nine indistinct costæ on each side. In the other species the costæ hardly deserve that name, except theoretically. The sculpture consists of a well-marked sutural costa limited by a deep stria, although in several species this costa is absent (*ecostata* and *politula*). There are three oblique discal costæ and one submarginal parallel with the outer margin. The first costa, when distinct, is dilated posteriorly, and is there limited internally by the sutural stria. The other costæ are scarcely distinct. The submarginal is not often well defined.

The extreme margin of the elytra is ciliate in very many of the species, but the hairs are often lost by abrasion.

PYGIDIUM.—While the pygidium does not differ in the sexes very materially in some species, in very many that of the female is much more elongate, often more convex, the punctuation more defined and the surface more shining.

ABDOMEN.—The differences are for the most part of a purely sexual nature, and their description is given with each species.

LEGS.—As a rule the legs of the female are shorter and stouter than in the male (fig. 8). This is especially noticeable in the front tibiae and hind femora. The tarsi are all shorter in the female, more perceptibly in those of the hind leg. The greatest disparity in length is observed in the species of the first and second groups, elsewhere the difference is not so great, the usual ratio being—the first four joints of the male hind tarsus are equal to the five of the female. The only other tarsal modification is that of *calceata* (fig. 15). The sexual differences in the claws have already been explained.

The posterior tibiae are either squarely or obliquely truncate at apex, the edge continuous in all the species excepting those of Groups VI and VII, in which in the males there is a sinuation of variable extent at the base of the fixed spur from which a broad groove extends along the inner edge of the tibia (figs. 13–14).

In the grouping of the species which follows I have adhered to the characters used by Dr. LeConte, but have modified their use to suit the greatly increased material. The subject has been a very difficult one to treat, in the *fusca* group especially, from the tendency to vary in those characters most serviceable in a synoptic table. With a little experience there will be no great difficulty in referring either sex to its appropriate group, but beyond that males alone can be safely used.

The following arrangement seems to give a fairly natural sequence of the species:

- | | |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| Hind tibiae ♂ with both spurs free..... | 2. |
| Hind tibiae ♂ with one spur fixed..... | 5. |
| 2.—Species very robust, one or both sexes apterous; hind tarsi ♂ very long,
those of ♀ scarcely longer than the tibiae..... | 3. |
| Species of usual oblong form; both sexes winged..... | 4. |
| 3.—Body clothed with scales; thorax not narrowed behind. | |
| | Group I, <i>lanceolata</i> . |
| Body glabrous; thorax widest at middle, narrowed at base as well as apex. | |
| | Group II, <i>farcta</i> . |
| 4.—Inner spur of hind tibiae ♂ stout and contorted (fig. 12).. | Group III, <i>torta</i> . |
| Spurs of hind tibiae ♂ both slender..... | 11. |

- Group I, lanceolata.

This group contains but one well-known species originally described as *Melolontha* by Say, and afterwards made the type of *Tostegoptera*

by Blanchard, which was alternately suppressed and revived by LeConte. Finding no reason based on structure, or suggested by convenience, I return it to where LeConte first placed it.

1. ***L. lanceolata*** Say.—Variable in form in the sexes, brownish to nearly piceous, subopaque; surface alutaceous, sparsely clothed with elongate whitish, or yellowish scales. Clypeus sinuate at middle, more distinctly ♀, margin rather widely reflexed, densely punctured, scales extremely small, front rather more roughly sculptured, the scales more hair-like in the males. Thorax not narrowed at base, arcuately narrowed in front, the margin strongly crenate, with short ciliae; surface closely not deeply punctate, each puncture with a scale, median line smoother. Elytra not distinctly punctured, but with an imbricate surface, the sutural costa distinct, the discal costae very feeble. Pygidium opaque, with close, but shallow punctures and few hair-like scales ♂, or more shining, more sparsely punctate, smoother near apex and sparse scales ♀. Metasternum densely finely punctate, the hairs short, but dense. Abdomen moderately closely punctulate, smoother at middle with numerous scales. Tarsal claws curved, toothed near the base, tooth small ♂, larger ♀. Last joint of maxillary palpi cylindrical, not compressed. Length .52—.68 inch; 13—17 mm.

MALE.—Form oblong, nearly parallel, body winged; metasternum of normal length. Antennal club nearly as long as the stem. Second ventral segment obtusely carinate at middle, third and fourth with an elevated crest, higher on the fourth, fifth segment slightly concave, emarginate at middle of posterior border. Pygidium broader than long. Tarsi long and slender, the posterior one and a half times the length of the tibia. Spurs of hind tibiae very slender. Scutellum oval (fig. 7).

FEMALE.—Ovate, ventricose, apterous; metasternum short. Antennal club much shorter than the funiculus. Abdomen simple. Legs stouter than the male, the tarsi stouter and shorter, the posterior not longer than the tibia. Spurs of hind tibiae shorter and broader. Scutellum transverse (fig. 8).

VARIATIONS.—When the specimens are perfectly fresh the scales cover the surface very evenly; when they have been transported and subject to slight abrasion the scales are partly removed along the lines of the discal costae, so that on each side are three abraded vittae.

This species formed for Blanchard the type of *Tostegoptera*, was recognized by Burmeister, but rejected by Lacordaire and LeConte as based on insufficient characters.

Occurs from Kansas to Texas.

Group II, *farcta*.

Form more or less ventricose and convex. Clypeus entire, or faintly sinuate. Antennæ 10-jointed. Last joint of maxillary palpi fusiform or ovate, feebly or not impressed. Thorax broadest at middle, narrowed at apex and base, the margin more or less serrate. Metasternum shorter than normal, very short in the females of all and also the ♂ of *cribrosa*. Legs stouter in the females, the hind tarsi much shorter. Antennæ 10-jointed.

The group has but one peculiar character common to all the species—the form of the thorax. All three are dissimilar in appearance, and with more species might be separated into separate groups.

One species was made the type of *Eugastra*, for the retention of which no valid reason exists.

The species are as follows:

Elytra subsulcate, both sexes apterous, the metasternum very short.

2. ***cribrosa*.**

Elytra without grooves, at most with the normal costæ feebly indicated; both sexes very feebly winged.

Piceous black; elytra with scattered white scales.....3. ***æqualis*.**

Chestnut brown or piceous; elytra without scales or hairs.....4. ***farcta*.**

These species belong to the Rio Grande Valley and northward.

2. ***L. cribrosa*** Lec.—Broadly ovate and convex, piceous black, shining. Clypeus feebly sinuate, margin narrowly reflexed, surface densely punctured and opaque, punctures coarser in the female. Thorax obtusely angulate at middle, narrowed at base and apex, margin coarsely serrate and ciliate; surface very coarsely, densely and moderately deeply punctured; a short, smooth, median line. Scutellum in both sexes short and transverse. Elytra with basal margin slightly reflexed, form broadly oval; surface subsulcate, or (if preferable) with eight obtuse discal costæ, the intervals coarsely, confluent punctured. Pygidium with coarse, shallow, sparsely placed punctures. Metasternum very coarsely, not densely punctured, the hairs extremely short. Abdomen sparsely coarsely punctate. Claws arcuate, a moderately long acute tooth near the base in both sexes. Last joint of maxillary palpi ovate, with a feeble impression. Metasternum short, body apterous in both sexes. Length .65—.90 inch; 16.5—23 mm.

MALE.—Antennal club not as long as the funiculus. Abdomen broadly impressed at middle. Hind tibial spurs slender, the tarsi much longer than the tibiæ.

FEMALE.—Antennal club small and lenticular. Posterior legs stouter than in the male, the tarsi not longer than the tibiæ, spurs slender, but broader than in the male.

VARIATIONS.—As might be expected in a species with such rough sculpture, the distinctness of the costæ may vary and the sculpture between them be less pronounced. The color also varies, but this is a matter of greater or less maturity.

With this species I have united *ventricosa* Lec. The two species were each described from two females, the *cribrosa* types being smaller and less mature. The genus *Eugastra* was founded to receive these species, but there are no reasons why it should be retained distinct from *Lachnosterna*.

Occurs in Texas in the Rio Grande Valley.

I have a species from Mexico closely allied to the above, but smaller; the elytra shorter and broader, with but four costæ. As it is represented by a female in not very good state, and as it is not advisable to complicate bibliography I pass it with this mention.

3. ***L. æqualis*** Lec.—Ovate, convex, piceous-black, shining; surface with sparsely placed, white, scale-like hairs. Body ♀ with rudimentary wings. Clypeus entire concave, margin reflexed; surface coarsely, not densely punctured. Thorax widest at middle, the margin serrate, sides arcuate, disc deeply coarsely punctured. Elytra deeply not closely punctate, the discal costæ entirely obliterated. Pygidium convex, strongly punctured. Metasternum with moderately dense short hair. Length .80 inch; 20 mm.

The above short description is practically a transcript of that of Dr. LeConte. The specimen is not now before me, and as far as I know the unique has never been duplicated. By its facies it recalls *ventricosa* if the latter is deprived of costæ.

Collected at El Paso, Texas.

4. ***L. fureta*** Lec.—Ovate, convex, facies robust, rufocastaneous, dark brown or piceous, moderately shining. Body feebly winged in both sexes. Clypeus feebly sinuate, border reflexed, more widely in front; surface coarsely and moderately closely punctate, the front more coarsely. Thorax broadest at middle, very little narrowed in front, margin distantly crenate, with short ciliæ, punctures of the disc moderately coarse, regularly placed, not dense, near the lateral margin very sparse. Elytral punctures as coarse as those of the thorax and rather deeper, as closely placed; surface slightly scabrous, sutural costa well marked, the discal costæ scarcely visible. Pygidium convex, gibbous near apex ♀, punctures finer than on the thorax, scarcely visible near the apex. Metasternum sparsely punctate, the hair very short and sparse. Abdomen sparsely punctate, more coarsely in the female. Claws moderately arcuate, the tooth intramedian in both sexes, and acute, longer in the female. Last joint of maxillary palpi fusiform, not impressed. Length .72—.97 inch; 18—24.5 mm.

MALE.—Antennal club as long as the funiculus. Abdomen broadly impressed at middle. Penultimate ventral segment with vague oblique impressions, which meet at the suture in front, behind

them the surface slightly quadrate. Elytra slightly broader at middle. Hind tarsi much longer than the tibiæ. Outer spur of hind tibia broad, with translucent border, apex obliquely truncate; inner spur shorter, broad, squarely truncate.

FEMALE.—Antennal club small, lenticular. Spurs of hind tibiæ longer and more slender. Elytra broader behind the middle. Posterior tarsi not longer than the tibiæ. Posterior legs much stouter than in the male.

VARIATIONS.—The color varies from rufocastaneous to dark brown, almost piceous. The sculpture varies but little.

The male is very like other robust species as *crassissima* in form, the female is more inflated posteriorly as in the females of the European *Geotrogus*. The metasternum in both sexes is short, more so in the female.

Occurs in Texas, Waco (Belfrage), New Braunfels (Lindheimer).

Group III, *torta*.

This group consists of two species, the peculiar character being found in the strongly curved and stout inner spur of the male hind tibia. The clypeus is emarginate, not deeply, the border reflexed; last joint of palpi impressed; the antennæ are 10-jointed; the spurs of the hind tibiæ are free in both sexes; the last ventral segment short; hind tarsi distinctly shorter in the female.

The two species are as follows:

- Large, robust, sculpture of surface well marked. Inner spur of male hind tibia inserted nearly at a right angle to the apex.....5. ***torta***.
Smaller, not robust; surface comparatively smooth. Inner spur of male hind tibia inserted in the axis of the tibia.....6. ***hamata***.

These two species are from Texas.

5. ***L. torta*** Lec.—Oblong, slightly broader posteriorly, convex, facies rather robust, reddish-brown, moderately shining. Head moderately broad. Clypeus distinctly emarginate, the margin reflexed, densely punctured, more coarsely in the female, front similarly punctured. Thorax with sides arcuate, the margin entire, crenate anteriorly, the disc rather closely and moderately coarsely punctate. Elytral punctures rather coarser than those of the thorax and somewhat more closely placed; the surface somewhat rugulose, the discal costæ often nearly wanting, sometimes feebly indicated. Pygidium closely and coarsely punctate. Metasternum moderately closely punctate, the hair rather long not dense. Abdomen coarsely, but not densely punctured over the entire surface, the punctures less deep at the middle. Last joint of maxillary palpi fusiform, not impressed. Claws strongly arcuate, the tooth smaller and intramedian ♂, larger and median ♀. Length .75—.96 inch; 19—24 mm.

MALE.—Antennal club a little shorter than the stem. Abdomen broadly flattened, the penultimate segment with a slightly granulate space posteriorly. Inner spur of hind tibia stout, inserted at the side of the end of the tibia, curved in a quadrant inward and downward, outer spur small, triangular (fig. 12).

FEMALE.—Antennal club shorter than the funiculus. Spurs of hind tibiæ normal. Posterior tarsi distinctly shorter than in the male.

VARIATIONS.—Like nearly all the reddish-brown species the color may vary in intensity. The costæ of the elytra are more distinct in some specimens, and in these the surface seems more rugose.

A very distinct and easily determinable species of the male is at hand, fortunately that sex is by far the most abundant.

Occurs in Texas, Waco (Belfrage), San Antonio (Brouse).

6. **L. hamata** n. sp.—Oblong, slightly broader behind, rufotestaceous, thorax darker, head brown; surface shining. Clypeus emarginate, margin narrowly reflexed; surface, with the front, closely punctate. Thorax narrowed in front, sides feebly arcuate, margin distantly interrupted by the insertion of short ciliæ, surface with moderate punctures; regularly, not closely placed. Elytral punctures similar to those of the thorax, but deeper; the discal costæ scarcely visible, the sutural well marked. Pygidium coarsely moderately closely punctate, smoother at the sides and apex. Metasternum finely not densely punctate, the hair moderately long, but not dense. Abdomen sparsely punctate, smooth at middle. Legs more red in color, tibiæ and tarsi brown. Claws feebly arcuate, the tooth moderate in size and intramedian. Last joint of maxillary palpi cylindrical, not impressed. Length .66 inch; 17 mm.

MALE.—Antennal club a little shorter than the stem. Abdomen flattened at middle, the penultimate segment declivous at middle of posterior half and slightly granulate. Inner spur of posterior tibiæ stout, strongly arcuate, arising at the end of the tibia, the outer spur short and triangular (fig. 11).

The unique before me superficially resembles *ephilida*, although somewhat dilated behind, so that while related to *torta*, structurally, it is quite unlike it in facies. The curved spur of the male hind tibia arises in a nearly direct line from the end and projects less inwardly than in *torta*.

One specimen, Texas.

Group IV, *ephilida*.

This group contains species of cylindrical form and compact build. The head is rather broad. The clypeus is entire in one species, feebly emarginate in the others. Antennæ 10-jointed, club elongate in the

male. The last joint of the maxillary palpi is fusiform, more or less impressed. Thoracic margin entire, except in *generosa*. Metasternum very feebly hairy, or almost naked, except in *generosa*. Posterior tibiae of male with the inner spur fixed, although short, and in two species entirely absent. The posterior tarsi do not notably differ in length in the sexes. The claws are feebly curved, although rather stout, the tooth not large, always intramedian or even basal, in the females of one species median. The last segment of the abdomen is rather shorter than usual in the species with one of the hinder spurs of the male fixed.

The following table will assist in the identification of the species:

Clypeus entire, slightly more prominent at middle; abdomen ♂ deeply im-	
pressed, the last segment nearly vertical.....	7. latifrons .
Clypeus emarginate, although feebly at times.	
Metasternum hairy; margin of thorax serrate.....	8. generosa .
Metasternum hairy; margin of thorax entire.....	9. prætermissa .
Metasternum nearly naked; margin of thorax entire.	
Inner spur of hind tibia ♂ entirely wanting.	
Form robust, surface usually more or less iridescent.	
	10. prununculina .
Form slender, surface always shining.....	11. glaberrima .
Inner spur of hind tibia ♂ distinct.	
Form less slender, surface shining.....	12. ephilida .

These species are all from the Southeastern Atlantic or Gulf regions.

7. **L. latifrons** Lec.—Oblong, cylindrical, variable in color from purplish-brown to rufotestaceous; surface in the darker specimens decidedly pruinose. Abdomen always pale. Head moderately broad. Clypeus entire (fig. 3). concave, the margin rather widely reflexed; surface sparsely punctate. Thorax arcuately narrowed from the base. margin entire, punctures regularly placed, not coarse nor close, a vague impression of the base each side. Elytral punctures a little coarser and deeper than on the thorax, not densely placed, the discal costæ very faint. Pygidium sparsely punctate. Metasternum rather coarsely and closely punctate, the hairs short and conspicuous. Abdomen sparsely punctate at the sides. Claws feebly arcuate, the tooth median, very small in the male, larger in the female. Last joint of maxillary palpi fusiform, slightly flattened externally. Length .60—.72 inch; 15—18 mm.

MALE.—Club of antennæ pale, longer than the stem. Abdomen deeply longitudinally impressed, the impression deeper and broader posteriorly, forming a rather deep triangular concavity in the penultimate segment. Terminal segment placed vertically to the other segments deeply concave at its middle, its apex acute, terminated by two small dentiform processes. Pygidium transverse, convex.

FEMALE.—Antennal club shorter than the funiculus. Pygidium nearly as long as wide, less convex than in the male and more nearly oval.

VARIATIONS.—As stated the color varies from dark purplish-brown to rufotestaceous. As far as I have seen the very dark specimens are always females. The pale males resemble *ephilida* in color, are rufotestaceous, the head and thorax somewhat darker. The pruinosity of the surface is very feeble, easily removed and not visible in the pale specimens.

While this species belongs very evidently in this group, the fixed spur of the male hind tibia is moderately long, the free spur is long and slender. In the female both spurs are long and slender. This species affords an instance of the necessity which often occurs in systematic work, where one character must be rejected which points in a direction opposite to the indication of all other characters.

Occurs in Florida. Dr. LeConte gives New York as the habitat of his types, but this is undoubtedly an error.

8. **L. generosa** n. sp.—Oblong, parallel, moderately robust, chestnut-brown moderately shining; surface slightly pruinose. Clypeus feebly emarginate, margin reflexed, very narrowly at the sides, punctuation coarse and close, quite dense at the middle of the front. Thorax narrowed in front, sides parallel behind, margin coarsely serrate; surface coarsely and rather closely punctate, median line smooth, a distinct depression in the front angles. Elytra with punctures coarser than the thorax and rather more closely placed, except on the declivity; surface slightly rugose, the discal costæ very feeble. Pygidium sparsely punctate, a median smooth space which becomes broader to the apex. Metasternum densely punctate, the hair long and dense. Abdomen very sparsely punctate. Claws feebly curved, the tooth rather long and slightly intramedian. Last joint of maxillary palpi fusiform, slightly flattened externally. Length .75 inch; 19 mm.

MALE.—Antennal club as long as the stem. Abdomen flattened at middle, penultimate ventral with a short arcuate elevation near the posterior border (fig. 36). Last ventral with a moderately deep, distinctly circumscribed concavity, smooth at bottom. Inner spur of hind tibia short.

Of this species but one specimen is now before me. It resembles *latifrons* in form, and has a color similar to that species. It seems to have been sent to Dr. LeConte as *uniformis* Bl., at least specimens so labelled are in his cabinet, but the description as well as notes made by Dr. LeConte show that *uniformis* is synonymous with *ephilida*.

One specimen, Texas.

9. **L. praetermissa** n. sp.—Oblong, slightly broader behind dark rufotestaceous to piceous brown, usually paler beneath, moderately shining. Clypeus feebly emarginate, the border narrowly reflexed; surface moderately, coarsely, sparsely punctate, front similar. Thorax obliquely narrowed in front, the sides posteriorly either parallel or slightly sinuate, the margin sparsely ciliate, not crenate, punctures moderately coarse, irregularly placed, with a tendency to form groups, median region somewhat smoother. Elytral punctures larger and closer than those of the thorax, somewhat stellate, the surface slightly wrinkled, the discal costæ very indistinct, the submarginal feeble posteriorly. Pygidium convex, the punctures finer and sparser than on the thorax. Metasternum densely punctulate, the hair rather long and dense. Abdomen at sides finely sparsely punctate, the last two segments more coarsely punctate. Last joint of maxillary palpi shortly fusiform, not impressed. Claws arcuate, a strong acute tooth at middle. Length .58—.64 inch; 15—16 mm.

MALE.—Antennal club as long as the stem. Abdomen slightly flattened at middle, the penultimate segment with a slight roughened ridge close to the posterior border; last ventral concave, broadly emarginate at apex. Inner spur of hind tibiæ very short, the outer long and slender.

VARIATIONS.—The specimens before me show no variation, except in size and color.

By its slightly broader form this species resembles the *congrua* group, but the very short fixed spur shows its relationship with the present group.

Only males have been seen. Collected in Louisiana by Morrison.

10. **L. prununculina** Burm.—Robust cylindrical, variable in color from reddish-brown to black; surface sometimes shining, often slightly pruinose, rarely with a dull smoky surface. Clypeus feebly broadly emarginate, the margin moderately reflexed, punctures moderate in size, close but not dense ♂, sparser ♀. Thorax arcuately narrowed in front, nearly parallel behind, the margin entire ♂, or very slightly irregular ♀, punctures coarse, regularly disposed, closely placed, but not dense, the basal margin slightly impressed each side. Elytra punctured similarly to the thorax, the costæ very feeble. Pygidium more finely and closely punctured than the thorax. Metasternum closely and moderately coarsely punctate, the pubescence very sparse and short. Abdomen more finely and sparsely punctate. Claws with a moderate tooth near the base in both sexes. Last joint of maxillary palpi fusiform and impressed. Length .56—.70 inch; 14—18 mm.

MALE.—Antennæ rufotestaceous, club paler and a little longer than the stem. Penultimate segment flattened at middle, an oblique obtuse elevation each side, last ventral moderately deeply concave, the border of the concavity limited posteriorly by a slight ridge which, near the apex, forms a slight cusp each side. Inner spur of hind tibia wanting, the outer long and slender (fig. 16).

FEMALE.—Club lenticular, shorter than the funiculus. Tarsi somewhat stouter than in the male, but scarcely shorter, the spurs of hind tibiæ long and slender.

VARIATIONS.—There is scarcely any variation in sculpture and very little in form, although the males are a little more slender. The color shows very striking variations which can be best explained by a list of the specimens before me.

Reddish-brown, surface shining—two males.

Reddish-brown, darker than the preceding forms, the surface sub-opaque, distinctly iridescent—six males, three females.

Brown-black, surface opaque, with slight iridescence—five females.

Piceous black, surface shining, without iridescence—two females.

From the above table it will be seen that the males, as a rule, are paler than the females.

In very well preserved specimens the elytral punctures have a very short hair.

This species is one of those placed by Burmeister in *Trichestes*, and while he ranges it among those with 9-jointed antennæ he remarks that "third joint before the club has such a distinct stricture that the antennæ may be counted 10-jointed. The specimen described by Burmeister belongs to the second series above described.

This species has, until now, borne the name *cerasina* in our cabinets, and it seems incomprehensible that Burmeister's good description should have escaped recognition.

Occurs in Georgia and Florida.

11. ***L. glaberrima*** Blanch.—Oblong, cylindrical, rufotestaceous, shining. Head usually a little darker. Clypeus moderately deeply, but broadly emarginate, margins moderately reflexed; surface coarsely and closely punctate, front similarly punctured in the male, more sparsely in the female. Thorax arcuately narrowed to the front, margin entire; surface moderately coarsely, not closely punctate, the punctures evenly disposed. Elytral punctures coarser and closer, the costæ barely visible. Pygidium moderately coarsely punctate, less closely in the female and more shining. Metasternum moderately coarsely and closely punctate, nearly naked, the hairs very inconspicuous. Abdomen sparsely punctate, the last two segments more closely, the punctures also coarser. Claws moderately curved, the tooth intramedian in the male, longer and median in the female. Last joint of maxillary palpi fusiform, distinctly impressed. Length .50—.60 inch; 13—15 mm.

MALE.—Antennal club as long as the stem. Abdomen slightly flattened at middle, the penultimate segment slightly rugulose, last

segment concave with two feebly elevated cusps within the concavity. The inner spur of hind tibia entirely absent, the outer long and slender.

FEMALE.—Antennal club shorter than the funiculus. Spurs of hind tibiæ slender and acute, hind tarsi distinctly shorter than the male. Pygidium less transverse.

VARIATIONS.—Except in size this species is very little variable, the color is very uniform.

This species resembles *ephilida* very closely, and differs in having the clypeus more distinctly emarginate. The male sexual characters afford the most certain method of separating the two.

Occurs from Pennsylvania to Florida.

12. **L. ephilida** Say.—Moderately elongate, cylindrical, rufotestaceous, the head and thorax usually darker; surface moderately shining. Clypeus broadly emarginate, the border reflexed; surface moderately closely punctate, the front more densely, the ♀ more coarsely punctured than the ♂. Thorax rather short, sides arcuate, narrowed in front, margin entire, the punctuation moderately coarse, not dense, an indistinct foveæ each side nearer the base than the side. Elytral punctures coarser and deeper than those of the thorax, apparently closer, the discal costæ usually feeble. Pygidium ♂ broader than long; surface irregularly wrinkled, the punctures large and vague, of ♀ smoother, punctured like the thorax, nearly as long as wide. Metasternum closely punctate, the hair moderately long, not dense. Abdomen coarsely, not closely, punctate at the sides, smooth at middle. Claws with moderate size tooth, intramedian ♂, longer and more nearly median ♀. Last joint of maxillary palpi fusiform, almost ovate, distinctly impressed. Hind tarsi similar in the two sexes. Length .55—.75 inch; 14—19 mm.

MALE.—Antennal club not quite as long as the stem, the funicular joints nearest the club transverse. Abdomen broadly channeled, penultimate segment (fig. 21) feebly emarginate at middle, a roughened space in front of the emargination; last segment emarginate, an obtuse cusp each side of the emargination, the middle of the segment abruptly depressed and roughened. Inner tibial spur short, outer long and slender.

FEMALE.—Club of antennæ much shorter than the funiculus. Spurs of hind tibiæ slender.

VARIATIONS.—In the well developed specimens the form is nearly as cylindrical as in *quercus*, but three specimens of smaller size from Texas and Florida are more decidedly ovate and resemble the females of *gibbosa*. In sculpture there is the usual variation in the distinctness of the costæ, and some specimens are slightly more rugose. Among the numerous specimens examined several have been ob-

served with 9-jointed antennæ. The peculiar abdominal characters of the male leave no doubt that this is merely an accident.

With this species I have united *Burmeisteri* Lec., founded on smaller specimens. The name was given under the supposition that Burmeister had incorrectly identified *longitarsis* Say, but I think that any one who will read his description will be fully satisfied that Burmeister had a genuine *longitarsis* before him.

Occurs from Canada to Florida and Texas.

Group V, *longitarsis*.

This group contains two species which agree in having the antennæ 9-jointed, the palpi fusiform, distinctly impressed. The spurs of the male hind tibiæ are—the inner very short and fixed, the outer long and slender. The claws have a small intramedian tooth.

The following table will assist in the separation of the species:—

Clypeus deeply emarginate; form elongate cylindrical, pale yellowish testaceous, head fuscous or piceous.....	13. longitarsis .
Clypeus entire; form oblong, slightly broader behind, rufotestaceous, head darker	14. clemens .

Were it necessary, by the presence of other species, these two might form the types of distinct groups.

The first species occurs in the Mississippi Valley, the second in Florida and Texas, and has been erroneously determined by Dr. LeConte as *dispar* Burm.

13. **L. longitarsis** Say.—Slender, elongate, cylindrical, pale yellowish testaceous, front fuscous or piceous; surface moderately shining. Clypeus concave, deeply emarginate, surface shining, coarsely very sparsely punctured, front coarsely densely punctured. Thorax short, transverse, strongly arcuate in front, slightly sinuate, margin entire, fimbriate in front, surface somewhat irregular, the punctures coarse not deep, rather closely placed. Elytra coarsely punctured, the punctures rather shallow, sparser near the apex, the discal costæ very feeble, the submarginal moderately well defined. Pygidium ♂ with coarse shallow punctures, those of the ♀ finer and more sparse near the apex. Metasternum closely, but indistinctly punctate, the hairs moderate in length but sparse. Abdomen sparsely indistinctly punctate at the sides, the last two segments more coarsely punctured, Last joint of maxillary palpi short, fusiform, very distinctly impressed. Claws feebly curved ♂ and with a small acute tooth near the base, the ♀ claw more arcuate, the tooth stronger and median. Length .41—.52 inch; 10.5—13 mm.

MALE.—Antennal club a little longer than the stem. Abdomen slightly flattened at middle, the last segment irregularly concave. Inner spur of hind tibia male short, the outer long and slender.

FEMALE.—Antennal club shorter than the funiculus. Posterior tarsi shorter than in the male.

VARIATIONS.—The costæ vary slightly in their distinctness and the head may be pale brown or nearly black.

The species described by Dr. LeConte as *frontalis* seems hardly entitled to be considered a variety.

Burmeister has very correctly described Say's species, excepting that he has placed it among those with 10-jointed antennæ. The synonymy given is, however, erroneous, *glaberrima* Bl. being an altogether different species.

Occurs from Illinois to Kansas and Montana, southward to New Mexico. A specimen in my cabinet is labelled Louisiana, possibly erroneously.

14. **L. clemens** n. sp.—Oblong, slightly broader behind, rufotestaceous, shining, head piceous. Clypeus concave, entire, margin rather widely reflexed, shining with sparse coarse punctures, front more closely and finely punctate. Thorax short, sides arcuate in front, nearly parallel behind, margin entire, punctures of disc moderate, regularly and rather closely placed, sparse near the sides. Elytra rather more coarsely but less closely punctured than the thorax, the discal costæ scarcely evident. Pygidium moderately punctate, smoother at middle and near the apex. Metasternum sparsely punctate, the hairs short and sparse. Abdomen more finely punctate, smooth at middle. Last joint of maxillary palpi fusiform, slightly impressed. Claws feebly arcuate, the teeth very small and intramedian ♂, or stronger ♀. Length .40—.46 inch; 10—11.5 mm.

MALE.—Antennal club as long as the stem. Abdomen longitudinally impressed, the last segment with a slight concavity. Inner spur of posterior tibia very small, the outer long and slender.

This is one of our smallest species, resembling a diminutive *ephilida*, although less cylindrical. It resembles also *dispar*, but this has a more cylindrical form and differs also in the group characters.

This species is the one determined by Dr. LeConte as *dispar* Burm., and so described in the "Review," but I am convinced that Burmeister's name belongs to another species as will be explained further on.

Occurs in Florida and Texas.

Group VI, *dispar*.

Clypeus deeply concave, the margin widely reflexed, entire. Last joint of maxillary palpi fusiform, slightly impressed. Antennæ 9-jointed, club moderately long. Metasternum almost naked. Inner spur of posterior tibiæ of male moderately long, prolonged in the

axis of the tibia, a distinct, but feeble sinuation of the apical margin anterior to the insertion of the tarsus, adjacent to the fixed spur. Claws rather slender, tooth small and slightly intramedian.

One species enters this group. The sinuation of the apex of the ♂ hind tibia allies it with the *congrua* group between which and the *longitarsis* group it naturally takes its place.

The species was made the type of a distinct genus (*Gynnis*) by Dr. LeConte, but the characters are too feeble to admit of its retention.

15. **L. dispar** Burm.—Elongate, cylindrical, pale rufotestaceous, thorax somewhat darker, head fuscous or piceous; surface moderately shining. Clypeus testaceous, semicircular, concave, margins rather widely reflexed, punctures rather coarse, not closely placed, front more closely punctate, the punctures coarser in the female. Thorax short, scarcely narrower at apex than base, sides regularly arcuate, margin obsoletely crenate, disc with moderately coarse punctures rather closely placed, coarser and deeper in the female. Elytra very coarsely and closely punctate, the discal costæ fine and indistinct, the submarginal slightly distinct posteriorly. Pygidium coarsely sparsely punctate, shining, punctures closer in the female. Metasternum sparsely, coarsely punctate, without hairs. Abdomen more sparsely and finely punctate. Claws feebly arcuate, the tooth small and slightly intramedian, slightly longer in the female. Last joint of maxillary palpi short fusiform, slightly impressed. Length .37—.48 inch; 9.5—12 mm.

MALE.—Antennal club as long as the stem. Abdomen vaguely impressed at middle, last segment slightly concave, a small dentiform process projecting backward from the anterior margin. Inner spur of hind tibia fixed and moderately long.

FEMALE.—Antennal club shorter than the funiculus. Spurs of posterior tibiæ long and slender, the tarsi distinctly shorter than in the male.

VARIATIONS.—Burmeister describes a specimen as fuscous, this is due more to a bad state of preservation than an actual difference of color.

In adopting the Burmeister name for this species (formerly *Gynnis debilis* Lec.) in place of that determined by Dr. LeConte as *dispar*, it is proper that the reasons should be given.

Burmeister indirectly compares the present species with *gracilis* (*volvula* Lec.), a comparison not at all applicable to *clemens* (*dispar* ‡ Lec.); the thorax is in the female more coarsely and deeply punctured than the male, a character very evident in the species under consideration; the shorter clypeus of the female is also noted by Burmeister.

Occurs in Florida. The specimen described by Dr. LeConte is said to be from near Philadelphia, but the source from which the specimen was obtained causes me to seriously doubt the accuracy of the locality.

Group VII, *congrua*.

Clypeus feebly emarginate, the border not widely reflexed. Antennæ 10-jointed, although inclined to vary in *gracilis*, the club rather long. Last joint of maxillary palpi fusiform, not impressed. Metasternum conspicuously hairy, except in *gracilis*. Inner spur of hind tibiæ ♂ fixed, long, more or less curved or contorted, a distinct sinuation of the inner edge of the tibia immediately in front of the tarsal articulation and adjacent to the base of the inner spur. Claws strongly toothed, except in *gracilis*. Tarsi shorter in the female than in the male in the species in which the former sex has been examined.

The essential characters are—the sinuation of the apex of the hind tibiæ together with the more or less emarginate clypeus and the 10-jointed antennæ. *L. gracilis*, by its slender form and the small tooth of its claws is rather aberrant as a member of the group, but it is retained here to avoid what might be considered an unnecessary multiplication of groups. The species are distinguished as follows:

Form slender, subcylindrical, yellowish testaceous; tooth of claws small and slightly intramedian.....16. **gracilis**.

Form oblong oval, more or less robust, color rufotestaceous to brown; tooth of claws strong.

Inner spur of hind tibiæ ♂ arcuate, angularly bent at tip (fig. 14).

17. **gibbosa**.

Inner spur not angularly bent, usually nearly as long as the outer spur.

Abdomen ♂ moderately densely hairy at middle and longitudinally impressed; penultimate ventral without transverse ridge; tooth of claws strong and slightly in front of middle (fig. 13a).

18. **hirtiventris**.

Abdomen ♂ glabrous; tooth of claws strong and median.

Abdomen ♂ deeply longitudinally impressed; penultimate segment without transverse elevation.....19. **congrua**.

Abdomen ♂ at most slightly flattened; penultimate segment with a transverse ridge which is excavated posteriorly, parallel with the margin.

Punctures of thorax not coarser than those of the elytra, not close; thoracic margin entire.....20. **postrema**.

Punctures of thorax very coarse and often umbilicate.

Surface shining; form oblong; punctures of elytra distinct and close, the costæ feeble or absent.....21. **affinis**.

Surface pruinose or iridescent; form short and more robust; punctures of elytra feeble and sparse, the costæ nearly always well marked22. **prunina**.

16. **L. gracilis** Burm.—Elongate, cylindrical, pale rufotestaceous, thorax somewhat darker, head fuscous or piceous. Head broad, eyes large, especially in the male. Clypeus short, deeply emarginate, margin not widely reflexed, moderately coarsely not closely punctate, front similarly punctured. Thorax short, not much narrowed at apex, sides strongly arcuate in front, nearly parallel or slightly convergent posteriorly, the margin subcrenate, surface moderately coarsely not closely punctate. Elytra more coarsely and closely punctate, the discal costæ almost entirely obliterated, the submarginal not at all visible. Pygidium shining, very sparsely punctate. Metasternum sparsely punctate, the hairs short and sparse. Abdomen shining, sparsely, vaguely punctate. Claws feebly curved, the tooth small and nearly median. Last joint of maxillary palpi fusiform, elongate, not impressed. Length .41—.52 inch; 10.5—13 mm.

MALE.—Antennal club as long as the stem. Abdomen slightly flattened at middle, penultimate segment at middle abruptly declivous, last segment feebly concave. Inner spur of hind tibia long, obtuse at apex, distinctly curved and slightly twisted on its own axis, outer spur very slender and long.

FEMALE.—Club of antennæ small and lenticular. Spurs of hind tibiæ slender and acute. Hind tarsi scarcely longer than the tibiæ, much shorter than in the male.

VARIATIONS.—This species is very constant in its color, except as to the head, which at times is not darker than the thorax or again piceous. The head of the male is broader (from the larger eyes) than the female, the thorax is consequently broader in front in the male. The antennæ vary in the number of joints being sometimes 9- at others 10-jointed, and specimens rarely occur with the number unlike on each side.

With this species I have united *volvula* Lec. (Endrosa) and *inana* Lec., both founded on unique females, the one with 9-jointed the other 10-jointed antennæ. Among the pale species of *Lachnosterna* there seems to be a tendency to variation of this sort, while among the darker species it is very rarely seen.

Occurs from Canada to North Carolina and Texas.

17. **L. gibbosa** Burm.—Oblong, convex, slightly broader behind, color variable from reddish-brown to rufotestaceous, moderately shining. Clypeus very feebly emarginate, front more coarsely punctured, convex, with erect hairs. Thorax rather short and convex, the sides arcuate, narrowing in front, the margin somewhat irregular, but hardly crenate, with long ciliæ, disc coarsely rather sparsely punctate, usually with a distinct smooth median space. Elytral punctures as coarse as those of the thorax, but more closely placed; the costæ variable, the submarginal faintly distinct in its apical half. Pygidium convex, subopaque with coarse, but feebly impressed punctures ♂, shining with distinct punctures ♀. Metasternum densely punctured, the hair long and close. Abdomen sparsely

punctate, very much more coarsely on the last two segments. Last joint of maxillary palpi slender fusiform, not impressed. Claws arcuate, a strong, acute, median tooth in both sexes. Length .48—.64 inch; 12—17 mm.

MALE.—Antennal club a little shorter than the stem. Abdomen broadly longitudinally impressed, penultimate segment slightly convex and regular at middle, on each side obliquely plicate, the last ventral deeply concave, the concavity united in its posterior half by an elevated border slightly united. Inner spur of posterior tibia (fig. 14) somewhat sigmoid in form, the proximal portion arcuate with the concavity toward the tarsus, the apical portion suddenly, obliquely bent.

FEMALE.—Antennæ short, the club small, lenticular, shorter than the funiculus, outer funicular joints more or less transverse. Last ventral segment with posterior border vaguely bisinuate. Spurs of hind tibiæ slender and moderate in length. Posterior tarsi one-third shorter than the male.

VARIATIONS.—The color variation has already been indicated. In the fully developed specimens the elytral costæ are but faintly indicated or even entirely wanting, while in the smaller specimens (which have at the same time a more robust facies) the costæ are well developed and the surface of the elytra more coarsely punctured and rugulose.

In his description of this species Burmeister adds a foot note, which I here translate: "One of the two specimens before me shows a remarkably anomaly; the ventral segments, usually completely united, are distinct, convex in their middle and resemble barrel-hoops in appearance." A similar specimen is now before me, and this discovery caused me to compare the species with Burmeister's description.

This species has long been known in our collections as *futilis* Lec., to which must be added *serricornis* Lec., described from a female.

Occurs from Canada southward to Virginia and from the New England States to Kansas.

18. ***L. hirtiventris*** n. sp.—Oblong, slightly oval, pale castaneous, moderately shining. Clypeus feebly emarginate, margin narrowly reflexed, surface moderately closely punctate, front more densely and rugosely punctate. Thorax arcuately narrowed from base to apex, the margin somewhat irregular, but not distinctly crenate, the fimbriæ short, the punctures coarse and close, rather dense near the apical margin, an indistinct smooth median space, a distinct channel along the basal margin from the angles nearly to the middle. Elytral punctures coarser and closer than on the thorax, but less deep, the surface slightly wrin-

kled, the discal costæ scarcely visible, the submarginal distinct. Pygidium coarsely and sparsely, somewhat irregularly punctured. Metasternum densely punctured, the hair moderately long and dense. Abdomen rather closely punctured at the sides, the last two segments more coarsely punctured. Last joint of maxillary palpi fusiform, not impressed. Claws arcuate, the tooth strong, distinctly in front of middle. Length .65 inch; 17 mm.

MALE.—Antennal club as long as the stem. Abdomen rather deeply channeled at middle and with moderately long hair arising from distinct punctures, penultimate segment acutely notched at middle (fig. 17) the last segment abruptly triangularly depressed, the floor of the impression terminating in two rounded lobes between which is a moderately deep acute notch. Inner spur of hind tibiæ moderate in length, projecting slightly obliquely from the tibia, the outer spur longer.

Of this species I have but one male before me, but several others in the cabinet of Dr. LeConte have been examined. It resembles *congrua* superficially so closely that they can hardly be distinguished except by the sexual characters.

The claws are remarkable in having the tooth slightly in front of the middle, the posterior portion of the claw broader than usual. The hairy abdomen is unique.

Occurs in Texas.

19. **L. congrua** Lec.—Oblong, moderately robust, rufocastaneous to picceous, shining. Clypeus feebly emarginate, the border moderately reflexed, surface moderately coarsely and densely punctured, front roughly punctured. Thorax narrowed from base to apex, more obliquely in front, the margin entire, sparsely ciliate, disc moderately coarsely, evenly not closely punctate, a distinct channel along the basal margin from the hind angles nearly to middle. Elytral punctures coarser and closer than those of the thorax, less deeply impressed, the surface slightly wrinkled, the costæ very indistinct, the first discal usually the only one visible beside the sutural. Pygidium coarsely sparsely and indistinctly punctate, the apex truncate. Metasternum densely rather finely punctate, the hair long, dense and silken. Abdomen sparsely finely punctured at the sides, the last two segments much more coarsely punctate. Last joint of maxillary palpi fusiform, not impressed. Tarsal claws arcuate, the tooth moderately large, median and acute. Length .58—.75 inch; 15—19 mm.

MALE.—Antennal club very nearly as long as the stem. Abdomen rather deeply impressed at middle, not hairy, penultimate segment acutely notched at middle, the last segment with a deep triangular impression, with rather abrupt sides, the apical margin sinuous with two small lobes at middle.

VARIATIONS.—There is such a marked difference in color between two large Texas specimens and some smaller ones from Kansas and

Louisiana that they would hardly be supposed to be the same species, but the male sexual characters are absolutely identical. A similar variation in color is seen in *latifrons*.

Only males have been observed.

Occurs in Missouri, Kansas, Texas and Louisiana.

20. **L. postrema** n. sp.—Oblong, moderately robust, castaneous, shining. Clypeus distinctly emarginate, the margin moderately reflexed, coarsely punctate, closely at middle, more sparsely at the sides, front more coarsely punctate, nearly smooth along the suture. Eyes moderately large. Thorax narrower in front, the sides parallel behind the middle, hardly arcuate in front, the margin entire with very short ciliæ, punctuation moderate, not closely, but quite regularly placed. Elytral punctures coarser and closer than those of the thorax, the postscutellar punctures slightly stellate: sutural costæ distinct, discal costæ entirely obliterated, the submarginal faintly indicated near the apex. Pygidium broader than long, convex, the punctures coarse, but feebly impressed, placed along the base and sides. Metasternum moderately densely punctured, the hair not long nor dense. Abdomen very indistinctly, sparsely punctate at the sides, the last two segments with a few coarse punctures near the sides. Last joint of maxillary palpi fusiform, depressed, without impression. Claws feebly curved, the tooth strong and median. Length .76 inch; 19 mm.

MALE.—Antennal club a little longer than the funiculus. Abdomen slightly flattened at middle, penultimate segment with a transverse ridge close to the posterior suture, beneath which the segment is channeled; last ventral flattened with a few granules. Inner spur of hind tibiæ long and slender.

In this species the emargination of the apex of the hind tibia at the base of the inner spur is less marked than in the other species of the group, although quite evident. Its facies is that of *generosa* or some of the more strongly distinctly punctured forms of *fusca*.

One male, Florida.

21. **L. affinis** Lec.—Oblong, distinctly broader behind, brownish or castaneous, shining. Clypeus acutely not deeply emarginate, border narrowly reflexed, surface coarsely and densely punctate, front more coarsely punctate or even cribrate at middle. Thorax narrowed in front, the sides behind nearly parallel, in front oblique, the margin serrate, sparsely ciliate, surface with coarse and deep punctures moderately closely, but somewhat irregularly placed, the median line usually smoother, the basal marginal channel not distinct. Elytral punctures very much finer than those of the thorax, moderately closely placed, distinctly impressed, the sutural costa distinct, the discal costæ very faint or entirely obliterated, the submarginal extremely indistinct or absent. Pygidium sparsely punctate, smoother near the apex. Metasternum closely, but indistinctly punctate, the hair rather short and sparse ♂, very short ♀. Abdomen sparsely finely punctate, each puncture with a short hair, the last two segments more coarsely punctured. Claws curved, the tooth strong and median. Last joint of maxillary palpus fusiform not impressed. Length .65—.78 inch; 16.5—20 mm.

MALE.—Antennal club shorter than the stem. Abdomen flattened at middle, penultimate segment with a straight, transverse, rugulose carina, behind which the segment is impressed, so that the carina seems to overhang. Last segment irregularly concave and sparsely granulate, the anterior margin elevated and often extended, forming an oblique carina each side of the median depression. Inner spur of hind tibia long, slender and acute, extending in the axis of the tibia; outer spur slender and slightly longer.

FEMALE.—Antennal club shorter than the funiculus. Last ventral segment moderately deeply and broadly emarginate, the face of the segment either deeply impressed or irregularly eroded. Hind tarsi distinctly shorter than in the male.

VARIATIONS.—In the typical form the elytral costæ are entirely obliterated, excepting the sutural, but specimens do occur with the discal costæ faintly indicated. The punctuation of the thorax is somewhat variable—from a comparatively regular distribution of the punctures to those where it is decidedly irregular and smoother spaces exist. The male antennal club varies a little in length, in some specimens being nearly as long as the stem. The last ventral of the female may have a deep semicircular depression, but every variation from this to an eroded space exists.

This species resembles some of the feebler forms of *corrosa* and *rugosa*, but the sexual characters in either sex will enable them to be separated.

Occurs in Kansas, Colorado, Indian Territory and Texas.

22. **L. prunina** Lec.—Oblong-ovate, facies moderately robust, castaneous to piceous, surface pruinose in well preserved specimens; when the pruinosity is removed the surface is feebly shining. Clypeus broadly emarginate, margin narrowly reflexed, surface densely punctured, the front more coarsely and roughly punctured. Thorax narrowed in front, sides behind nearly parallel, in front oblique, margin coarsely serrate, sparsely ciliate, basal marginal impression indistinct, disc with very coarse (sometimes variolate) punctures, closely placed, dense near the front angles, median line usually smoother. Elytral punctures fine, indistinct, usually sparsely placed, the costæ always moderately distinct. Pygidium finely punctate, nearly smooth in the female. Metasternum densely punctured, the hair moderately long and dense ♂ or sparser and much shorter ♀. Abdomen sparsely indistinctly punctate, the last two segments more coarsely. Claws curved, strongly toothed at middle in both sexes. Last joint of maxillary palpi elongate fusiform, not impressed. Length .67 — .74 inch; 17 — 18.5 mm.

MALE.—Antennal club a little longer than the funiculus. Abdomen flattened at middle, penultimate segment (fig. 27) with a strongly elevated, transverse, rugulose ridge, behind which the segment is

moderately deeply impressed. Last segment irregularly concave with small granulations, the anterior margin distinctly elevated. Inner spur of hind tibia long, slender and acute, extended in the axis of the tibia; outer spur longer, slender and acute.

FEMALE.—Antennal club shorter than the funiculus. Last ventral segment broadly and moderately deeply emarginate, the disc of segment with an abrupt triangular or oval impression. Posterior tarsi distinctly shorter than in the male.

VARIATIONS.—The pruinosity is easily removed from the surface by immersion in alcohol or from other causes, and the specimens have then quite a different appearance from the others. These are very difficult to determine, except from the male. The thoracic punctuation is normally close and regular, but specimens occur with a decided irregularity in the punctuation.

The sexual characters of *prunina* and *affinis* are practically identical. It is therefore difficult to so describe the non-pruinose specimens of the former that they may be separated from the latter. In *prunina* the form is shorter and more robust, the elytral costæ fairly distinct, the punctuation fine, sparse and indistinct.

With this species I am inclined to unite that described by Burmeister as *fraterna*. The description certainly does not apply to that species, while it seems quite close enough to be applied to a *prunina* deprived of pruinosity.

Occurs from Ohio and Michigan to Kansas, Texas and Alabama.

Group VIII, *calceata*.

Clypeus moderately deeply emarginate, the border reflexed. Last joint of maxillary palpi fusiform, flattened externally. Antennæ 10-jointed. Posterior tibiæ with the inner spur fixed in the male. First joint of posterior tarsus very short, not longer than half the second, the apex abruptly dilated and prolonged in a process externally in both sexes, although more distinctly in the male. Claws curved, the tooth median, longer in the female. Posterior tarsi ♀ shorter.

At the time this species was described Dr. LeConte suggested that it should probably form a distinct group. The female was then unknown, and he was unable to assign characters common to the two sexes.

The form of the hind femur of the male is known in but one other, *vehemens*, a species allied to *fusca*.

The only species at present known is the following :

23. ***L. calceata*** Lec.—Oblong oval, broader behind, subdepressed, castaneous, shining. Clypeus emarginate, more deeply in the female, margin rather widely reflexed, surface closely punctate, front flat, more densely punctate, especially at middle. Thorax widest at middle, slightly narrowed in front, margin more or less serrate, sparsely ciliate, punctures coarse and rather close, denser and finer along the apex, a moderately wide median smooth space and a smaller smooth spot on each side in front of middle, a feeble depression of the basal margin each side. Elytral punctures very much finer and closer than those of the thorax, smoother at apex, sutural costa convex, the first dorsal well developed, broader and more convex posteriorly where it adjoins the sutural, the other dorsal costæ not distinct, submarginal distinct and long. Pygidium sparsely punctate, smoother near the apex. Metasternum densely punctured, the hair long and dense, shorter in ♀. Abdomen moderately coarsely and closely punctate, the last two segments more coarsely. Claws arcuate, the tooth median and strong, longer in the female. Last joint of maxillary palpi fusiform, flattened externally. Length .75 — .80 inch ; 19 — 20 mm.

MALE.—Antennal club a little longer than the stem. Abdomen broadly concave at middle, penultimate (fig. 37) segment concave posteriorly, the concavity limited each side by an oblique moderately elevated process which projects slightly over the concavity. Last ventral with a reniform depression. Posterior femur (fig. 15) obtusely subangulate at middle. Inner spur of hind tibia broad and squarely truncate, the outer longer, although broad, acute. First joint of hind tarsus (fig. 15) short, the distal extremity abruptly produced on the outer side. Pygidium convex, broad.

FEMALE.—Antennal club shorter than the funiculus. Posterior femora stout, of the usual form. Spurs of hind tibiæ rather broad. Posterior tarsi shorter than the male, the first joint similar, but with the process less marked. Pygidium more elongate than in the male, the punctuation more regular and distinct.

VARIATIONS.—In the comparatively large number of specimens examined no special variation has been observed. The color does not vary to any extent.

This species has some superficial resemblance to *rugosa*, etc., but the elytra have the smoother sculpture of *fusca*.

Occurs in Texas.

Group IX, *fusca*.

After having separated all those species possessing well marked structural characters there remain a large number of species of analogous form and structure which constitute this central group of the genus. Many of the species are of common occurrence and

wide distribution, "presenting the phenomenon of races" which might be supposed to be distinct species if one studied with meagre material. To avoid error from the latter cause it is well to collect as largely as possible from different broods in succeeding years and remote localities. When this is done it will be found that, while there are geographical races, individuals will occur in broods reproducing exactly the usual type of the races from remote localities.

As this group is composed of those species remaining after all those with well defined, usually structural, characters have been removed its characters are more of a negative than positive character.

Body not pubescent above, usually shining, in a few species pruinose or iridescent. Antennæ 10-jointed, the club of the male always longer than that of the female. Clypeus usually emarginate, although at times feebly. Last joint of maxillary palpi fusiform, without impression. Thorax variable in form, the sides sometimes subangulate, the margin often serrate or crenulate. Posterior tibiæ truncate at apex, without trace of sinuation at the base of the fixed spur of the male; this spur usually long, at most feebly curved. Claws strongly toothed at middle, the tooth of the male usually smaller than in the female. Posterior tarsi of female usually shorter than in the male. Last ventral segment large in both sexes.

The homogeneity of the species renders it extremely difficult to separate them in tabular form by any characters sufficiently constant or sharply defined to make their recognition certain. The following is the division proposed by Dr. LeConte, and has been adopted, although some modification of the species admitted in each series has been made for reasons which will be explained.

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Clypeus not densely punctured, the margin moderately reflexed, feebly emarginate; lateral margin of thorax not serrate, except in <i>errans</i> ... | Species 24 — 32. |
| Clypeus densely punctured, the margin at most narrowly reflexed, moderately deeply emarginate; thorax not angulate at the sides, the lateral margin more or less serrate. | Species 33 — 37. |
| Clypeus as in the preceding; thorax subangulate at the sides, usually narrower at base than at middle, the margin always more or less serrate. | Species 38 — 44. |

Species 24—32.

In this series the punctures of the clypeus are well separated and not crowded together, the clypeus is more or less concave, the margin moderately or even widely reflexed, the emargination always feeble. The thorax is narrowed from the base, when viewed from

above, not subangulate; the margin entire with few exceptions. The sculpture of the surface is never very pronounced; that is, the punctures of the thorax are not conspicuously coarse, nor are the elytral costæ well marked.

The following table will assist in the determination of the species:

Males with the last ventral with a cupuliform depression, the penultimate segment with very feeble characters.

Form short and robust, larger species..... 24. **crassissima**.

Form oval, surface slightly pruinose, smaller.....25. **subpruinosa**.

Males without any well defined concavity of the last ventral, the penultimate with a more or less developed transverse or sinuous elevation.

Thorax strongly serrate, fimbriate with long hair, clypeus with scarcely a trace of emargination.....26. **errans**.

Thorax not serrate, at most slightly irregular or feebly crenate, the ciliæ short, clypeus distinctly emarginate.

Penultimate ventral of male with a semicircular, slightly rugulose depression, without any transverse ridge.....27. **inversa**.

Penultimate ventral of male with a transverse, more or less sinuous ridge in front of the posterior margin of the segment.

The transverse ridge of the penultimate ventral of the male deeply divided by the median depression of the abdomen. 28. **bipartita**.

The transverse ridge of penultimate ventral of male entire.

Surface very conspicuously pruinose29. **micans**.
Surface not at all pruinose.

Species oblong, depressed, the punctuation of thorax and elytra relatively very coarse.....30. **diffinis**.

Species larger and of moderately robust facies, the punctuation not conspicuously coarse.

Fixed spur of male hind tibia long, slightly curved and with a slight hook at tip.....31. **vehemens**.

Fixed spur of male hind tibia moderate in length, straight.

32. **fusca**.

24. **L. crassissima** Blanch.—Ovate, robust, castaneous or brown, when recent slightly iridescent, shining. Clypeus very feebly emarginate, the margin moderately reflexed, moderately closely punctate, front more densely punctate. Thorax short and broad, convex, narrowed from base to apex, the sides more oblique in front, margin distinctly crenate and ciliate, surface closely, not very coarsely punctate, smoother at the sides, the median line indistinctly smoother, a feeble channel along the basal margin from the hind angles not reaching the middle. Elytra somewhat more coarsely punctured than the thorax, the punctures less dense, surface sometimes slightly rugulose, the costæ usually very indistinct. Pygidium sparsely punctate, indistinctly in male. Metasternum densely punctured, the hair long and dense, shorter in the female; sides of abdomen sparsely punctate, more distinctly in the female. Claws curved, the tooth moderate and slightly intramedian ♂, or stronger and median ♀. Last joint of maxillary palpi slender, fusiform, not impressed. Length .60—.82 inch; 15—21 mm.

MALE.—Antennal club (fig. 4) a little longer than the stem. Abdomen flattened at middle, the penultimate segment with a feebly elevated, transverse ridge near the posterior border, sometimes merely a slight rugulose convexity, the last segment with a smooth, moderately deep fovea. Inner spur of hind tibia slender, half the length of the outer.

FEMALE.—Antennal club nearly as long as the funiculus. Last ventral segment broadly and moderately deeply emarginate. Pygidium gibbous, and very smooth at apex. Hind tarsi distinctly shorter than the male.

VARIATIONS.—Specimens vary from the normal type of thoracic punctuation in having the punctures rather coarser and less dense and the costæ, especially the first discal, more developed, and the entire surface more rugulose.

This species is one of the most broadly ovate in our fauna, approaching *farcta*, but less ventricose. Recent specimens are probably decidedly iridescent, several in my cabinet show it faintly, but the usual alcoholic collecting seems to deprive the surface of the lustre.

With this species *robusta* and *obesa* must be united; the former was placed among the species with 9-jointed antennæ, but this is purely an error of observation, but the measurement given, .92 inch, is possibly a typographical error.

Occurs from Kansas to Texas.

25. **L. subpruinosa** Casey.—Oval, slightly oblong, castaneous, feebly pruinose, slightly shining. Clypeus very feebly sinuate at middle, the margin moderately reflexed, punctures moderately coarse not dense, frontal punctures slightly coarser and less close. Thorax narrowed from base to apex, sides feebly arcuate, more oblique in front, margin entire, sparsely ciliate, punctures moderately coarse, regularly not closely placed, a slight impression of the base each side. Elytral punctures as coarse as those of the thorax and rather more closely placed, sutural costa distinct, but narrow, the discal costæ scarcely visible, the submarginal faintly indicated. Pygidium convex, smooth and shining, except a few punctures each side ♂. Metasternum densely punctured, the hair moderately long, but not dense. Abdomen sparsely indistinctly punctured, opaque. Claws feebly curved, the tooth quite small and median. Last joint of maxillary palpus fusiform, acute, not impressed. Length .60 inch; 15 mm.

MALE.—Antennal club as long as the stem. Abdomen slightly flattened at middle, penultimate segment slightly gibbous at the middle of the posterior border and somewhat granulate. Last segment with a smooth cupuliform depression, slightly emarginate at apex. Inner spur of hind tibia two-thirds the length of outer, both slender.

VARIATIONS.—Eight specimens have been seen not differing even in color.

This species has much the form and size of *comans*, but differs in important structural characters. A careful study shows that it must be associated with *crassissima*, although of very much less robust facies.

Taken near Jacksonville, Florida, by the late Edward Tatnall.

26. **L. errans** Lec.—Oval, slightly oblong, moderately robust, rufocastaneous to brown, shining. Clypeus very nearly entire, concave, the border rather widely reflexed, the surface coarsely and moderately closely punctate, front more coarsely and densely. Thorax arcuately narrowed from base to apex, the margin serrate and fimbriate with long hairs, the punctuation coarse and deep, very regularly placed and moderately close, a feeble basal channel. Elytral punctuation less coarse than the thorax and closer, rugulose, especially along the suture, sutural costa narrow, the discal costæ very faint or wanting, submarginal very faint, border of elytra with long fimbriæ. Pygidium moderately coarsely, but not closely punctate. Metasternum densely punctured, the hairs long and dense in both sexes. Abdomen sparsely punctate, the last two segments more coarsely. Claws curved, the tooth median, small ♂, strong ♀. Last joint of maxillary palpi fusiform, not impressed. Length .60—.75 inch; 15—19 mm.

MALE.—Antennal club equal to or longer than the stem. Abdomen flattened at middle, penultimate segment (fig. 32) with a strongly elevated arcuate carina arching anterior to the middle of the segment. Last segment flat. Inner spur of hind tibiæ slender and acute, two-thirds as long as the outer, which is slender.

FEMALE.—Antennal club shorter than the funiculus. Last segment with an impression along the apical border, which is broadly emarginate. Legs, especially the posterior, stouter than in the male, the hind tarsi shorter.

VARIATIONS.—The color of this species varies but little. The sculpture may be comparatively smooth or quite rugulose. This seems to depend on locality, those from the south of California are smoother than those from the north or from Oregon, while the Nevada specimens are quite rugulose.

The antennæ show a decided tendency to vary in the number of the joints. While the majority of the males are 10-jointed, a specimen in my cabinet has nine joints on one side. Four females are before me, all of which have 9-jointed antennæ produced by the coalescence of the third and fourth joints without trace of suture.

The club of the male antennæ varies in length, sometimes barely as long as the stem, in others very distinctly longer. In these latter, as if by compensation, the arcuate ridge of the penultimate ventral is less strongly elevated.

This is one of the striking illustrations of the uncertainty resulting from describing species from unique examples.

Occurs in Oregon, California and Nevada.

27. **L. inversa** n. sp.—Oblong oval, scarcely broader behind, rufocastaneous to brown, moderately shining. Clypeus very feebly emarginate, the border moderately reflexed, surface shining, moderately closely punctate, front somewhat more closely punctate. Thorax rather short and convex, sides nearly parallel behind, arcuately narrowing to the front, the margin usually entire, with few ciliæ, the surface with moderately coarse punctures not closely placed (as in *fusca*), the basal marginal groove distinct, but feebly impressed. Elytral punctures as coarse as those of the thorax and more closely placed, distinctly rugulose along the middle, the discal costæ very feeble, the submarginal barely indicated. Pygidium sparsely vaguely punctate. Metasternum densely punctate, the hair moderately long and dense, but shorter in the female. Abdomen sparsely punctate, the last two segments more coarsely. Claws curved, the tooth median, not large ♂, larger in ♀. Last joint of maxillary palpi fusiform, not impressed. Length .60—.72 inch; 15—18 mm.

MALE.—Antennal club nearly as long as the stem. Abdomen rather broadly impressed, the penultimate segment (fig. 34) with a semicircular, somewhat rugose depression, usually surrounded by a finely raised line. Last segment broadly transversely impressed, a faint longitudinal impression, the apex faintly bisinuous. Inner spur of hind tibia broad, short and obtuse, the outer longer and more slender.

FEMALE.—Antennal club small and lenticular, shorter than the funiculus. Pygidium much more elongate than the male and more convex at tip. Hind tarsi distinctly shorter.

VARIATIONS.—While some specimens are comparatively smooth, others are somewhat rugulose. The punctuation of the thorax varies from that in which the punctures are separated by very little more than their own diameter to that where the punctuation is as distant as in the ordinary forms of *fusca*. The color variation is that common to all the fuscous species.

The semicircular impression of the penultimate ventral of the male extends from the posterior border slightly in front of the middle. When the elevated line bordering it is well marked the fossa seems deeper.

In facies this species resembles the smaller forms of *fusca* as well as *bipartita* and the ventral characters of the male afford the only certain means of separating them.

Occurs in Kentucky, Illinois, Kansas, Nebraska and Texas.

28. **L. bipartita** n. sp.—Oblong, slightly oval, castaneous to piceous, moderately shining. Clypeus broadly, but feebly emarginate, margin moderately reflexed, the punctures coarse and rather close, front more coarsely and densely punctured. Thorax moderately convex, narrower in front, sides posteriorly nearly straight and parallel, anteriorly arcuately and obliquely narrowing to the front, the margin crenate and with short ciliæ, the punctures coarse and moderately close, near the sides somewhat larger and more distant, median line usually smooth, a slight impression of the basal margin each side. Elytral punctures as coarse and close as those of the thorax, indistinct and rugulose each side of the suture, the sutural and first discal costæ fairly distinct, the others very indistinct or entirely wanting. Pygidium sparsely indistinctly punctate. Metasternum densely punctured, the hair moderately long and dense, less dense in ♀. Abdomen sparsely punctate. Claws arcuate, the tooth median and strong in both sexes. Last joint of maxillary palpi very slightly fusiform, not impressed. Length .60—.75 inch; 15—19 mm.

MALE.—Antennal club as long as the stem. Abdomen slightly longitudinally impressed at middle, penultimate segment (fig. 26) with a moderately acutely elevated, transverse carina at middle divided into two parts by the longitudinal impression, an acute emargination of the posterior edge of the segment closed with membrane, last segment slightly concave, a faint longitudinal impression, with few granules, the apical border acutely emarginate. Inner spur of hind tibiæ half the length of the outer and not stouter.

FEMALE.—Antennal club shorter than the funiculus. Last ventral segment sinuate each side of middle so that the middle portion projects in the form of a broad triangular tooth. Hind tarsi slightly shorter than the male.

VARIATIONS.—The median smooth space of the thorax is not always distinct. The elytral costæ may vary in distinctness, but not to any great degree. In the male the transverse ridge of the penultimate ventral varies in development, so that at times the free edge projects in the form of an overhanging lobe. This is the only species known to me in which the penultimate segment is formed in this manner.

Occurs in Kansas, Louisiana and Texas.

29. **L. micans** Knoch.—Oblong, slightly broader behind, brownish-black, surface with a pruinose coating and consequently opaque. Clypeus concave and feebly emarginate, the border moderately reflexed, surface rather coarsely not very closely punctate, front similarly punctate. Thorax nearly parallel behind, arcuately narrowed in front, margin entire or sometimes slightly crenate posteriorly, basal marginal channel feeble, surface with moderate punctures, sparsely and somewhat irregularly placed, median line smoother, the punctures somewhat finer near the apex than at base. Elytra punctured similarly to the thorax, the punctures equal in size and not very closely placed, sutural costa distinct, also the first discal, the others indistinct or wanting. Pygidium opaque, shining at

apex, the punctures coarse but indistinct. Metasternum densely punctured, the hair moderately long and dense, very little shorter in the female. Abdomen pruinose, with sparse fine punctures each bearing a short hair. Claws arcuate, the tooth median, moderate in the male, large in the female. Last joint of maxillary palpi fusiform not impressed. Length .59—.68 inch; 15—17 mm.

MALE.—Antennal club shorter than the stem. Abdomen flattened at middle, penultimate segment with a feebly elevated, arcuate ridge at middle. Last segment irregularly concave. Inner spur of hind tibia half the length of the outer, slender and slightly curved outwardly, outer spur slender and long.

FEMALE.—Antennal club shorter than the funiculus. Last segment of abdomen often slightly concave or with a transverse depression, usually convex, and either smooth or sparsely punctate. Pygidium more convex at apex. Posterior tarsi very distinctly shorter than the male.

VARIATIONS.—For a species with so wide a distribution the variation is very slight. The color is in some specimens rufescent, but this is merely immaturity. In a few specimens the front may be nearly smooth at middle. As a general rule the specimens from the northern regions are longer and more parallel, those from the south shorter and more robust. When the pruinose coating is removed, the punctures become apparently longer and more distinct.

The form of the fixed spur of the hind tibia of the male is very like that seen in *comans*.

The species determined as *micans*, by Blanchard, and placed among those with 9-jointed antennæ is really *prununculina*.

Occurs from Massachusetts to Missouri, and to Georgia and Louisiana.

30. **L. diffinis** Blanch.—Oblong, nearly parallel, rather depressed, rufo-feruginous, shining. Head rather broad, eyes large. Clypeus faintly sinuate at middle, margin moderately reflexed, surface with coarse and deep, sparse punctures, front sparsely punctate at middle, more closely near the eyes. Thorax rather short, widest at middle, very slightly narrowed to base, sides anteriorly arcuately narrowed to front, margin slightly irregular not crenate, with short ciliæ, disc feebly convex, the punctures coarse, rather sparsely placed, but closer near the sides, a very faint basal marginal groove. Elytra with very coarse and rather closely placed punctures, surface somewhat rugulose, the first discal costa faintly indicated, the submarginal entirely wanting. Pygidium with coarse, indistinct punctures, somewhat rugulose near the apex. Metasternum densely punctate, the hair moderately long and dense. Abdomen at sides sparsely finely punctate, the second and last two more coarsely. Claws feebly curved, the tooth small and median ♂. Last joint of maxillary palpi fusiform, not impressed. Length .60 inch; 15 mm.

MALE.—Antennal club slightly longer than the stem. Abdomen flattened at middle, penultimate segment with a straight transverse ridge near the posterior margin, along which the segment is impressed. Last segment vaguely concave and smooth. Inner spur of hind tibia half the length of the outer and acute.

VARIATIONS.—Two males are before me which agree in all particulars, except that one has the antennal joints so confused that but nine can be counted; in the other specimen the antennæ are normally ten-jointed.

This species is rather more slender and depressed than usual in this group, and the punctuation of both thorax and elytra notably coarse. The male ventral characters are not unlike those of the usual form of *fusca*.

Two specimens; Duval Co., Florida, and eastern Kentucky.

31. ***L. vehemens*** n. sp.—Oblong-oval, moderately robust, fuscous to piceous, shining. Clypeus slightly emarginate, somewhat concave, margin moderately reflexed, surface rather coarsely, moderately closely punctate; front similarly punctured. Thorax narrowed from the base, sides posteriorly nearly straight, anteriorly arcuate, margin entire, with short ciliæ, disc moderately convex, the punctures relatively small and sparse, the median line smooth behind, a feeble basal marginal sulcus from the hind angles. Elytra with punctures similar to those of the thorax, but indistinct, except at base and sides, at middle rugulose, sutural costa rather narrow, the discal costæ feeble, the submarginal well developed and nearly reaching the humerus. Pygidium sparsely indistinctly punctate, the punctures rather fine. Metasternum densely punctured, the hair moderately long, but dense. Abdomen sparsely indistinctly punctate, the last two segments more coarsely. Claws curved, the tooth median and strong, a little longer in the female. Maxillary palpi rather stout, the last joint fusiform, not impressed. Length .84—.86 inch; 21.5 mm.

MALE.—Antennal club not as long as the stem. Abdomen broadly flattened and slightly concave, the penultimate segment (fig. 29) with an arcuate ridge, projecting in the manner of a ledge, behind which the segment is slightly concave and smooth. Last segment broadly transversely impressed, the apex broadly emarginate. Posterior femur broadly angulate at middle. Inner spur of hind tibia long, somewhat curved and slightly hooked at tip, outer spur slender.

FEMALE.—Antennal club shorter than the funiculus. Penultimate ventral segment transversely impressed near the posterior border. Last segment broadly emarginate. Posterior femur not angulate, hind tarsi slightly shorter than the male.

VARIATIONS.—Nothing has been observed in the small number seen beyond color.

The two males before me show a curious structure, which must for the present be considered a monstrosity. The outer anterior claw has an additional small tooth between the usual tooth and the apex, on one side midway (fig. 9a), on the other close to the base of the tooth (fig. 9b); this in one male. In the second male both claws of the left side are normal, while the outer claw of the right side has the tooth midway (fig. 9c) as in the other male. The claws of the other legs are normal, as are those of the female. The maxillary palpi are stouter than I have observed in any other species.

This species so closely resembles the larger forms of *fusca* as to be with difficulty distinguished, except by the sexual characters and the stouter palpi.

Collected in Kansas by Prof. F. H. Snow.

32. **L. fusca** Fröhl.—Form usually oblong, although somewhat variable, rufocastaneous, brown or piceous, shining. Clypeus slightly emarginate, the border moderately reflexed, surface moderately closely punctate, front usually a little more coarsely and less closely punctate. Thorax always widest at base, usually arcuately narrowed to the apex, margin entire with short ciliæ, surface variably punctate, never very coarsely nor very closely, usually with a smooth median line, basal channel wanting. Elytra more closely punctate than the thorax, the costæ variable, sometimes fairly distinct or again entirely obliterated, the submarginal always distinct posteriorly. Pygidium usually punctate, sometimes coarsely, sometimes more finely, always sparsely. Metasternum densely punctured, the hair long and dense, a little shorter in the female. Abdomen shining, sparsely punctate, the last two segments more coarsely. Claws curved, the tooth median, always stronger in the female. Last joint of maxillary palpi ovate, not impressed. Length .70—.95 inch; 17.5—23.5 mm.

MALE.—Antennal club as long as the stem, or very little longer. Abdomen flattened at middle, penultimate segment with a transverse ridge near the posterior border, variably elevated, sometimes very sinuous (figs. 30, 31). Last ventral feebly concave. Inner spur of hind tibiæ two-thirds the length of the outer and slender.

FEMALE.—Antennal club small, much shorter than the funiculus. Last ventral segment broadly emarginate at apex. Pygidium more elongate than the male, more shining, the punctures more sharply impressed. Hind tarsi distinctly shorter.

This species as here defined is probably the most widely distributed of any in our fauna, and at the same time the most abundant wherever it occurs. We observe, therefore, geographical races, and within these races individual variations which are brought into prominence in most collections by being preserved, while the typical forms are rejected. As a general rule the southern specimens are larger, more

robust and more dilated behind. The Middle States specimens are oblong and nearly parallel. Those from the Hudson's Bay region southward to Colorado and west to Washington Territory, are of somewhat shorter form and more obtuse in front. These remarks must be accepted in the most general sense as every manner of intermediate forms occurs.

In his "Review" Dr. LeConte has suggested a number of races based on the general form of the specimens, but as these were founded on one, or at most two specimens in each case, sometimes on a male or again on a female, they must be considered of no more value than as types of individual variation.

One character, however, requires explanation. His second race is based on a "male with the unguis short" in contradistinction to the others in which the males have a "long tooth on the claw." These distinctions are purely relative. In all cases where the same brood is examined, the males have always a tooth slightly shorter than the female, although the difference is never so marked as in *micans*, for example.

After an examination of vast numbers of specimens from all parts where it occurs certain differences have been observed in the ventral characters of the male which seem to indicate three races.

The most common form of the Middle States region, probably the same as those seen by Froehlich have the male as follows:

Race *fusca*.—Penultimate segment impressed along its posterior border, in front of which is a feebly elevated, slightly arcuate, obtuse ridge, the last ventral segment transversely impressed and with a few small granules.

Race ———.—Carina of penultimate ventral more elevated, more arcuate at middle, the edge of the carina slightly free, that is, the segment is slightly excavated behind the carina so that the edge of the carina is slightly overhanging, the last segment slightly concave, nearly smooth.

Race ———.—This is merely an exaggeration of the preceding, the edge being still more projecting.

Specimens of these three forms may be readily selected, but there is every intergrade. The greatest number of individual or geographical variations seems to occur in the form with the feebly elevated carina on the penultimate ventral. The first well marked geographical variety has been described as

L. cephalica Lec.—Color ferruginous brown or pale castaneous, form a little shorter than typical *fusca*. Elytral costæ moderately well defined, especially the first discal.

The characters used by Dr. LeConte to define this as a species vanish entirely. He described from one specimen, while there are now sixteen before me. An extreme form might be selected which would readily pass as distinct from typical *fusca*.

These forms occur at Hudson's Bay, Idaho, Colorado, Kansas, Utah, Washington Territory and Northern California.

It seems hardly necessary to dwell in any detail on those variations in which the sides of the thorax behind the middle are either parallel or slightly convergent to the front, nor on those where the thorax is apparently slightly narrower than the elytra. There is variation in the size of the punctures of the thorax as well as in their closeness, but not as striking as in many other species.

The elytral costæ are usually feebly developed, but specimens are quite frequent in which all the costæ are fairly indicated. At this point it is well to note that nearly all the variations from the typical form are females and these attain the greatest development as to size. Specimens of this sex are seen from North Carolina and Georgia in which the elytra are comparatively smooth, but not shining, the sutural stria so faint that the sutural costa seems merely an elevation of the suture.

In fact so variable is *fusca* and so evanescent the differences that I know of no better task than the study of a *large* series of this species for those to whom differences mean specific distinction.

As may be inferred from the preceding remarks *fusca* is very widely distributed. It occurs in the Hudson's Bay region through Canada to Maine, southward to northern Georgia, thence north-westwardly to Kansas, Colorado, Utah, Idaho, Nevada, Washington Territory and the north of California.

Species 33 — 37.

The clypeus is here either flat or slightly transversely convex, the margin scarcely or very narrowly reflexed, moderately deeply emarginate, the punctuation always very dense. The thorax is more angulate at the sides, the margin more or less serrate or crenate in all the species.

The species are as follows :

- Surface very shining, as if varnished, the elytral costæ entirely obliterated, thorax with very large impunctured spaces33. **politula**.
 Surface of usual aspect, costæ more or less distinct.
 Submarginal costa of elytra well marked, reaching very nearly the humeral umbone.
 Thorax equally punctate, but not conspicuously coarse..... 34. **barda**.
 Thorax with scattered coarse punctures, with smooth spaces of variable size35. **marginalis**.
 Submarginal costa very feeble, visible only at apical third.
 Antennal club ♂ longer than the entire stem; last ventral not cupuliform.36. **spretta**.
 Antennal club ♂ very little longer than the funiculus; last ventral with cupuliform fovea.....37. **fraterna**.

Two of the species, *marginalis* and *fraterna*, are variable in thoracic sculpture, and reference must be made to the details under the descriptions.

33. **L. politula** n. sp.—Oblong, nearly parallel, rufocastaneous, surface very smooth and shining. Clypeus moderately deeply emarginate, the border narrowly reflexed, coarsely, cribrately punctured, front very coarsely punctured, but not cribrate. Thorax narrowed in front, sides arcuate, margin crenate, with short ciliæ, surface very shining, with coarse umbilicate punctures sparsely placed near the side, others smaller irregularly scattered each side of the median line and along the apex, having a large smooth space each side. Elytral punctures much finer than those of the thorax, moderately closely placed, except near the apex, surface as if varnished, the costæ entirely obliterated, the sutural stria nearly entirely effaced, the suture scarcely more convex. Pygidium polished, a few scattered punctures near the side. Metasternum rather coarsely and closely punctured, the hair rather short and sparse ♀. Abdomen moderately closely punctured at the sides, the last two segments more coarsely. Claws curved, with a strong median tooth ♀. Last joint of maxillary palpi cylindrical, truncate, not impressed. Length .71 inch; 18 mm.

The female has the antennal club a little shorter than the funiculus. Penultimate ventral segment transversely impressed close to the posterior border. Pygidium broader than long, feebly convex. Of this species I have seen but one female remarkable in the polished surface and the entire obliteration of the elytral costæ. It cannot be mistaken for *nitida*, as the latter has 9-jointed antennæ and the pygidium gibbous near the apex. The thoracic sculpture is quite different in the two species.

One specimen, locality unknown, given me by the late Chas. Wilt.

34. **L. barda** n. sp.—Oblong-oval, rather robust, above slightly depressed, piceous, shining. Clypeus distinctly emarginate, the border very slightly reflexed, densely punctured, the front more coarsely but less densely punctured. Thorax moderately convex, sides posteriorly straight, but slightly convergent to

the front, anteriorly broadly arcuate, margin entire with short ciliæ, disc moderately coarsely and rather closely punctured, median line smooth for a short distance, basal channel moderately well defined. Elytra less coarsely punctured than the thorax, but more closely, somewhat rugulose along the middle, smooth at sides of apex, sutural costa as usual, the first discal moderately distinct, especially in the female, the other costæ obliterated, submarginal costa well developed, usually extending two-thirds to base. Pygidium dissimilarly punctured in the sexes. Metasternum densely punctured, the hair of moderate length, not dense, much shorter in the female and sparser. Abdomen moderately closely punctate at the sides, each puncture bearing a short hair, the last two segments, especially in the female, conspicuously more coarsely punctate. Claws with a median tooth, small in the male, long in the female. Last joint of maxillary palpi fusiform, not impressed. Length .82—.86 inch; 21—22 mm.

MALE.—Antennal club a little shorter than the stem, piceous. Abdomen flattened at middle with a faint median linear impression, penultimate segment impressed along its posterior margin, at middle a feebly elevated, sinuous, transverse carina. Last segment feebly concave, a fine median linear impression. Pygidium a little broader than long, the punctures coarse but not deep, the surface irregular. Inner spur of hind tibia slender, two-thirds as long as the outer.

FEMALE.—Antennal club brown, much shorter than the funiculus. Penultimate ventral segment arcuately impressed at middle. Last segment broadly, but feebly emarginate. Pygidium somewhat conical, more protuberant near the apex, the punctures coarse and close along the middle, sparser near the sides.

VARIATIONS.—The three specimens before me agree in color and differ only in the distinctness of the elytral costæ, the male being smooth.

This species is difficult to place by means of any tabular division. It seems nearly intermediate between some of the more rugose forms of *fusca* and the species of the present sub-group in the form of the clypeus and its sculpture. The presence of a well defined channel along the base of the thorax inclines me to place it here rather than with *fusca*. From the latter, which it resembles in form, it differs in its generally coarser punctuation, the thorax being more coarsely and closely punctate than ever occurs in *fusca*.

The form of the tooth of the male claws deserves especial mention. The claw is feebly curved, the tooth rather small and median, formed nearly like the tooth of a saw; that is, the distal edge forms a right angle with the edge of the claw, while the inner border is very obtuse.

Three specimens, North Carolina (Morrison).

35. **L. marginalis** Lec.—Oblong, very little broader behind, rufocastaneous to brown, shining. Clypeus moderately emarginate, the border very narrowly reflexed, deeply and moderately coarsely punctured, front more coarsely and deeply punctured. Thorax broadest at base, sides arcuately narrowed to the front, margin slightly irregular but not crenate, with short ciliæ, surface shining, the punctures very coarse, sparsely and irregularly placed, having large smooth spaces on each side slightly in front of the middle, basal marginal groove feebly distinct each side. Elytral punctures rather fine, moderately closely placed, the costæ distinct, but narrow and feebly elevated, the submarginal costa well developed posteriorly in all specimens and in most of them extending to the humeral umbone. Pygidium sparsely punctate, smoother at apex. Claws arcuate, strongly toothed at middle. Last joint of maxillary palpus fusiform not impressed. Metasternum densely punctured, the hair of moderate length, in the female shorter and sparser. Length .65—.85 inch; 16.5—21.5 mm.

MALE.—Antennal club a little longer than the stem. Abdomen flattened at middle, the penultimate segment (fig. 28) with a semi-circular rugulose elevation in front of a moderately deep, smooth fovea. Last ventral segment vaguely longitudinally impressed. Inner spur of hind tibia shorter than the outer and usually stout, the outer spur long and slender.

FEMALE.—Antennal club shorter than the funiculus. Penultimate ventral segment slightly impressed along the posterior border. Hind tarsi a little shorter than the male. Pygidium slightly protuberant near the apex.

VARIATIONS.—The punctuation of the thorax varies greatly. The typical form has the punctures very sparsely placed, but so arranged as to have a smooth transverse space on each side in front of the middle, but specimens occur in which the area of the surface absolutely smooth is greater than that with punctures. On the other hand the punctures may be more abundant, so that the smooth space is only vaguely indicated, as in *rugosa*. Three specimens of the larger size (.80 inch) have the sides of the thorax distinctly crenate, but there is every degree from this to those in which the margin is slightly irregular. A specimen ♀ from Tennessee has the thorax very coarsely and rather closely punctured, the punctures larger than known to me in any other species. Without the male I am unwilling to consider it distinct, and for the present place it as an extreme variety.

Occurs from New York to Wisconsin and Illinois (southward to Tennessee?).

36. **L. spreta** n. sp.—Oblong, elytra slightly wider at middle, castaneous or fuscous, shining. Clypeus feebly emarginate, margin very narrowly reflexed, densely and moderately coarsely punctured, front rather more coarsely but less

densely. Thorax narrower in front, sides posteriorly nearly parallel, in front oblique, the margin entire, with short distinct ciliæ, disc moderately convex, the punctures small, sparsely but equally placed, a slight depression of the base on each side. Elytral punctures equal to those of the thorax, more closely placed, surface slightly rugulose on each side of the suture, the costæ distinct but feebly elevated, the submarginal distinct posteriorly. Pygidium sparsely punctate, smoother near the apex. Metasternum densely punctate, the hair moderately long and close; sides of abdomen with sparse punctures bearing short hairs. Claws curved, the tooth moderate in size and median δ . Last joint of maxillary palpi short, fusiform, not impressed. Length .66—.72 inch; 16.5—18 mm.

MALE.—Antennal club nearly a third longer than the entire stem. Abdomen slightly flattened at middle, penultimate segment with a short, feebly elevated, transverse ridge a short distance in front of the posterior margin. Last segment very slightly concave. Inner spur of hind tibia two-thirds the length of the outer and broader.

VARIATIONS.—The two male specimens before me do not vary, except slightly in color and size.

In this species the clypeus is more feebly emarginate than usual in those with the punctures of its surface dense and the border narrowly reflexed. On the other hand the antennal club of the male is unusually long, exceeding that of any species of the *fusca* group. The facies and sculpture are very like a small *fusca*.

Occurs in Maryland and Iowa.

37. L. fraterna Harris.—Oblong, scarcely broader behind, rufotestaceous, fuscous or piceous, shining. Clypeus moderately emarginate, the border narrowly reflexed, surface densely punctured, the front more coarsely less densely. Thorax gradually narrowed from base to apex, the sides feebly arcuate, the margin entire or slightly irregular, rarely slightly crenate, a slight impression of the middle of the base each side, surface variably punctured, the punctures moderate in size, never very coarse. Elytral punctures finer than those of the thorax, more closely placed, somewhat rugulose each side of the middle, the costæ usually very feeble, the submarginal feebly distinct posteriorly. Pygidium sparsely finely and indistinctly punctate. Metasternum densely punctured, the hair not long nor dense, shorter in the female. Abdomen sparsely punctate at the sides, the last two segments more coarsely. Claws curved, the tooth strong and median. Last joint of maxillary palpi fusiform, not impressed. Length .59—.70 inch; 15—18 mm.

MALE.—Antennal club equal to or slightly longer than the funiculus. Abdomen slightly flattened at middle, penultimate segment impressed at middle and slightly granulate, a feeble oblique tuberosity each side. Last segment deeply concave and smooth, the apex slightly emarginate. Inner spur of hind tibiæ moderately long, shorter than the outer, but less slender.

FEMALE.—Antennal club shorter than the funiculus. Penultimate ventral segment with a linear impression close to and parallel with the hind margin. Hind tarsi slightly shorter than the male.

VARIATIONS.—Apart from the usual color variation the most striking is the punctuation of the thorax. The kinds of variation may be best explained by accepting as races the various forms which it seems necessary to aggregate under one common name. It must not, however, be inferred that the races are sharply defined, as there is every intergrade in the numerous specimens examined and in the large series now before me.

L. fraterna Harr.—Thoracic punctures moderately coarse, sparse and somewhat unequal in size, more closely placed near the sides, median line smoother. Lateral margin usually entire. As a rule the elytral costæ are very feeble.

This is the form most common from Maryland northward.

L. cognata Burm.—Thoracic punctures coarse, but equal in size, more sparsely placed at middle and closer at the sides, with a tendency observed to form smooth spaces on each side. The lateral margin is irregular, sometimes feebly crenate. Elytral sculpture somewhat more pronounced as to the costæ and slightly rugulose.

This race is the more abundant south of Maryland. *L. lutescens* Lec., is intermediate between this race and the next.

L. Forsteri Burm. (*lugubris* Lec.)—Punctures as coarse as in *cognata*, but widely distant on the disc, having large smooth spaces on each side in front of the middle as well as along the base, this style of sculpture recalling the normal form of *marginalis*. The lateral margin is usually irregular, rarely feebly crenate. Elytral sculpture as in *cognata*. In this race it is more often observed that the head and thorax are nearly piceous in color, while the elytra are reddish-brown.

The habitat of this species, although parallel with the two preceding, is more inland, although I have specimens from New Jersey, specimens otherwise are from western New York to North Carolina and Tennessee, extending westward to Iowa.

L. semicribrata Lec.—The punctures are still larger than in *Forsteri*, deeper and more widely scattered. The elytral punctures are also somewhat coarser, but the costæ are feeble.

Of this form I have seen two specimens ♂ and ♀ the locality of which is uncertain, but probably Georgia.

The species as defined above occurs from Maine to Iowa, southward to North Carolina and possibly Georgia.

Species 38—44.

In this series the clypeus is flat, deeply emarginate, margin narrowly reflexed, surface very densely punctured. The thorax is obtusely angulate at the sides, narrowed toward the base as well as the apex, the margin serrate. The elytral costæ are well marked, except in *scitula* and *infidelis*. The thoracic punctuation is usually coarse.

The species are difficult to separate, but the following sketch will assist :

Fixed spur of hind tibiæ ♂ very short; thorax not rugose, the elytra without costæ38. **infidelis**.

Fixed spur of hind tibiæ ♂ of normal length, or even as long as the free spur.

Penultimate ventral ♂ with a transverse, more or less rugose elevation.

The transverse elevation in the form of a ridge a little in front of the posterior border; last ventral depressed, with granular elevations; fixed spur of male very long.....39. **luctuosa**.

The transverse elevation formed by the apparent thickening or elevation of the posterior border of the penultimate segment; fixed spur shorter than the outer.....40. **corrosa**.

Penultimate ventral ♂ broadly impressed at middle, forming an oblique declivity, on each side of which is an obtuse elevation.

Thorax densely and confluent punctured.

Elytral costæ entirely obliterated; form rather elongate; punctures of thorax with a tendency to become transversely confluent.

41. **scitula**.

Elytral costæ feeble, but distinct; form rather robust; thoracic punctures irregularly confluent.42. **Knochii**.

Thoracic punctures coarse and close, but not confluent; costæ of elytra moderately distinct, the submarginal distinct in apical half.

Punctures of thorax dense and regularly placed, the disc not very convex.....43. **profunda**.

Punctures of thorax close, but somewhat irregular, the disc moderately convex.....44. **rugosa**.

38. **L. infidelis** n. sp.—Oblong-oval, broader behind, convex, chestnut-brown, head and thorax darker, shining. Clypeus moderately deeply emarginate, rather more acutely in the female, margin narrowly reflexed, rather coarsely densely punctured, front less densely punctured. Thorax distinctly narrower in front, sides obtusely angulate, widest at middle, narrowed to base, more obliquely narrowed in front, margin irregular, scarcely crenate, sparsely ciliate, disc convex, the punctures moderately coarse not closely placed, slightly irregular in distribution, an indistinctly defined, smooth, median space, a distinct depression of the basal margin externally. Elytra gradually wider from the humeri, the punctures finer than those of the thorax, moderately close near the base,

gradually more sparse toward the apex, sutural costa well marked, the others entirely wanting. Pygidium moderately coarsely not closely punctate. Metasternum moderately coarsely and closely punctate, the hair rather sparse, not long ♂, shorter and sparser ♀. Claws arcuate, strongly, equally toothed at middle in both sexes. Last joint of maxillary palpus fusiform, not impressed. Length .75—.82 inch; 19—21 mm.

MALE.—Antennal club nearly as long as the stem. Abdomen sparsely finely punctate at the sides, the last two segments more coarsely, at middle flattened, the penultimate segment slightly depressed along the posterior border at middle, the last segment slightly concave. Inner spur of hind tibia very short, the outer long and slender. Pygidium convex, the punctures coarser.

FEMALE.—Antennal club shorter than the funiculus. Abdomen at sides more coarsely punctured. Pygidium more elongate, the punctures less coarse, but more impressed. Posterior femora stouter, spurs of hind tibiae slender. Tarsi not shorter than the male. Last ventral segment broadly emarginate at apex.

VARIATIONS.—In quite a large series no variation occurred, except in color.

As is usual in species of rather dark color the legs, especially the femora, have a reddish color. The surface is rather more shining than in any other species of this series, except *nitida*. The inner spur of the male hind tibia is as short as in some of those of the *ephilida* group, so that a strict interpretation would place the present species there, but the entire facies indicates its position here.

Occurs in Georgia (Morrison) and Florida (H. A. Kelley).

39. ***L. luctuosa*** n. sp.—Oblong-oval, broader behind, convex, the ♀ slightly ventricose, dark brown or piceous, moderately shining. Clypeus slightly emarginate, the border narrowly reflexed, coarsely and closely ♂ or densely punctate ♀, front more densely punctate than the clypeus ♂ or cribrate ♀. Thorax rather short, very obtusely subangulate at middle, sides almost rounded, very little narrower at apex than base, the margin distinctly crenate with short ciliae, disc convex, the punctures very coarse and close, a dense group near the front angles, a feebly indicated smooth median line, a very feeble basal channel externally. Elytra gradually broader from the humeri, convex, the punctuation much finer than on the thorax, moderately dense, slightly rugulose, smoother near the apex; sutural costa normally distinct the first discal usually slightly distinct, the others absent, submarginal faintly indicated. Metasternum moderately coarsely closely punctate, the hair short, sparse ♂, nearly naked ♀. Pygidium sparsely punctate, smoother near the apex. Abdomen sparsely punctate at the sides, more finely in the ♂, the last two segments more obviously coarsely punctured in the male. Claws curved, strongly and equally toothed at middle in both sexes. Last joint of maxillary palpus fusiform, not impressed. Length .79—.87 inch; 20—22 mm.

MALE.—Antennal club very little longer than the funiculus. Abdomen flattened at middle, the penultimate segment depressed along its posterior border, in front of which is a transverse, obtuse ridge slightly interrupted at middle. Last ventral with the anterior border slightly elevated, a reniform depression containing small granular rugæ. Spurs of hind tibiæ equal in length, very long, slender and acute.

FEMALE.—Antennal club shorter than the funiculus. Spurs of hind tibiæ less elongate and rather wider. Pygidium more elongate, slightly gibbous near the apex. Posterior femora stouter, the tarsi equal to the male. Last ventral segment (fig. 22) broadly and deeply emarginate, the face of the segment with a deep, irregularly triangular depression.

VARIATIONS.—The color ranges from castaneous to piceous. The form varies, being somewhat more ventricose in specimens regardless of sex. In the males the sides of the clypeus have the appearance of being convergent to the front, while in most of the females the sides are strongly arcuate, although a few have the same form as the male.

This species has a similar form to *infidelis*, but is more robust, and while the latter has the fixed spur unusually short, this one has it unusually long and slender, in fact as long as the free spur, a character of very unusual occurrence.

Occurs in South Carolina, Georgia, Fla., Alabama and Louisiana.

40. **L. corrossa** Lec.—Oblong-oval, slightly broader behind, form rather robust, castaneous or brown, head usually darker, moderately shining. Clypeus rather broadly emarginate, the border narrowly reflexed, very closely, rather coarsely punctate, front more coarsely punctate, almost cribrate. Thorax widest at middle and very obtusely angulate, slightly narrowed to base, more obliquely in front, margin serrate, more distinctly behind the middle, sparsely ciliate, disc convex, the punctures coarse, variolate, moderately closely placed, except each side of middle where they are sparser, near the sides densely punctured, median line indistinctly smoother, a depression at the basal margin on each side. Elytral punctures moderately coarse, but not dense, surface somewhat rugulose, sutural costa distinct, first discal feeble, the others very indistinct, submarginal well developed. Pygidium rather sparsely punctate. Metasternum closely punctate, the hairs moderately long, not dense, shorter in ♀. Abdomen sparsely punctate, the last two segments more coarsely. Claws curved, with a strong median tooth rather longer in the female. Last joint of maxillary palpus fusiform and slightly flattened. Length .67—.80 inch; 17—20 mm.

MALE.—Antennal club nearly as long as the stem. Abdomen flattened at middle, penultimate segment (fig. 41) with the posterior border vertical at middle, slightly granulate, the horizontal portion

of the segment obliquely plicate each side. Last segment vaguely concave, smooth. Spurs of the hind tibiae slender and acute, the inner one-third shorter.

FEMALE.—Antennal club shorter than the funiculus. Pygidium more elongate, the hind tarsi slightly shorter than the male.

VARIATIONS.—There is no great variation in color in the specimens examined; the sculpture is in some specimens much more rugose than in others.

This species was not placed by Dr. LeConte among those with the sides of the thorax subangulate, for the reason that the smaller series of specimens and the fewer species enabled him to draw the line more closely. It is placed in the present series because the thorax is very distinctly narrowed at base, although the prominence of the sides of the thorax is rather rounded than angulate.

A very close resemblance between this species and *rugosa* exists, so that it is hardly possible to separate the females, the males may be readily distinguished by the ventral characters.

Occurs in Illinois and Texas.

41. **L. scitula** n. sp.—Form rather elongate, elytra widest at middle, chestnut brown, head and thorax somewhat darker, shining. Clypeus rather deeply emarginate, the border moderately reflexed, densely coarsely punctate, front much more coarsely punctate at middle. Thorax broadest at middle and very distinctly angulate, narrowed toward base, sides more oblique in front, apex not much narrower than base, margin crenate, ciliae short, very densely and moderately coarsely punctate, the punctures subconfluent in a transverse direction, median line posteriorly cariniform, smoother. Elytra nearly elliptical in form, widest at middle, the sutural costa alone distinct, the others entirely obliterated, punctures moderately coarse and close. Pygidium sparsely punctate female, rugose male. Metasternum densely punctured, the hair moderately long and dense in the male, extremely short and sparse in female. Abdomen sparsely punctate at the sides, the last two segments more coarsely. Claws curved, the tooth strong and median. Last joint of maxillary palpus fusiform, not impressed. Length .70—.78 inch; 18—20 mm.

MALE.—Antennal club a little longer than the stem. Abdomen slightly concave at middle, the penultimate segment (fig. 40) with a triangular depression posteriorly, surrounded by an obtusely elevated ridge. Last segment flattened with rugose punctures. Inner spur of hind tibia elongate triangular and very acute, the outer longer, rather broadly translucent at apical half.

FEMALE.—Antennal club shorter than the funiculus. Pygidium more elongate, slightly gibbous near the tip. Posterior tarsi not shorter.

VARIATIONS.—The few specimens seen show no variation.

The form of this species is more elongate than usual in this part of the series recalling *ignava*, but not so cylindrical. In the female the punctures of the thorax are filled with clay, so that the transverse strigosity becomes evident; in the male the thorax has rather a velvety appearance.

Occurs in Texas.

42. **L. Knochii** Gyll.—Elongate oval, very little broader behind, ferruginous brown to piceous, feebly shining. Clypeus rather broadly and moderately deeply emarginate, the border scarcely reflexed, densely rather coarsely punctate, front nearly cribrate. Thorax widest at middle, subangulate, distinctly narrowed to base, more obliquely narrowed in front, margin crenate, sparsely ciliate, disc densely, coarsely, and at times subconfluently punctate, a distinctly elevated smooth median line, basal margin hardly depressed. Elytral punctures comparatively small and rather closely placed, except near the apex, the sutural and first discal costæ well developed, the others indistinct, the submarginal very feeble. Pygidium moderately coarsely not closely punctate. Metasternum closely punctate, the hair rather short and sparse, in female shorter. Abdomen at sides moderately closely punctate, the last two segments more coarsely. Claws curved, the tooth strong and median, a little longer in female. Last joint of maxillary palpus fusiform not impressed. Length .85—.92 inch; 21.5—23.5 mm.

MALE.—Antennal club a little shorter than the stem. Abdomen slightly flattened at middle, penultimate segment flattened at middle and slightly granulate, on each side a feeble oblique tuberosity. Last segment feebly concave, slightly granular each side, the apex acutely emarginate. Inner spur of hind tibia elongate triangular, the outer longer and more slender.

FEMALE.—Antennal club shorter than the funiculus. Pygidium more elongate, pubescent at apex. Posterior tarsi as long as the male. Femora stouter than the male, especially the posterior.

VARIATIONS.—The usual color is reddish-brown, with the head and thorax a little darker, in these the legs are more reddish in color, and the abdomen paler than the upper surface. One specimen before me is entirely piceous.

This species is one of the largest of the central series of *Lachnosterna*; this with the very closely punctate thorax with median carina make it easily known.

Occurs from Massachusetts to Georgia, but seems rare.

43. **L. profunda** Blanch.—Oblong, slightly broader behind, moderately robust, shining, castaneous. Clypeus broadly, moderately deeply emarginate, margin narrowly reflexed, moderately coarsely densely punctured, front more coarsely punctured. Thorax widest at middle, obtusely angulate, slightly nar-

rowed to base, more obliquely narrowed in front, margin crenate, sparsely ciliate, a feeble channel along the basal margin externally, coarsely and closely punctate, the punctures denser near the sides, those of the disc umbilicate, median line smooth, feebly elevated. Elytra rugulose at middle, the punctures distinct along the base and sides which are finer than those of the thorax and closely placed, sutural costa well marked, first discal distinct, but not prominent, the other discal costæ obliterated, submarginal distinct posteriorly. Pygidium coarsely not closely punctate. Metasternum densely punctured, the hair moderate in length but not dense. Abdomen sparsely rather finely punctate, the last two segments more coarsely. Claws curved, the tooth stout, long and median. Last joint of maxillary palpi elongate, cylindrical, not impressed. Length .80—.90 inch; 20—23 mm.

MALE.—Antennal club nearly as long as the stem. Abdomen flattened and somewhat concave, penultimate ventral (fig. 38) slightly concave and granulate at middle and on each side an oblique obtuse ridge. Last ventral feebly concave, longitudinally impressed at middle, a slight emargination at apex. Inner spur broad and stout, moderately long, the outer long, broadest at middle.

FEMALE.—Club of antennæ shorter than the funiculus. Penultimate segment narrowly impressed parallel with the posterior margin. Last ventral with a rather broad and deep, abrupt emargination. Hind tarsi slightly shorter than in the male.

VARIATIONS.—A slight variation in color has been observed, but the sculpture seems very uniform. In the males the oblique carinæ on each side of the penultimate ventral, although generally separate, sometimes extend and meet in front of the depression.

This insect has exactly the form of *Knochii*, and has the thorax as little convex. By the table which precedes it is also allied to *rugosa*, which has a more convex thorax, the punctures less densely and rather irregularly placed.

Occurs in Texas. For specimens compared with the type we are indebted to Mr. A. Sallé, of Paris.

44. **L. rugosa** Mels.—Oblong, broader behind, moderately robust, rufocastaneous to piceous, shining. Clypeus acutely, moderately deeply emarginate, border narrowly reflexed, densely, moderately coarsely punctate, front rather more coarsely punctate. Thorax widest at middle, obtusely angulate, distinctly narrowed at base, more obliquely narrowed in front, margin crenate, sparsely ciliate, a slight depression of the base opposite the middle of each elytron, disc convex, the punctures coarse and deep, moderately closely, although somewhat irregularly placed, the median line and sometimes a space each side smoother. Elytral punctures finer than those of the thorax, very closely placed, somewhat rugulose each side of the suture, the sides and apex smoother, the discal costæ moderately distinct, the submarginal distinct in its posterior half. Pygidium with coarse sparsely placed punctures. Metasternum densely punctate, the hair moderately

long and dense ♂, very short ♀. Abdomen sparsely, rather finely punctate at the sides, the last two segments more coarsely. Claws curved, the tooth strong and median. Last joint of maxillary palpus moderately elongate, slightly fusiform, not impressed. Length .70—.90 inch; 18—23 mm.

MALE.—Antennal club a little longer than the stem. Abdomen flattened at middle, penultimate segment deeply transversely depressed in its posterior half, on each side of which is a feeble obtuse, oblique elevation. Last segment concave, smooth, the apex broadly triangularly emarginate closed by membrane. Inner spur of hind tibia half the length of the outer, acute at tip.

FEMALE.—Antennal club small and lenticular, shorter than the funiculus. Penultimate ventral segment with a linear transverse impression near the posterior border, the last segment broadly emarginate. Posterior tarsi slightly shorter than the male.

VARIATIONS.—The usual variation in color from rufocastaneous to brown exists in this species, the latter color seeming to prevail in the western specimens (Nebraska). The angulation of the thorax varies in a marked degree, and some of the specimens approach *affinis* in such a decided manner that they might be placed together without reference to other characters; *corrosa* is also closely related in form and the sexual characters of the male alone separate them with certainty. The extent of the emargination of the last ventral segment ♀ varies in extent from a deep, squarely cut form to an arcuate emargination.

Occurs from Massachusetts to Colorado southward to North Carolina and Texas.

Group X, *balia*.

This group contains a small number of species which have the following characters in common: Inner spur of hind tibia ♂ fixed, and at least half as long as the outer spur. The antennæ are 9-jointed. Clypeus emarginate in all the species, although very feebly in *comans*, in which there is a mere sinuation. The last joint of the maxillary palpus is fusiform or subcylindrical, not impressed. The claws are strongly toothed in all except *comans*.

The antennæ have been shown to exhibit some variation in the number of joints in other parts of the series, and it might naturally be suspected that the species in the present group are composed of merely aberrant individuals of those series in which the antennæ are normally 10-jointed.

With the large material now before me this matter has been carefully investigated, and there has not been found any very great resemblance in external form and sculpture between the species of this group and any other, except possibly in the case of *limula* and *cephalica*, and here as in all other cases the secondary sexual characters of the male are quite different. The species at present known may be approximately separated as follows:

- Body with erect hairs rather sparsely placed; form moderately elongate and parallel.....45. **hirsuta**.
 Body above entirely glabrous, with the exception of erect hairs on the head.
 Clypeus with scarcely a trace of emargination; ventral sexual characters ♂ feeble.....46. **comans**.
 Clypeus very distinctly emarginate.
 Sutural stria deeply impressed, the sutural costa of normal width and convexity; antennal club ♂ as long as or longer than the stem.
 Species more or less ovate; tarsal claws unequally toothed in the sexes.
 Last ventral ♂ convex, the penultimate concave with a tuberosity each side.....47. **implicita**.
 Last ventral ♂ concave, the penultimate segment with a transverse, obtuse ridge.....48. **balia**.
 Species elongate, parallel; tarsal claws with a long tooth in both sexes.
 49. **villifrons**.
 Sutural stria feebly or not impressed, sutural costa narrow, scarcely elevated.
 Surface with normal lustre; upper outline viewed laterally convex; pygidium ♀ not gibbous at apex.....50. **limula**.
 Surface polished as if varnished; upper outline of elytra flat; pygidium gibbous at apex.....51. **nitida**.

45. **hirsuta** Knoch.—Oblong, nearly parallel, ferruginous brown to piceous, feebly shining, sparsely clothed with yellowish erect hairs, longer on the thorax. Head densely and coarsely punctured with moderately long hair, clypeus emarginate, the border moderately reflexed. Thorax widest at middle, slightly narrowed at base, more at apex, the margin entire, ciliate, basal margin channeled externally, surface with coarse punctures moderately closely placed, with long erect hairs. Elytral punctures much finer than those of the thorax, less impressed, denser and somewhat rugulose, the hairs sparser and shorter than on the thorax, the discal costæ not distinct. Pygidium moderately and not closely punctate ♂, coarsely and closely ♀, sparsely hairy. Metasternum densely punctured, the hairs yellow moderately dense, much longer in the male. Abdomen sparsely punctate at the sides, the second segment more densely ♂, the last two segments more coarsely. Claws arcuate, a strong acute median tooth. Last joint of maxillary palpi slender fusiform, not impressed. Length .58—.72 inch; 15—18 mm.

MALE.—Antennal club a little longer than the stem. Abdomen slightly flattened at middle, the penultimate segment at middle with a transverse, arcuate, rugulose elevation, behind which is a concavity. Last ventral flat. Inner spur of hind tibia fixed, a little shorter and stouter than the outer.

FEMALE.—Antennal club as long as the funiculus. Last ventral segment broadly emarginate. Hind femora stouter, the tarsus a little shorter than in the male.

VARIATIONS.—Beyond the usual differences in color and size there is no variation. Some of the small specimens often have a resemblance, at first glance, to some of the darker forms of *tristis*.

Occurs from Michigan to North Carolina.

46. **L. comans** Burm.—Oblong, slightly broader behind, rufotestaceous to piceous, shining. Clypeus feebly sinuate at middle, the border not widely reflexed, moderately closely punctate, front convex, less closely punctate. Thorax narrowed in front, the sides regularly arcuate from the base, the margin somewhat irregular, but not crenate, punctures coarse, sparse, rather irregularly placed, a median smoother space, a distinct basal channel from the hind angles. Elytral punctures finer than those of the thorax and more closely placed, somewhat rugulose in the post-scutellar region in the male, the costæ faintly distinct. Pygidium coarsely indistinctly punctate at base, smoother at apex ♂, more elongate, smoother and gibbous at apex ♀. Metasternum densely finely punctured with long and abundant yellow hair in ♂, the hair shorter and sparser ♀. Abdomen sparsely punctulate at the sides, the punctures with short hairs. Claws arcuate, the tooth small and median ♂, larger in ♀. Last joint of maxillary palpus cylindrical not impressed. Length .58—.63 inch; 15—16 mm.

MALE.—Antennal club slightly longer than the stem. Abdomen flattened at middle, penultimate segment with slight oblique impressions each side. Inner spur of hind tibia short, slightly curved.

FEMALE.—Antennal club shorter than the funiculus. Metasternum less hairy. Last ventral segment broadly emarginate at apex.

VARIATIONS.—The two ♂ specimens before me are rufotestaceous, the female piceous and more shining, the metasternum brownish, the legs reddish.

There is no other species known to me in which one of the hind tibial spurs of the male is fixed and the ventral sexual characters are almost absent.

An opportunity occurred to examine the specimens from the cabinet of Dr. Zimmerman, and one was found bearing the number (141) under which it was sent to Burmeister. I have, therefore, been able to describe from what is practically a duplicate type. On comparison *rufiola* Lec., is found to be absolutely identical, while *sororia* is found to be a composite species the male being *comans*, the female a *micans* with the pruinosity lost. The type of *decidua* (unique) is also the same species, but there are associated with it specimens of another species also a member of the present group.

Occurs in Georgia, South Carolina and Florida.

47. **L. implicita** n. sp.—Oblong-oval. convex, rufotestaceous to brown head and thorax always darker, moderately shining. Clypeus moderately deeply, acutely emarginate, the border moderately reflexed, surface closely rather coarsely punctate, front more densely punctate. Thorax narrowed from base to apex, more obliquely in front, the margin somewhat irregular, scarcely crenate. with short ciliæ, the punctures coarse, regularly, but not closely placed, the median line usually smoother, a distinct channel along the base externally. Punctures of elytra as coarse as those of the thorax, more shallow, closer, stellate and somewhat rugose, discal costæ very feeble, the submarginal usually more distinct. Pygidium sparsely indistinctly punctate. Metasternum densely punctate, the hair long and abundant ♂. shorter and sparser ♀. Abdomen indistinctly punctate at the sides, the last two segments more coarsely punctate. Claws arcuate, a small acute median tooth ♂, larger in ♀. Last joint of maxillary palpus fusiform, not impressed. Length .55—.68 inch; 14—17.5 mm.

MALE.—Antennal club longer than the stem. Abdomen flattened and slightly concave at middle. Penultimate segment (fig. 25) with a semicircular depression on each side of which is a short, oblique tuberosity. Last segment convex, sometimes with a slight median channel. Inner spur of hind tibia half the length of the outer, stout and slightly curved.

FEMALE.—Antennal club a little shorter than the funiculus. Pygidium more elongate than the male, slightly gibbous near the apex. Metasternum less hairy, the hind tarsi slightly shorter.

VARIATIONS.—The full color of this species is: elytra brown, head and thorax more nearly piceous, body beneath paler than above. Specimens occur with the elytra red-brown, in which case the sides of the thorax are paler. Another specimen is as rufotestaceous as *glaberrima*.

This species resembles *balia*, but the clypeus is more acutely and deeply emarginate, the surest method of separating these closely allied species is by reference to the male characters. It is likely that specimens of this species are mixed in most cabinets with *balia* and *comans*, and I think they partly constitute the series standing as *decidua* in the LeConte cabinet.

Occurs in Canada, Iowa, Missouri, Nebraska and Louisiana.

48. **L. balia** Say.—Oblong, distinctly broader behind, brown, head and thorax slightly darker than the elytra, surface moderately shining. Head coarsely and moderately densely punctured, front convex, with erect hairs. Clypeus broadly not deeply emarginate, margin narrowly reflexed. Thorax narrowed in front, widest at middle, very slightly narrowed posteriorly, more obliquely narrowed in front, the margin entire ciliate, punctures coarse not closely, somewhat irregularly placed, usually a smooth median space, a distinct basal channel externally. Elytra a little more finely punctured than the thorax and quite densely with a somewhat scabrous appearance, the discal costæ very indistinct. Py-

gidium coarsely sparsely punctured, smoother near the apex. Metasternum densely punctate, the hair moderately long and dense; sides of abdomen sparsely punctate, the last two segments more coarsely. Claws curved, the tooth strong and median. Last joint of maxillary palpi slightly fusiform, not impressed. Length .60—.64 inch; 15—16 mm.

MALE.—Club of antenna as long as the stem. Abdomen broadly flattened at middle, the penultimate segment with an arcuate, transverse elevation in front of a slight concavity. Last segment with a cupuliform depression, the anterior margin somewhat elevated. Inner spur of hind tibia two-thirds as long as the outer and not thicker.

FEMALE.—Antennal club shorter than the funiculus. Metasternum less hairy than in the male, the hind tarsi distinctly shorter.

VARIATIONS.—As in all species with the thoracic punctures rather sparse, their distribution is somewhat irregular, although not so obviously as in *villifrons*.

This species is more decidedly oval in outline than either *villifrons* or *hirsuta*. It is the only species of the present group in which the last ventral ♂ has a well defined concavity, the ridge on the penultimate segment is very like *hirsuta*.

Occurs in the Middle States region westward to Illinois, a specimen given me marked Arizona is looked upon with doubt as to locality.

49. **L. villifrons** Lec.—Oblong, moderately elongate, slightly broader behind, rufotestaceous or castaneous, shining. Head coarsely and closely, almost cribrately punctured. Clypeus deeply emarginate, the border narrowly reflexed, frontal suture deeply impressed, front with short erect hairs. Thorax narrowed in front, the sides regularly arcuate, the margin not crenate, with short ciliæ, a distinct sulcus along the basal margin externally, disc shining, the punctures coarse and deep, sparsely placed, in many specimens there are large smooth spaces. Elytral punctures coarse and very closely placed, the discal costæ very indistinct. Pygidium with coarse, sparsely placed, indistinct punctures. Metasternum densely punctured, the hair moderately long, but not dense. Abdomen very sparsely punctate at the sides, the last two segments more coarsely. Claws curved, a strong acute tooth at middle. Last joint of maxillary palpus cylindrical, not impressed. Length .56—.62 inch; 14.5—16 mm.

MALE.—Antennal club (fig. 5) as long as the stem. Abdomen broadly flattened at middle, penultimate segment with a feeble arcuate elevation. Last segment broadly concave with a longitudinal impression at middle. Inner spur of hind tibia two-thirds the length of the outer, acute, moderately stout. Pygidium broad, the punctures large, but shallow.

FEMALE.—Antennal club shorter than the funiculus. Metasternum with shorter hair. Pygidium more oval and shining, the punctures smaller, but sharply impressed.

VARIATIONS.—While in the greater number of specimens the thoracic punctures are equally scattered, many occur with smooth impunctured spaces, usually one on each side in front of the middle. The hairs on the front are often lost by abrasion, in such specimens the specific name may cause doubt.

With this species I unite *hirticeps* Lec., described like *villifrons* from a single specimen. The measurement given for the former .92 inch is evidently a typographical error for .62 inch.

Occurs in Canada, Pennsylvania, Illinois and Iowa. For *hirticeps* LeConte says Georgia, but this is doubtful.

50. ***L. limula*** n. sp.—Oblong, scarcely broader behind, convex, robust, rufo-testaceous, shining. Clypeus emarginate, the border narrowly reflexed, surface rather coarsely densely punctured, front convex, more coarsely punctured, a slight impression at middle of front. Thorax short, broad, rather more deflexed than usual, sides arcuately narrowed from base to apex, margin somewhat irregular, but not crenate, sparsely ciliate, a distinct basal channel, disc moderately coarsely punctate, the punctures not close, but somewhat irregularly scattered. Elytra more finely and closely punctured than the thorax, the surface smoother near the apex, sutural costa narrow, feebly elevated, the first discal moderately distinct, the others scarcely evident, the submarginal faintly distinct near the apex. Pygidium sparsely punctate, smoother near the apex. Metasternum densely punctured, the hair long and dense ♂, shorter and less dense ♀. Abdomen at sides sparsely punctate, the last two segments more coarsely. Claws arcuate, a strong median tooth in both sexes. Last joint of maxillary palpi slightly fusiform, not impressed. Length .55—.72 inch; 14—18 mm.

MALE.—Antennal club very little longer than the funiculus. Abdomen flattened at middle, the penultimate segment with an obtuse, transverse ridge divided by a depression at middle. Last ventral concave, the anterior margin elevated. Inner spur of hind tibia broad and stout, obliquely truncate at apex.

FEMALE.—Antennal club shorter than the funiculus. Spurs of hind tibiæ more slender. Pygidium more elongate and smoother. Posterior tarsi shorter than in the male.

VARIATIONS.—While the greater number of specimens have the costæ as described, others have them more evident. The color varies but little. The thoracic punctuation varies in distinctness, but not greatly.

This species greatly resembles *cephalica*, and like that species is more convex in outline when viewed laterally.

Occurs southward of Hudson's Bay, Montana, Colorado, Utah and Illinois.

51. **L. nitida** Lec.—Oblong, nearly parallel, convex, dark brown, very shining as if varnished. Clypeus moderately deeply emarginate, the margin reflexed, surface densely and coarsely punctured, front convex, more coarsely but less densely punctured. Thorax short and broad, the sides arcuate from base to apex, the margin a little irregular but not crenate, sparsely ciliate, disc rather finely and distinctly punctured, a distinct fovea at the middle of the declivity each side, the basal channel distinct. Scutellum almost entirely smooth. Elytra with fine punctures more closely placed than on the thorax, sutural costa indistinct, the stria usually defining it scarcely visible, discal costæ very faintly indicated. Pygidium ♀ highly polished, sparsely punctate, conical, gibbous near the apex. Metasternum moderately closely punctate, the hair moderately abundant and long. Abdomen very shining, sparsely punctate, the last two segments more coarsely. Claws arcuate, the tooth long, strong and median. Last joint of maxillary palpus fusiform, not impressed. Length .80—.82 inch; 20.5—21 mm.

Of this species I have seen but two specimens, both females; the one in the cabinet of Dr. LeConte, the second given me by Dr. Hamilton. These two specimens agree in every detail, excepting as to the antennæ. In the typical specimen the antennæ are 9-jointed, while in mine the fourth and fifth joints are so closely united that the antennæ seem 8-jointed. The club is slightly shorter than the funiculus. The posterior tarsi are not quite as long as the tibiæ, and it is probable that the male will have longer tarsi.

Occurs in Georgia (LeConte) and at Allegheny City, Pennsylvania (Hamilton).

Group XI, *ilicis*.

This group is formed of rather heterogeneous material in aspect, yet related by certain characters, having affinities in two directions, *hirticula* and *delata* approximate *hirsuta* and its allies, while *ilicis* and *ciliata* resemble *brevidens* and *cæmula* of the next series.

The clypeus is emarginate with narrowly reflexed border; antennæ 10-jointed, the ♂ club not long; inner spur of posterior tibia ♂ fixed, moderately long; claws armed with a strong median tooth; last joint of maxillary palpus slightly fusiform, not impressed; surface hairy.

The following are the species known:

Basal margin of the thorax channeled from the hind angles nearly to middle; sides of thorax not subangulate.

Elytra with vittate series of erect hairs.....52. **hirticula**.

Elytra with fine scattered hairs.....53. **delata**.

Basal margin of thorax not channeled, the median line usually finely carinate; sides subangulate.

Surface of elytra distinctly pruinose, the pubescence uniform and recumbent.....54. **ilicis**.

Surface not pruinose, elytra with vittate series of short erect hairs in addition to the recumbent.....55. **ciliata**.

52. **L. hirticula** Knoch.—Oblong, slightly broader behind, fuscoferruginous to dark brown, moderately shining, head and thorax with erect hair, elytra with lines of erect hair along the usual costæ. Clypeus moderately deeply emarginate, the margin narrowly reflexed, surface very densely punctured, front more coarsely punctured and with erect hairs. Thorax narrower at apex, the sides more oblique in front, the margin usually entire, sometimes more or less crenate, with short ciliæ, surface variolately punctured, sometimes very densely, so that the surface is opaque, at others with distinct intervals, the thorax more shining, the erect hairs not long, but more abundant in the former race, a distinct channel along the basal margin from the hind angles to near the middle. Elytra with much finer punctures, feebly impressed, rather closely placed, so that the elytra at times are rather scabrous than punctate, in every case they form a denser group at the middle third of the elytra external to the sutural costæ; erect hairs arranged in vittæ along the lines of the costæ forming thus five series, the margin fimbriate with longer hairs. Pygidium more convex and transverse in the male, coarsely sparsely punctured and shining, not hairy. Metasternum densely punctured, the hair moderately long. Abdomen moderately closely punctured along the sides, smoother at middle, each puncture with a very short hair. Claws curved, with a strong median tooth, alike in the sexes. Last joint of maxillary palpi subcylindrical, not impressed. Length .65—.75 inch; 16.5—19 mm.

MALE.—Antennal club a little longer than the funiculus. Abdomen flattened at middle, the penultimate segment at middle more depressed at its posterior half, on each side plicate. Last ventral slightly concave at middle. Inner spur of posterior tibia moderately long and acute.

FEMALE.—Antennal club shorter than the funiculus. Last ventral segment often vaguely impressed near the apex. Posterior tarsi distinctly shorter than in the male.

VARIATIONS.—The extreme forms of this species differ so greatly that they might, without intermediate forms, be considered distinct species. They may be divided as follows:

Southern forms (North Carolina to Texas). These are larger, the erect hairs of the surface longer and more abundant. Thorax very densely cribrately punctured and subopaque. Punctuation of metasternum very dense.

Central forms (Illinois, etc.). These are smaller in size, slightly more oval, the erect hairs less numerous, shorter and easily abraded. Thorax rather shining, the punctures variolate and separated by smooth, but narrow interspaces. Metasternum less densely punctured.

Eastern forms (Virginia northward and New England States). These are exactly intermediate between two forms above described. The thoracic punctures are large, variolate and closely placed, but

not so densely, that the intervals between them are entirely obliterated. These are the typical forms as described by Knoch.

One peculiarity of the elytral sculpture is best marked in the southern forms, the denser group of punctuation on each side of the suture beginning about one-fourth from the scutellum, extending from that point nearly half way to the apex.

When the pubescence is entirely removed from a specimen, as may occur, it is difficult to distinguish an Illinois specimen from the group of species allied to *cognata*.

Occurs abundantly in the entire Atlantic region extending to Nebraska and Texas.

53. ***L. delata*** n. sp.—Oblong, slightly broader behind, piceous brown, head and thorax more shining, surface sparsely clothed with short, semi-erect, grayish hair. Clypeus moderately deeply, broadly emarginate, border very narrowly reflexed, surface densely coarsely punctate, front less densely, front and clypeus with short erect hair. Thorax narrowed from the base, the sides more oblique in front, margin subcrenate and ciliate, surface with coarse deep punctures not closely placed, a little closer near the side, each puncture with a short semi-erect hair, a distinct channel along the basal margin from the hind angles nearly to middle. Elytra rather finely and rather closely punctate, forming a somewhat denser space behind the scutellum, the punctures near the base slightly rugose, nearer the apex stellate, discal costæ very indistinct, the surface subopaque, sparsely clothed with short, fine, semi-erect pubescence. Pygidium sparsely, irregularly punctate. Metasternum densely punctured, the hairs yellowish, not long nor dense. Abdomen sparsely finely punctate at the sides, each puncture with a short hair, last two segments more coarsely punctured. Claws curved, with a strong median tooth. Last joint of maxillary palpi fusiform, not impressed. Length .65 inch; 16.5 mm.

MALE.—Antennal club a little longer than the funiculus. Abdomen slightly flattened at middle, penultimate segment (fig. 33) with an impression at middle which becomes rapidly wider and extends along the posterior border of the segment, on each side of the impression the segment is more convex, and with an oblique plica more external, last segment slightly concave, acutely notched at apex, a distinct longitudinal impression. Inner spur of hind tibia half the length of the outer, the latter long and slender.

Of this species I have seen but two males, not differing.

This species resembles *hirsuta*, but is more oval, less hairy, the clypeus more widely emarginate and more densely punctured. It has also 10-jointed antennæ, while in *hirsuta* they are but nine.

Occurs in eastern Kentucky.

54. **L. ilicis** Knoch.—Oblong, slightly broader behind, brown, more or less opaque, elytra pruinose, surface sparsely clothed with short, recumbent hair, equal in length. Head piceous, with very short erect hair. Clypeus rather deeply emarginate, the border not widely reflexed, surface with the front, very densely and coarsely punctured. Thorax widest at middle, slightly narrowed at base, more obliquely narrowed in front, the margin crenate and ciliate, surface very densely granulate punctate, usually with a slightly elevated, smooth, median line, the pubescence recumbent and not conspicuous. Elytra densely punctulate and finely rugulose, the punctures shallow and for the most part indistinct, the discal costæ indistinct, the submarginal moderately distinct, the pubescence fine gray and recumbent, the margin usually ciliate. Pygidium shining, coarsely sparsely punctate. Metasternum densely punctured, the hairs long, but not dense. Abdomen moderately coarsely punctured at the sides, but not densely, each puncture with a short hair, the last two segments more coarsely punctured. Claws curved, tooth strong and median. Last joint of maxillary palpi fusiform, obtuse, not impressed. Length .75—.92 inch: 19—23.5 mm.

MALE.—Antennal club slightly longer than the funiculus. Abdomen flattened at middle, the penultimate segment (fig. 35) broadly transversely impressed with an oblique tuberosity each side. Last segment irregularly concave, distinctly emarginate at apex. Pygidium regularly convex, broader than long, the punctures not deeply impressed. Inner spur of hind tibiæ half the length of the outer, stout, obliquely truncate.

FEMALE.—Antennal club much shorter than the funiculus. Metasternum with shorter and sparser pubescence. Pygidium longer than wide, more convex at apex, punctures more abundant and deeply impressed. Posterior tarsi slightly shorter.

VARIATIONS.—All the specimens have the elytra distinctly pruinose, but to a variable degree, the specimens from the northern regions less distinctly. These latter have the discal costæ more evident, although they are never well developed at any time. The color varies but little.

The legs have always a clearer red color than the under surface and more shining, the femora of the female are always stouter than the male.

With this species I have united *subtonsa* Lec., founded on a single specimen which has lost the ciliæ of the elytra rather through accident than for specific reasons.

After a study of a pretty large series I believe it probable that Burmeister described his *ilicis* from an immature specimen. Two in my cabinet fit his description very well, and here it may be observed that the less mature the specimens are the greater the tendency of

the short hairs to become erect. The *fimbriata* of Burmeister is the fully mature *ilicis*.

Occurs from New York to Georgia and Illinois.

55. **L. ciliata** Lec.—Oblong, moderately robust, slightly broader behind, subopaque, surface sparsely clothed with semi-erect grayish hair with some slightly longer, more erect hairs in vittæ on the elytra, not pruinose. Head nearly black, densely and rather roughly punctate, with short erect hair, clypeus moderately deeply emarginate, the border narrowly reflexed. Thorax widest at middle, slightly narrowed behind, more obliquely narrowed in front, the margin ciliate, not distinctly crenate, surface densely granulate-punctate, the median line slightly elevated, the hairs short and erect. Elytra densely punctate, the postscutellar region subgranulate, the discal costæ faintly developed, the submarginal distinct, but feeble; surface not pruinose, the pubescence sparse, semi-erect; the slightly longer, more erect hairs placed along the lines of the usual costæ margin ciliate. Pygidium coarsely punctured, smoother near the apex and often along the middle posteriorly, the female more densely punctured. Metasternum densely punctured, the pubescence moderately dense, but not very long; sides of abdomen more coarsely but less densely punctured, the last two segments more coarsely. Claws arcuate, the tooth strong, acute and median. Last joint of maxillary palpi slightly fusiform, not impressed. Length .80—.85 inch; 20—21.5 mm.

MALE.—Antennal club slightly longer than the funiculus. Abdomen flattened at middle, the penultimate segment flattened and finely asperate at middle, on each side a slight oblique tuberosity, the last segment slightly concave, emarginate at apex. Inner spur of hind tibia broad and stout, obliquely truncate at tip, the outer more slender, nearly twice as long. Pygidium regularly convex, broader than long.

FEMALE.—Club of antennæ much shorter than the funicle. Pubescence of metasternum shorter and less abundant. Pygidium nearly as long as wide, more narrowed towards tip, the surface more coarsely and densely punctured, especially above, and more gibbous near the apex. Hind tarsi slightly shorter.

VARIATIONS.—Nothing noteworthy has been observed. At times in this species as well as in *ilicis*, the median line of the thorax is not elevated.

The lines of longer hair on the elytra are not well marked, and are best seen by looking obliquely from the front. In view of the fact that specimens of *crenulata* occur with and without these erect hairs, it might be considered questionable whether *ciliata* should be separated from *ilicis*. Although my series of both species is quite large, I do not feel justified in speaking positively either way, but leave the matter for future determination.

Occurs in Wisconsin, Illinois, Missouri and Georgia.

Group XII, *crenulata*.

The species of this group are of moderately large size, the upper surface hairy in different degrees. The clypeus is always emarginate, although feebly in several species, the margin narrowly reflexed. Last joint of maxillary palpi fusiform or cylindrical impressed in but one species. Antennæ 10-jointed, the male club not so conspicuously longer than that of the female, as is usual in the genus; the lateral margin of the thorax may be either entire or crenate; pectus with long hairs in some species, nearly naked in others. Abdomen moderately closely punctured over the entire surface. Claws with a strong, acute, median tooth alike in both sexes in *crenulata*, *rubiginosa*, *æmula*, *arcta* and *albina*; small and intramedian in the male, but stronger and more nearly median in the female, *parvidens* and *vetula*; posterior tarsi shorter in the female in *parvidens* alone. Spurs of posterior tibiæ free in both sexes.

The vestiture of the surface presents two forms—that in which the pubescence is uniform and recumbent, and that in which there are longer erect hairs intermixed. In *parvidens*, however, the erect hairs are not very obvious, except on the thorax. The erect hairs where they occur have a tendency to form a serial arrangement along the suture and the lines of the discal costæ and are always more abundant and longer in the females than in the males. One species has conspicuously long erect hairs on the elytra (*vetula*).

One of the species (*crenulata*) has a wide distribution, the others seem restricted and rather local. They are as follows:

- Pubescence of upper surface fine and recumbent, without any intermixed erect hairs.
- Form robust, front and clypeus coarsely punctured.....56. **æmula**.
- Form cylindrical, punctuation extremely fine and dense.....57. **arcta**.
- Pubescence of upper surface intermixed or erect.
- Margin of thorax strongly crenate.....58. **crenulata**.
- Margin of thorax at most feebly serrate behind the middle.
- Pubescence of surface white59. **albina**.
- Pubescence yellowish or brownish.
- Upper surface with very long erect hair; palpi distinctly impressed; club of antennæ ♂ and ♀ equal.....60. **vetula**.
- Erect hair moderate; last joint of palpi not impressed; antennal club ♂ long.
- Thorax shining, punctures not dense.....61. **rubiginosa**.
- Thorax somewhat opaque, punctures close, often dense.
62. **parvidens**.

56. **L. æmula** n. sp.—Oblong oval, slightly broader behind, facies rather robust, brown, surface distinctly pruinose, clothed with fine, short, recumbent pubescence. Clypeus emarginate, the border narrowly reflexed, coarsely and closely punctured, front more densely punctured with short semi-erect hairs. Thorax very obtusely angulate, the margin subcrenate, surface equally punctured, the punctures coarse and dense, not rugose nor confluent, each puncture bearing a short hair, a few erect hairs along the apical margin, the sides ciliate with longer hair. Elytra with punctures much finer than on the thorax less impressed and much less closely placed, each bearing a short recumbent hair; sutural costa distinct, discal costæ scarcely evident, submarginal costa distinct in its entire length, but not prominent; lateral margin ciliate with shorter hairs than on the thorax. Pygidium as closely punctured as the thorax. Metasternum not densely punctured. Abdomen rather finely and sparsely punctured, with short hairs. Legs more shining, usually reddish-brown. Claws with a large acute tooth at middle, slightly smaller and near the base in the female. Last joint of maxillary palpi long, slightly fusiform. Length .82—.90 inch; 21—23 mm.

MALE.—Antennal club scarcely as long as the funiculus. Abdomen vaguely impressed at middle, the penultimate segment with a slight triangular impression with feeble granulations each side.

FEMALE.—Antennal club very short. Posterior legs much stouter than in ♂, the tibiæ more dilated at tip.

VARIATIONS.—The only variation observed is in color. The typical form has the color and aspect of fully mature *ilicis*. One specimen before me is a very dark brown, almost piceous, from it the pubescence has been in great part removed.

This species resembles *ilicis*, and at superficial examination would be taken for that, but there is no smooth median thoracic line so commonly seen in that species. The structural (group) characters will easily distinguish the two species.

It has also considerable resemblance to *parvidens*, but in that species the hair is somewhat coarser and in part erect.

The hair covering the surface is very fine, and in carelessly collected specimens may be abraded, but there will hardly be any difficulty in assigning the species a place in the table.

This is the only instance known to me in which the claws are toothed nearer the base in the female than in the male.

Occurs in northern Georgia (Morrison).

57. **L. arcta** n. sp.—Oblong, subcylindrical, brownish ferruginous, head piceous, thorax a little darker than the elytra, semiopaque, surface clothed with extremely fine, short pubescence. Clypeus feebly emarginate, margin narrowly reflexed, surface densely punctured, front more finely and more densely punctured. Thorax with sides arcuate, the margin entire, surface with very fine and

moderately dense punctuation, slightly shining, clothed with very fine and short pubescence; scutellum closely punctured. Elytra scarcely wider than the thorax, the punctuation dense, fine and equally disposed, each puncture with a short hair; sutural costa distinct, the discal costæ obliterated, submarginal costa distinct in its apical half. Pygidium shining, not closely punctate. Metasternum finely not closely punctate, the hair not long. Abdomen more shining than the upper surface, the punctuation fine, not close, pubescence short and easily abraded, last ventral segment with coarse punctures ♀. Legs somewhat red, the tibiæ and tarsi usually darker. Tooth of claws long, acute and median. Last joint of maxillary palpi moderately long and cylindrical. Length .60—.65 inch; 15—16 mm.

MALE.—Unknown.

FEMALE.—Antennal club shorter than the funiculus. Spurs of hind tibiæ long and slender.

Of this species but two specimens have been examined, both females, differing only in size.

Of all the species of *Lachnosterna* this has the finest punctuation, and on the elytra so closely placed as to produce the opacity of the surface. In form it resembles *quercus*.

Occurs in Texas, region unknown.

58. **L. crenulata** Fröhl.—Oblong, very little wider posteriorly, brown, feebly shining, surface clothed with short yellowish recumbent hair, often with erect hairs intermixed. Clypeus emarginate, the border reflexed, surface coarsely and closely punctate with short erect hairs, front more densely punctured with longer hairs. Thorax with lateral margin coarsely serrate, the median smooth line interrupted, surface very coarsely and closely punctate, less densely at sides and base, with moderately long erect yellowish hairs. Elytra equally punctured, the punctures much finer than on the thorax, moderately closely placed, sutural costa feeble, discal costæ usually indistinct, submarginal costa well marked and entire, surface with short recumbent pubescence, often with erect hairs intermixed. Pygidium with coarse moderately dense punctures and short erect hair. Metasternum moderately closely punctured at the sides, smoother at middle, the hair rather long but sparse. Abdomen less densely but more coarsely punctured and with short sparse pubescence. Claws with a strong median tooth, alike in both sexes. Length .65—.80 inch; 17—20 mm.

MALE.—Antennal club as long as the funiculus. Penultimate ventral segment vaguely concave at middle.

FEMALE.—Club shorter than the funiculus. Posterior legs stouter than in the male.

VARIATIONS.—In by far the larger number of specimens examined the pubescence of the elytra is uniform in character, being short and recumbent. This is the form assumed by the specimens from Massachusetts to North Carolina, but as the species is found a hundred or more miles west the pubescence is coarser, and a tendency

is shown in some of the hairs to become erect, until in the more mountainous regions of western North Carolina and eastern Kentucky the erect hairs are observed to form distinct series as in *hirticula*, with the hairs even longer and more conspicuous. In those forms with the recumbent pubescence only the elytral costæ are extremely feeble, as the erect hairs become more evident the costæ are better developed. The punctuation of the thorax is also much denser in those in which the pubescence is coarser. The last joint of the maxillary palpi is long and cylindrical.

As has already been noted in the generalities, those specimens in which the erect hairs of the elytra are the most conspicuous are females.

Occurs in the region bounded by Massachusetts and South Carolina, Kansas and Indian Territory.

59. **L. albina** Burm.—Oblong oval, distinctly broader behind, brown, moderately shining, surface rather densely clothed with white hairs. Clypeus emarginate, the border narrowly reflexed, densely punctured and with short erect hairs, front more coarsely punctured, the pubescence partly recumbent, the erect hairs longer than on the clypeus. Thorax obtusely angulate on the sides, the lateral margin entire, disc moderately coarsely and closely punctate, without median smooth line, the white pubescence moderately long and recumbent, with erect hairs intermixed. Elytra nearly as coarsely punctured as the thorax, but less densely; the usual costæ, including the submarginal well marked, the pubescence, as on the the thorax, but with few erect hairs intermixed near the base and sides, more numerous in the females. Metasternum densely punctured, the pubescence long and erect. Abdomen equally punctured over the entire surface, the punctures a little coarser, but not so dense as on the metasternum, the pubescence fine and recumbent. Pygidium densely punctured, the pubescence recumbent. Claws with a moderately large, acute, median tooth. Length .60—.70 inch; 15—18 mm.

MALE.—Antennal club a little longer than the funiculus; ventral segments slightly flattened at middle.

FEMALE.—Club distinctly shorter than the funiculus.

Of this species I have examined five specimens which show no special variation, except slightly in size.

The last ventral segment is extremely short, and might almost escape observation. It is an easily recognized species by the conspicuous white pubescence of the surface. The last joint of the maxillary palpi is fusiform.

The specimens seen have been collected in Indiana and Mississippi. It has, probably, a limited distribution.

60. **L. vetula** n. sp.—Oblong oval, broader behind, color variable from ferruginous to dark brown, surface more or less pruinose, distinctly so in the darker specimens, sparsely clothed with very short recumbent hair, the elytra with very long erect hair near the base and along the suture. Clypeus very feebly emarginate, the margin reflexed, surface shining with coarse deep punctures not closely placed, frontal suture deeply impressed, front shining, coarsely and deeply punctured, somewhat rugose, with moderately long erect hairs. Thorax very obtusely angulate, the margin coarsely serrate, the punctures of the disc moderate in size, sparsely placed, a little coarser near the sides, each puncture having a moderately long erect hair, the lateral margin with long hair. Elytra with moderately coarse punctures, very regularly and moderately closely placed, each puncture with a short semi-erect hair, with very long erect hairs arising from special punctures on each side of the scutellum and along the sutural costa, also along the first discal costa ♀, lateral margin ciliate with shorter hairs. Pygidium convex, coarsely punctured with short erect hairs and longer hairs nearer the apex, more abundant in the female. Metasternum densely but indistinctly punctured, with moderately long erect yellow hair. Abdomen very sparsely punctate with short erect hairs. Last joint of maxillary palpi fusiform, obtuse, a moderately deep impression on the outer side. Length .50—.75 inch; 13—19 mm.

MALE.—Antennal club small, shorter than the funiculus. Spurs of hind tibiae slender and long. Claws feebly curved, the tooth relatively small and within the middle. Abdomen vaguely impressed at middle. Last ventral segment transversely impressed, the anterior border of the segment with two very obtuse teeth (fig. 13) directed backward. Penultimate segment obtusely elevated at middle, obliquely flattened and subgranulate; erect hairs of elytra shorter and forming one series along the sutural costa.

FEMALE.—Antennal club as in the male. Claws more curved, the tooth larger and median. Spurs of hind tibiae broader than in male; erect hairs of elytra much longer than in the male and forming an additional line in the usual position of the first discal costa.

VARIATIONS.—The color varies greatly from a pale ferruginous to a dark purple brown, as in *micans*. The elytral costae are usually entirely obliterated, although some few show faint traces of them. As a rule the males are paler than the females. In some specimens the glaucous coating is so conspicuous on the thorax as to cause it to appear white in certain lights.

This species appears closely allied to a Mexican form which bears the mss. name *longipilosa* Reiche, of which I have seen only a female. In the latter the margin of the thorax is less crenate and the last joint of the maxillary palpi acutely ovate. Burmeister describes several closely allied, especially *setifera*, which is described as densely pubescent and the thoracic margin not crenate.

Occurs in Arizona (Morrison), New Mexico (Prof. Snow).

61. **L. rubiginosa** Lec.—Oblong-oval, scarcely broader behind, ferruginous brown, thorax moderately shining, elytra pruinose, sparsely clothed with semi-erect hair, longer on the thorax and base of elytra. Clypeus emarginate, the border narrowly reflexed, coarsely and moderately closely punctured, front more coarsely, less closely punctured and with erect hair. Thorax with arcuate sides, the margin ciliate, subcrenate posteriorly, disc with moderate punctures, evenly placed over the surface and well separated, each bearing a moderately long erect hair. Elytral punctures finer than those of the thorax, evenly arranged, not closely placed, each with a semi-erect hair, with longer hairs at base and along the lines of the costæ in the female, less distinct in male, margin ciliate; discal costæ scarcely evident, the submarginal distinct at apical half. Pygidium coarsely not closely punctate, sparsely hairy. Metasternum moderately densely punctured, the hair long and yellowish. Abdomen more finely and sparsely punctate, subopaque, the hairs short and sparse, longer on the last two segments. Claws curved, the tooth strong, acute and median. Last joint of maxillary palpi fusiform, obtuse, not impressed. Length .60—.75 inch; 15—19 mm.

MALE.—Antennal club as long as the entire stem. Penultimate ventral segment slightly flattened at middle, the punctures muricate. Last ventral with slight, longitudinal, median impression; longer erect hairs of elytra not obvious, except near the base. Pygidium broader than long.

FEMALE.—Antennal club very short; erect hairs of upper surface more abundant than in the male, and forming distinct lines along the lines of the costæ. Tarsi, especially the posterior, shorter than in the male. Pygidium longer than wide.

VARIATIONS.—Size and slightly in color are the only variations observed.

By reference to the characters of the tables this species may be readily known. Although placed adjacent to *parvidens* there are many points of difference: the punctuation of thorax, the style of pubescence and the position of the tooth of the claws.

Occurs in Kansas and Texas, those from the former State are smaller and lighter in color.

62. **L. parvidens** Lec.—Oblong-oval, slightly broader behind, moderately robust, brown, sometimes more or less ferruginous, subopaque, very slightly pruinose, sparsely pubescent, with larger erect hairs on the head, thorax and base of elytra. Clypeus feebly emarginate, the border narrowly reflexed, coarsely, deeply and closely punctured, front more densely punctured and with short erect hairs. Thorax very obtusely angulate, the lateral margin irregular, but not truly crenate with long hairs, surface moderately coarsely and closely punctate, more densely and coarsely at the sides, surface with short, semi-recumbent hairs with longer erect hairs intermixed. Elytra equally punctate, the punctures coarse, close, but not dense; the sutural costa distinct, the first discal costa feebly indicated, the submarginal extremely feeble, surface sparsely clothed with short recumbent pubescence, with longer erect hair intermixed at base.

Pygidium closely, subgranulate-punctate, with short recumbent hair. Metasternum densely punctured, with long yellow hair. Abdomen finely, indistinctly, not closely punctate, opaque, the pubescence very short and sparse. Last joint of maxillary palpi fusiform, not impressed. Length .75—.90 inch; 19—23 mm.

MALE.—Club of antennæ nearly as long as the entire stem. Spurs of hind tibiæ slender; claws feebly curved, the tooth small and intramedian. Penultimate ventral segment slightly flattened with granular elevations at middle. Pygidium distinctly broader than long.

FEMALE.—Club shorter than the funiculus. Claws more curved, the tooth stronger than in the male. Pygidium distinctly as long as wide. Posterior legs much stouter than in the male, the femora especially, the tibiæ much broader at apex. Tarsi on all the legs distinctly shorter than in the male.

VARIATIONS.—The only variation observed is that of color, due probably to the varying maturity of the specimens. The males have the thorax a little more closely punctate and consequently slightly less shining.

Occurs in Georgia, Florida (and Texas?).

Group XIII, submucida.

Form variable in the species, but never truly cylindrical, the surface iridescent in *submucida* alone, more or less shining in the others; clypeus emarginate or truncate. Last joint of maxillary palpi fusiform or cylindrical, at most feebly impressed; lateral margin of thorax entire, at most feebly ciliate; breast with moderate hair; spurs of hind tibiæ free in both sexes; tooth of claws never large, always intramedian, often close to the base.

The species all belong to the southwestern region, and are as follows:

Anterior tibiæ normally dentate, the upper tooth very small.

Surface iridescent; species larger, of robust facies, the submarginal costa well developed.....63. **submucida.**

Surface glabrous, not iridescent nor pruinose; species smaller and more distinctly ovate, the submarginal costa rarely visible.

Surface not shining..... 64. **glabricula.**

Surface very shining.....65. **fucata.**

Anterior tibiæ with the upper tooth nearly as long, fully as acute as the middle tooth.

Clypeus truncate; color piceous brown..... 66. **exorata.**

The character used to separate *glabricula* and *fucata* does not seem very strong, but in nature the difference is very striking, the ventral male characters are also different.

63. **L. submucida** Lec.—Oblong, subcylindrical, slightly broader behind, facies robust, reddish-brown or rufopiceous, surface distinctly sericeous or iridescent. Head moderately broad, eyes not prominent, color usually darker. Clypeus flat, emarginate, margin narrowly reflexed and with the front densely and rather coarsely punctured. Thorax narrowed in front, the sides arcuate, margin very feebly crenate by the insertion of distant ciliæ, surface equally punctate, with punctures of moderate size not closely placed. Punctures of elytra coarser and deeper than those of the thorax, not closely placed, the usual costæ distinctly indicated, the submarginal well developed and entire. Pygidium somewhat irregular, the punctures coarse, rather close, but shallow. Last joint of palpi fusiform, not impressed. Claws arcuate, with an acute tooth near the base, larger in the female. Length .75—.80 inch; 19—20.5 mm.

MALE.—Club of antennæ shorter than the stem. Abdomen slightly flattened at middle, the hind margin of the penultimate segment (fig. 24) abruptly thickened with acute granulations.

FEMALE.—Club of antennæ shorter than the funiculus. Posterior tarsi a little shorter than in the male.

VARIATIONS.—Numerous specimens have been seen, but no variation worthy of mention has been observed.

This species is one of the few in which the surface is sericeous or slightly iridescent. In this form of surface, immersion in alcohol does not seem to injure the lustre, while in those truly pruinose, like *micans* and *prunina*, the coat is often entirely removed.

In perfectly fresh specimens the punctures of the elytra bear an extremely short, recumbent hair as in *prununculina*, but in the great majority of specimens these are not seen.

Occurs quite commonly in western Texas, taken by Belfrage at Waco.

64. **L. glabricula** Lec.—Oblong, subcylindrical, slightly broader behind, rufotestaceous or slightly darker, surface moderately shining, not iridescent. Head moderately broad. Clypeus emarginate, rather concave, the margin reflexed, moderately coarsely not densely punctate, front more densely. Thorax distinctly narrowed in front, sides arcuate, margin entire, sparsely fimbriate, disc evenly punctate, the punctures coarser and moderately close. Elytra with punctures as coarse as those of the thorax, less densely placed, less deep near the apex, the surface somewhat wrinkled; sutural costa well marked, the discal and submarginal almost entirely obliterated. Pygidium more finely punctured than the thorax, the punctures rather irregularly placed. Metasternum closely punctate, the hairs moderate, not dense. Abdomen shining, sparsely punctate, with short hairs at the side. Last joint of maxillary palpi fusiform, not impressed. Claws arcuate, the tooth moderate in size, near the basal dilatation. Length .55—.65 inch; 14—16.5 mm.

MALE.—Antennal club a little longer than the funiculus. Abdomen flattened at middle, posterior half of the penultimate segment obliquely declivous, finely granulate. Last segment flat, slightly granulate.

VARIATIONS.—The larger number of specimens are nearly as cylindrical as *ephitida*, others are slightly oval. The elytral costæ vary somewhat in distinctness, but in no specimens is the submarginal fairly developed.

At the time of the original description Dr. LeConte suspected that this might possibly be a small race of *submucida*. This seems now very unlikely. The clypeus is more concave, the punctures of entire surface coarser; there is no iridescence, and finally the male characters are sufficiently different.

I have seen very many of this species at times, but in the two dozen or more now accessible I have not found a female.

Occurs in Kansas and Texas, probably extending into Mexico.

65. ***L. fucata*** n. sp.—Oblong, slightly ovate, reddish-brown or pale castaneous, surface very shining. Head not broad. Clypeus emarginate, slightly concave, the margin narrowly reflexed, coarsely and moderately closely punctate, front more closely. Thorax distinctly narrowed in front, sides arcuate, margin entire, not ciliate, punctures of disc moderate in size, regularly placed, but not close. Elytral punctures of similar size to those of the thorax, rather more closely placed, but sparser near the apex, sutural costa distinct, discal costæ very feeble, submarginal costa well marked posteriorly. Pygidium sparsely but regularly punctate, the punctures finer than on the thorax. Metasternum closely punctate, the hair moderately long, but not dense. Abdomen sparsely finely punctate, the penultimate segment more coarsely punctured at the sides. Last joint of maxillary palpi subcylindrical, slightly impressed. Claws arcuate, the tooth moderate in size, slightly intramedian. Length .55 — .65 inch; 14 — 16.5 mm.

MALE.—Club of antennæ as long as the funiculus. Penultimate ventral segment (fig. 23) slightly flattened posteriorly and with a slight arcuate process projecting over the suture with the last ventral, the sides sometimes obliquely plicate.

VARIATIONS.—In some specimens the elytra are slightly wrinkled.

Of this species I have examined nine specimens, all males. It is remarkable in this part of the genus by its very shining surface.

Collected in southern Arizona (C. G. Pringle).

66. ***L. exorata*** n. sp.—Oblong, slightly oval, facies moderately robust, dark chestnut-brown, surface feebly shining. Head not broad. Clypeus subtruncate, margin moderately reflexed, punctuation coarse and closely placed, frontal suture rather deeply impressed, front more densely punctured, somewhat rugulose. Thorax with sides strongly arcuate in front, parallel behind, margin rather dis-

tantly ciliate, basal margin depressed each side, punctuation coarse, rather close, regularly disposed. Elytral punctuation as coarse as on the thorax, more closely placed, somewhat rugulose, near the apex smoother, a slight depression of the base within the humeri, discal costæ, except the sutural, very indistinct. Metasternum densely punctured, the hair long, yellow and abundant. Abdomen sparsely indistinctly punctate. Pygidium subopaque, extremely finely alutaceous, not distinctly punctured. Last joint of maxillary palpi slender, fusiform, not impressed. Claws feebly curved, tooth small and close to the base. Anterior tibiæ with the upper tooth nearly as long and fully as acute as the middle tooth (fig. 6). Length .66 — .70 inch : 17 — 18.5 mm.

MALE.—Antennal club as long as the entire stem. Abdominal characters wanting, except a very slight concavity of the last ventral segment.

VARIATIONS.—Six specimens have been examined showing no notable variation.

The punctures of the thorax and elytra each bear a very short hair, so short as to be entirely within the puncture and scarcely visible. This is not mentioned in the above description, as in species in which such hairs occur but few specimens retain them. The form of the thorax is described from a vertical view. On the declivity of the sides of the thorax in the two specimens now before me there is a slight depression.

One of the most striking characters of this species is the form of the anterior tibiæ. The teeth are all slender and long, the upper tooth being very nearly as long as the second tooth. The upper tooth in all other species is at best small, and often merely an angulation, the extreme in another direction is seen in the *maculicollis* group, in which the upper tooth is entirely gone.

Occurs in Texas. I am indebted for my specimens to Mr. Otto Lugger, of Baltimore.

Group XIV, *ignava*.

This group contains but one species of elongate cylindrical form, glabrous, shining. The head is broad, the eyes large, clypeus emarginate. Thorax very little narrower at apex than base, the sides coarsely serrate. Elytra not wider than the thorax. Antennæ 10-jointed; spurs of male hind tibiæ free and slender. Claws with a small acute tooth at middle. Last joint of maxillary palpus fusiform, slightly flattened externally.

By its form and broad head the species is more closely allied to the *quercus* group; from the *submucida* group it differs in its elongate form and serrate thoracic margin.

67. **L. ignava** n. sp.—Oblong, cylindrical, chestnut-brown, shining. Head broad, eyes moderately prominent. Clypeus flat, feebly emarginate, the border very narrowly reflexed, surface densely and rather coarsely punctate, front similar. Thorax rather short, very little narrower at apex than at base, sides arcuate, margin coarsely crenate, surface with rather coarse, subvariolate punctures closely, but somewhat irregularly placed. Elytra parallel, not wider than the thorax, punctures as coarse as on the thorax and moderately closely placed, less deeply impressed near the apex, sutural costa rather feeble, the discal costæ indistinct, the submarginal feeble near the apex. Pygidium coarsely sparsely punctate. Metasternum closely punctate, the hair moderate in length, not dense. Abdomen sparsely rather finely punctate, without hair. Claws feebly curved, a moderate tooth at middle. Last joint of maxillary palpi moderate in length, slightly flattened externally. Length .60—.65 inch; 15—16.5 mm.

MALE.—Club of antenna a little shorter than the entire stem. Abdomen without characters.

FEMALE.—Club shorter than the funiculus. Posterior tarsi a very little shorter than in the male, the pygidium a little longer.

VARIATIONS.—About a dozen specimens have been seen in various collections without variation, except slightly in color.

This species and *boops* are more nearly truly cylindrical than any others in our fauna. It is also one of the few with absolutely no sexual differences in the abdomen.

Occurs in Texas and New Mexico (Prof. Snow).

The following species should probably be referred to this group if it really is a member of our fauna. The description is from Blanchard supplemented by notes taken by myself from the type:

68. **L. longicornis** Blanch.—Oblong, nearly parallel, subcylindrical, brown, shining, slightly paler beneath, glabrous. Clypeus feebly emarginate ("integer" Bl.) and with the front densely punctured. Thorax with feebly arcuate sides, the margin crenulate, surface densely punctured and with a pseudo-strigose appearance. Elytra moderately punctate, the costæ very indistinct. Pygidium finely punctate. Legs somewhat reddish. Metasternum with pale hairs. Claws with a small tooth slightly in front of the middle. Length 18—19 mm.

MALE.—Antennal club longer than the stem. Abdomen vaguely impressed at middle, the last two segments without sexual characters.

The locality is indefinitely given as "Amér. Bor." Du voyage de M. de Castelnau.

Two reasons have caused me to doubt that this species belongs to our fauna. First, nearly all the species given by Castelnau described in Blanchard's catalogue are from Brazil; secondly, the tooth of the claw is small and *in front of the middle*, a character entirely unknown in our large series of species.

Group XV, *quercus*.

This group contains a few species in which the form is decidedly cylindrical and the antennæ 9-jointed; the clypeus is entire in three species and emarginate in two, the margin in all rather widely reflexed; the last joint of the maxillary palpi is fusiform, and at most with a slight flattening on the outer side; the breast is feebly hairy in all except *ecostata*, which is further remarkable in having the hind angles of the thorax rounded and the elytra without costæ; the anterior tibiæ are tridentate in the usual manner; the spurs of the male hind tibiæ are free and slender; the claws have in three species a small basal tooth, but in *quercus* the tooth is large and median; two species are more or less iridescent, the others glabrous. The head is rather broad, with prominent eyes in three species, small in *ecostata*.

The species adopted as the typical form of the group was made the type of *Endrosa* by Dr. LeConte. I have given, in sufficient detail elsewhere, the reasons for rejecting the genus, and find, since the discovery of allied species, that it must take its place in this portion of the older genus *Lachnosterna*.

The following species are at present known:

Hind angles of thorax distinct; sutural costa of elytra always present.

Clypeus more or less emarginate.

Surface subopaque or iridescent; tooth of claws large and median.

69. ***quercus***.

Surface shining.

Tooth of claws large and median; inner spur of hind tibiæ long and slender.....70. ***inepta***.

Tooth of claws small and basal; inner spur of hind tibiæ short.

71. ***affabilis***.

Clypeus entire; surface glabrous; tooth of claws small and nearly median.

Head not broad, thorax distinctly narrowed in front; color rufotestaceous.....72. ***clypeata***.

Head broad, eyes large, thorax scarcely narrower at apex than at base; color dark brown or piceous.....73. ***boops***.

Hind angles of thorax rounded; elytra without trace of costæ; pectus with long hair.

Clypeus entire; surface subopaque; tooth of claws small and basal.

74. ***ecostata***.

Both sexes are known of *quercus*, *clypeata* and *boops*, males only are known of the others.

69. ***L. quercus*** Knoch.—Oblong, cylindrical, rufotestaceous, head darker, elytra paler, surface glabrous, pruinose. Clypeus emarginate, margin narrowly reflexed, punctures moderate, not closely placed, front more coarsely punctured. Head broad, eyes large. Thorax rather short, very little narrowed in front, sides arcuate, not crenate, distantly ciliate, punctures moderate in size, very regularly

scattered, but sparse. Elytra as coarsely punctured as the thorax, but a little more closely, becoming somewhat finer near the apex, discal costæ faintly indicated, margin distantly fimbriate. Pygidium more shining, coarsely sparsely punctate. Metasternum moderately finely not densely punctate, the hair not long. Abdomen very sparsely punctate, each puncture with a short hair. Last joint of maxillary palpi slender, moderately long, not impressed. Claws arcuate, with a strong median tooth in both sexes. Length .58—.64 inch; 14.5—16 mm.

MALE.—Antennal club as long as the stem. Penultimate ventral segment slightly impressed at middle and slightly granulate. Pygidium wider than long.

FEMALE.—Club much shorter than the funiculus. Pygidium as long as wide. Last ventral segment more shining and more coarsely punctured.

VARIATIONS.—None have been observed, except slightly in color.

This species is the type of the genus *Endrosa* *Lec.*, based on the emarginate ligula. This occurs so frequently among those recognized as *Lachnosterna* in LeConte's "Revision" as to have no value for generic separation.

The broad head and large eyes of this and the associated species recall a similar form in *prununculina* and its allies.

Occurs from the Middle States southward to Georgia.

70. ***L. inepta*** n. sp.—Oblong, subcylindrical, rufotestaceous, shining. Clypeus emarginate, the border narrowly reflexed, moderately coarsely not densely punctured, front similarly punctured. Thorax rather short, narrowed in front, sides arcuate, margin entire, with short ciliæ, the punctures rather coarse, not closely but regularly placed, a distinct smooth median space, a slight depression at the middle of the declivity. Elytral punctures a little coarser than on the thorax and somewhat more closely placed, the costæ all moderately distinct. Pygidium moderately closely punctate, but smoother near the apex. Metasternum moderately densely punctured, the hair not long and rather sparse. Abdomen sparsely punctate at the sides. Last joint of maxillary palpi slightly fusiform, not impressed. Claws curved, the tooth large and median in the male. Length .60 inch; 15 mm.

MALE.—Antennal club very little longer than the funiculus. Abdomen slightly flattened at middle, penultimate segment with a distinctly limited oval concavity, on each side of which is an obtuse pyramidal tuberosity. Last ventral not impressed. Spurs of hind tibiæ long and slender. Pygidium broader than long.

This species resembles both *affabilis* and *ephilida* in form and color, being, however, more closely related to the former, but differing more especially in those characters to which attention has been called in the table. The female is unknown.

Two male specimens, Ohio.

71. **L. affabilis** n. sp.—Oblong, subcylindrical, rufotestaceous, surface shining. Head moderately broad, darker in color. Clypeus feebly but distinctly emarginate, margin moderately reflexed, punctures moderately coarse not close, front more finely and closely punctate. Thorax short, sides regularly arcuate, margin entire, not ciliate, punctuation moderately coarse, regularly placed, not close, smoother near the sides. Elytra with punctures as coarse and close as on the thorax, the surface somewhat scabrous also, the costæ faintly indicated. Pygidium coarsely sparsely punctate. Metasternum sparsely coarsely punctate, the hair short and sparse. Abdomen sparsely punctate at the sides, smoother at middle, not hairy. Last joint of palpi fusiform, slightly impressed. Claws feebly curved, the tooth small and very near the base in the male. Length .61 inch; 15 mm.

MALE.—Antennal club nearly as long as the stem. Abdomen broadly flattened at middle, the last segment with a slight concavity.

Of this species I have seen but two male specimens exactly alike. It has a great resemblance in form and color to *ephilida*, but differs widely in more important characters.

The inner spur of the hind tibia, although free, is nearly as short as in some species of the *cerasina* group, and without careful examination might be supposed to be connate with the tibia. The last ventral segment is, however, short, as is usual with these species with both hind tibial spurs free in the male.

Occurs in Kansas.

72. **L. clypeata** (*integra* || Lec.)—Oblong, slightly broader behind, rufotestaceous, moderately shining. Head coarsely moderately closely punctate, clypeus entire, concave, the border rather widely reflexed. Thorax arcuately narrowed from base to apex, the margin entire with short ciliæ, surface moderately coarsely and closely punctate. Elytra as coarsely punctate and rather more closely, the discal costæ plainly indicated, but not prominent, humeral umbone rather more prominent than usual. Pygidium sparsely punctate, smooth at apex, the punctures in female more distinct. Metasternum closely punctate, the hair rather sparse and not long. Abdomen very sparsely indistinctly punctate at the sides, the last two segments more coarsely. Claws feebly curved, the tooth small and intramedian. Last joint of maxillary palpi fusiform, distinctly impressed. Length .65—.70 inch; 16.5—18 mm.

MALE.—Antennal club longer than the funiculus. Abdomen impressed at middle, the last segment flat, the anterior border slightly thickened, the surface posteriorly with small granular elevations. Spurs of hind tibiæ unequal, the outer longer and more slender.

FEMALE.—Antennal club shorter than the funiculus. Pygidium slightly longer and more distinctly punctate.

Superficially this species resembles *affabilis*, but the clypeus is entire, and the male ventral characters different.

This species was described by Dr. LeConte from one male as *integra*, and placed in the series in which the inner spur of the hind tibiae male is fixed. This is doubtless due to error of observation, the type being rather old and inferior. The coincident presence of one fixed spur and the tooth of claws small and intramedian is unknown to me. This fact would not have escaped Dr. LeConte had he more material, and the species would not have been placed in proximity to the *hirsuta* group.

Occurs in Georgia and Florida.

73. **L. boops** n. sp.—Oblong, cylindrical, castaneous to piceous, shining. Head broad, eyes large and prominent. Clypeus entire, the margin moderately reflexed, moderately coarsely sparsely punctate, front similarly punctate. Thorax short, scarcely narrowed in front, sides arcuate, distantly ciliate, margin entire, punctuation coarse, rather sparse, evenly disposed on the disc, sparser at sides. Elytra more coarsely and rather more closely punctured than the thorax, the sutural and first discal costae distinct, the others obliterated. Pygidium more finely punctured and rather more closely. Metasternum moderately coarsely, not closely punctate, the pubescence scarcely evident. Abdomen sparsely indistinctly punctate, smooth at middle. Last joint of maxillary palpi slightly fusiform, feebly impressed. Claws feebly curved, a small tooth, median ♀, slightly intramedian ♂. Length .45—.50 inch; 11.5—13 mm.

MALE.—Antennal club one-half longer than the stem. Abdomen slightly flattened. Last segment (fig. 20) foveate, emarginate and with two dentiform processes projecting backward from near the anterior margin of the segment. Pygidium broader than long.

FEMALE.—Antennal club shorter than the funiculus. Last ventral segment nearly as long as the penultimate. Pygidium as long as wide.

VARIATIONS.—No variation has been observed, except in color, probably from varying maturity.

This species, by its form and structural peculiarities, associates very naturally with *quercus*. It is remarkable in having the last ventral segment of the female larger than is usual in the species in which both hind tibial spurs ♂ are free. The hind tarsi are distinctly shorter in the female than in the male.

Collected in northern Georgia (Morrison).

74. **L. ecostata** n. sp.—Oblong, subcylindrical, slightly depressed, subopaque (probably slightly sericeous when recent), rufotestaceous, thorax slightly darker, head brownish. Antennae rufous, club piceous brown. Head not broad. Clypeus entire, concave, the margin rather widely reflexed, coarsely and closely punctate; frontal suture straight, front cribrately punctured. Thorax narrowed in front, sides regularly arcuate, margin entire sparsely ciliate, hind angles

rounded, disc coarsely sparsely punctate, punctures indistinct near the hind angles, a few scattered hairs near the sides. Elytral punctures coarse and sparsely placed, the surface without trace of costæ, the sutural costa being entirely obliterated, margin with short ciliæ. Metasternum moderately densely punctured, the hairs rather dense, long and yellowish-white. Abdomen sparsely punctate, with short hairs. Claws ♂ feebly arcuate, the tooth small and close to the base. Last joint of maxillary palpi fusiform, obtuse, not impressed. Length .62 inch; 16 mm.

MALE.—Club of antenna one-third longer than the stem. Abdomen absolutely simple.

Of this species I have seen but one specimen remarkable in having the hind angles of the thorax rounded and the sutural costa of the elytra entirely obliterated. When recent the surface is probably slightly pruinose or sericeous, but the specimen has been collected in alcohol, and this often removes the pruinosity and makes the sericeous appearance dull and subopaque.

Occurs in southwestern Texas.

Group XVI, *tristis*.

This group contains three species of oblong or slightly oval form with the following peculiarities: The head is small, clypeus entire (fig. 2) and rather deeply concave, coarctate at base, not extending to form a part of the canthus of the eye; upper surface of body hairy, the hairs erect on the head and thorax and at the base of the elytra; thorax feebly crenate in *lenis* only; elytra with feeble discal costæ; pectus with moderately long hair; antennæ 10-jointed, the joints often very indistinct; anterior tibiæ normally toothed; spurs of posterior tibiæ free in both sexes; the tarsal claws have a rather small tooth; always intramedian in the male, longer in the female; the posterior tarsi of the female of *crinita* are notably shorter than the male.

The following table will aid in the identification of the species:

Elytra with little or no pubescence, surface glabrous; antennal club ♂ much longer than the entire stem.....75. ***crinita***.

Elytra hairy; antennal club not longer than the stem.

Above abundantly hairy, the surface shining..76. ***tristis***.

Above sparsely finely hairy on the elytra, the surface distinctly pruinose.

77. ***lenis***.

Of these species *tristis* is widely distributed, *lenis* south California and Arizona, *crinita* Texas and Mexico.

75. **L. crinita** Burm.—Oblong-oval, distinctly broader behind, rufotestaceous, shining, head and thorax with moderately long erect hairs. Clypeus entire, concave, the margin rather widely reflexed, coarsely not closely punctured, front similarly punctured and with erect hairs. Thorax with entire margin, subrenate posteriorly, disc with coarse punctures, evenly arranged over the entire surface, moderately closely placed, each with a moderately long, erect, yellow hair. Elytra with punctures distinctly coarser than on the thorax, evenly arranged and more closely placed than their own diameters, surface without hair, the discal costæ entirely obliterated. Pygidium coarsely, sparsely punctured, shining. Metasternum densely finely punctured, the hair long and yellow. Abdomen shining, a few fine, sparse punctures at the sides, last two segments with coarser punctures. Last joint of maxillary palpi slender, fusiform, not impressed. Claws variable in the sexes. Length .50—.64 inch; 13—16 mm.

MALE.—Club of antennæ one and a half times the length of the entire stem. Abdomen slightly impressed at middle, penultimate ventral slightly rugose at middle. Last ventral with an acute median impression. Tarsal claws feebly arcuate, the tooth small and slightly intramedian. Pygidium broader than long.

FEMALE.—Antennal club very short. Tarsal claws more curved and with a stronger tooth. Tarsi, especially the posterior, much shorter than in the male. Pygidium as long as wide.

VARIATIONS.—Nothing has been observed, except size.

The small group in which this species is placed has but three members, which are easily separated from each other. This one is noteworthy in having no hair on the elytra and the antennal club of male very long.

This species has, until now, borne the name *glabripennis* Lec., but I have no hesitation in restoring Burmeister's name, and am surprised that a fact so evident should have escaped recognition for so long a time.

Occurs in Texas, extending into Mexico.

76. **L. tristis** Fab.—Oblong-elongate, slightly broader behind, sometimes slightly oval, yellowish testaceous, sometimes slightly reddish, sparsely clothed with short semi-erect hair on the elytra, with longer erect hair on the thorax and at base of elytra. Clypeus entire, concave, coarsely sparsely punctured, not prolonged at sides on the eyes, front more densely punctured and with erect hair, not long. Thoracic margin entire, fimbriate with long hair, disc coarsely and rather closely punctured, hair long, erect and yellow. Elytra evenly punctured, the punctures closer than on the thorax, but not dense, pubescence sparse, short, semi-erect, with longer hairs at the base, extending somewhat along the suture, discal and submarginal costæ entirely obliterated. Pygidium coarsely and closely punctured with moderately long erect hairs. Metasternum densely finely punctured, the hair long, yellow and silken. Abdomen coarsely, usually moderately closely punctate, shining, the pubescence very

short. Last joint of maxillary palpi short, ovate, slightly impressed. Claws slightly curved, the tooth acute, moderate in size and median ♀ or smaller and intramedian ♂. Length .45—.60 inch; 11.5—15 mm.

MALE.—Antennal club slightly longer than the stem. Abdomen flattened at middle, penultimate segment with a short, transverse, acute ridge near the anterior border, the last segment with the anterior margin elevated and a ridge prolonged backwards at middle.

FEMALE.—Antennal club as long as the funiculus. Pygidium less transverse than in the male. Tarsi equal in the sexes.

VARIATIONS.—As might be expected in a species with such wide distribution there is considerable variation, not only in size and color, but in sculpture. As a general rule northern specimens are larger and more elongate, the southern smaller and more dilated behind. Specimens received from northern Illinois are darker in color, the elytral punctuation quite close, while in the Georgia and Texas specimens the punctures are coarser and stand well apart. In the northern specimens the thoracic punctuation is denser and the surface less shining than the southern specimens.

The southern form has been determined by Dr. LeConte as *crinita*, but I have shown elsewhere that Burmeister had another species in view and described it well.

This species has probably the widest distribution of any in our fauna. I have seen specimens from the entire region east of the Rocky Mountains and from Oregon and Washington Territory.

77. **L. lenis** n. sp.—Oblong, slightly broader posteriorly, pale rufotestaceous, elytra testaceous, surface more or less pruinose, sparsely clothed with short erect hair, longer on the thorax and base of elytra. Clypeus entire, faintly truncate in front, acutely notched in front of the eye, concave, margin rather widely reflexed, punctuation coarse, almost cribrate, with very short hair, front cribrately punctured with longer hair. Thorax more glossy than the rest of the surface, margin subcrenate and ciliate, surface coarsely sparsely punctate, with moderately long erect hairs. Elytra with regularly disposed punctuation, the punctures as coarse as those of the thorax, not closely placed, sparsely clothed with short hairs, with longer hairs at the base extending sparsely along the suture, discal and submarginal costæ entirely obliterated. Pygidium coarsely sparsely punctured, with sparse semi-erect hairs, with longer erect hairs intermixed. Metasternum densely punctured, the hair long, yellow and silky. Abdomen shining, slightly pruinose at the sides, sparsely punctate, smooth at middle, with very few, extremely short hairs. Last joint of maxillary palpi fusi-form, not impressed. Claws feebly arcuate, tooth moderate and acute, exactly median ♀, slightly intramedian ♂. Length .55—.60 inch; 14—15 mm.

MALE.—Antennal club pale testaceous, a little longer than the funiculus. Abdomen slightly impressed at middle, penultimate seg-

ment (fig. 19) flattened at middle and rugosely punctured. Last ventral segment with a dentiform process, prolonged backward from the anterior margin and bifid at its tip.

FEMALE.—Antennal club nearly as long as the funiculus. Pygidium longer than in the male. Posterior tarsi very little shorter.

VARIATIONS.—Scarcely any variation has been observed, except in size. One specimen from southeastern California is brownish, but this is probably from bad preservation.

This species resembles some of the larger forms of *tristis*, but is distinctly less hairy. These two species are remarkable in the fact that the sides of the clypeus do not extend over the eye to form the canthus, so that when viewed directly from above the clypeus seems acutely notched immediately in front of the eye. This character is even better marked in this species than in *tristis*.

Among the numerous specimens examined there is a variation in the number of the joints of the antennæ. While the normal number is ten joints some have one antenna with nine only, and in several specimens it is not possible to determine with certainty how many joints there are between the scape and club.

Females seem to be rare, as there is but one of that sex in seventeen specimens.

Occurs in Arizona (Morrison) and southeastern California.

Group XVII, *heterodoxa*.

Form oblong-oval, surface shining, without hairs. Clypeus subtruncate, concave, margin rather widely reflexed. Last joint of maxillary palpi fusiform, not impressed. Antennæ 10-jointed. Margin of thorax slightly irregular. Anterior tibiæ normally tridentate. Posterior tibiæ with both spurs free in the two sexes. Claws unlike in the two sexes, and in the male dissimilar on various tarsi.

For reasons already given I prefer to retain this species as an aberrant *Lachnosterna* rather than separate it with a new generic name.

The claws of the anterior tarsi ♂ as represented in fig. 44 have a rather broad basal dilatation, the tooth, not projecting beyond it, of broadly triangular form, the apical portion of the claw curving down close to the tooth. The inner claw of the middle tarsus is like the front claw. The outer middle claw is very different. The tooth is very large and deflected to one side so that the claw is almost bifid,

the claw is stronger and more arcuate than the others. The figures on the plate represent this claw as seen on the outer side (42) or inner side (43). The claws of the posterior tarsi are alike and do not greatly differ from those of the front feet, except that they are slightly more slender. The claws of all the tarsi of the female are of the ordinary *Lachnosterna* type as seen in the *fusca* group (fig. 46).

There is very little resemblance in the claws of the male to *Phytalus*, or in fact any of the genera of *Rhizotrogini* now known to me, and any separation of the species as a distinct genus must be based purely on the male sexual characters.

78. ***L. heterodoxa*** n. sp.—Oblong, pale rufotestaceous, head and thorax slightly darker, surface very glossy. Clypeus subtruncate, faintly sinuate at middle, margin moderately widely reflexed, surface moderately coarsely and closely punctate, front much more coarsely punctured. Thorax narrower in front, sides arcuate, the margin entire or subcrenate, with ciliæ. disc smooth with very sparse irregularly placed punctures, with large smooth intervals. Elytra with moderately coarse not closely placed punctures, the sutural costa alone distinct, the others entirely obliterated. Pygidium smooth, indistinctly sparsely punctate. Metasternum densely punctured, the hair moderately long, not dense, similar in sexes. Abdomen very sparsely punctate at the sides. Last joint of maxillary palpi fusiform, not impressed. Claws dissimilar in the sexes. Length .56 inch; 14 mm.

MALE.—Antennal club nearly one and a half times the length of the stem. Abdomen concave at middle, the last segment slightly granular with a linear median impression. Spurs of hind tibiae slender and free. Claws unlike on the three pairs of legs. Pygidium broader than long, regularly convex.

FEMALE.—Antennal club shorter than the funicle. Tarsal claws normally toothed and similar on all the feet. Pygidium as long as wide, obtusely prominent near the apex. Hind tarsi shorter than in the male.

At first glance this species is not very unlike *crinita* in form and color, although with a more shining surface.

This species was collected with *fucata* in southern Arizona, or possibly in Chihuahua, by Mr. C. G. Pringle, a well-known botanical collector of Charlotte, Vermont.

To this group *L. ravida* Bl., of the Mexican fauna, should be referred. It resembles *heterodoxa*, but is more robust, the surface more coarsely punctured and less shining. The antennal club of the male is scarcely longer than the stem. The tooth of the claws is longer and less triangular. The outer claw of the middle tarsus is similar in the two species.

Group XVIII, *maculicollis*.

In this group are placed three species of small size and of a facies quite different from all the preceding species, and presenting characters of almost generic value. The spurs of the hind tibiæ are free in both sexes; antennæ 9-jointed; claws with a small basal tooth. Last ventral segment small; anterior tibiæ bidentate, the upper tooth being entirely wanting; the anterior border of the thorax distinctly thickened.

The importance of most of these characters has already been alluded to by Dr. LeConte, but the bidentate front tibiæ seem to have escaped observation. He has, however, directed attention especially to the thickening of the front margin of the thorax and the slight pointing thereby in the direction of *Listrochelus*. In one of the species (*maculicollis*) there is on the occiput a similar transverse ridge, which prevents the head from being too far retracted, and to which I have directed attention as a characteristic of the vast majority of the species of that genus.

In the group as at present constituted the clypeus is entire, feebly truncate in *nitidula*, and the hind angles of the thorax are well defined in but one species. It is worthy of note that one species has the clypeus slightly coarctate at base as in *crinita* and *tristis*.

The three species may be separated in the following manner :

Thorax with a large, indistinctly limited piceous space.

Hind angles of thorax rectangular; head with punctures not close, front flat; margin of body not ciliate; legs testaceous, not ciliate. 79. **tusa**.

Hind angles of thorax very obtuse; head roughly cribrate, front convex; margin of body fimbriate with moderately long hair; femora yellow, tibiæ and tarsi piceous, legs ciliate.....80. **maculicollis**.

Thorax entirely pale yellowish testaceous.

Hind angles of thorax broadly rounded; head with very coarse punctures in two groups; margin of body with short ciliæ; legs testaceous, not ciliate.

81. **nitidula**.

These species are all from the southwestern limit of our fauna, the first from Texas, the others from Peninsula of California.

79. **L. tusa** n. sp.--Moderately elongate, subdepressed, slightly broader behind, beneath pale yellowish testaceous, thorax with large anterior piceous spot, elytra testaceous, but darker than the under side, surface moderately shining. Head piceous, shining. Clypeus concave, entire, the margin broadly reflexed, punctuation coarse and close, front flat, similarly punctured. Thorax narrower in front, apical border distinctly thickened, sides strongly arcuate in front, nearly parallel posteriorly, margin entire, ciliæ distant and short, hind angles distinct; disc with coarse punctures, less deeply impressed toward the sides, very regularly, but not closely placed. Elytral punctures coarser, closer and deeper than

those of the thorax, the costæ very faintly indicated, the sutural distinct, margin not ciliate. Pygidium shining, with few scattered punctures. Metasternum sparsely punctate, the hairs short and inconspicuous. Abdomen obsoletely sparsely punctate at the sides, smooth at middle, without hairs. Legs yellowish testaceous, not ciliate, posterior femora very little stouter than the middle, claws arcuate, the tooth moderate, placed near the base. Palpi fusiform, not impressed. Length .47 inch; 12 mm.

MALE.—Antennæ pale, the club one and a half times the length of the stem. Abdomen flattened at middle. Last ventral segment with a transverse cupuliform depression, posterior margin of the penultimate segment elevated, a slight dentiform process at middle.

VARIATIONS.—The nine specimens examined are remarkably uniform in size, color and sculpture; they are all males.

This species so closely resembles *maculicollis*, that it might readily be supposed to be a mere color variety, but the characters separating them are many and important, the most obvious are the sculpture of the head, the distinct hind angles of thorax and the absence of ciliation of the margin and legs.

Occurs near San Antonio, Texas. Collected by S. F. Aaron.

80. **L. maculicollis** Lec.—Oblong-oval, yellowish testaceous, elytra brownish testaceous, thorax with a large piceous spot, irregularly pentangular in form, the base in front, surface moderately shining. Head piceous, almost black, opaque. Clypeus almost semicircular, rather deeply concave, margin widely reflexed, coarsely closely punctate, front roughly cribrate. Thorax distinctly narrower in front, apical border slightly thickened, sides arcuate, margin entire, ciliate with long hairs, surface with moderately coarse, sparsely placed punctures, hind angles very obtuse. Elytra with coarser punctures than the thorax, more closely and regularly placed, margin ciliate with long hairs. Pygidium coarsely, sparsely punctured. Metasternum closely punctate, the hair sparse, but moderately long. Abdomen with very coarse, shallow punctures and with sparse erect hair. Last joint of maxillary palpi fusiform, slightly impressed. Legs sparsely ciliate with moderately long hairs, femora yellowish testaceous, tibiæ and tarsi brown, posterior femora short. Claws feebly arcuate, with a very small basal tooth. Length .48—.55 inch; 12—14 mm.

MALE.—Antennæ rufotestaceous, club brown, one and a third times longer than the entire stem. Abdomen without sexual peculiarity.

VARIATIONS.—Of this species four specimens have been examined showing no noteworthy variation.

The description of the color as given by Dr. LeConte is somewhat different from that given above. The entire under side and femora are pale yellowish testaceous. The thorax is a little darker in color, and the large piceous spot gives the species an appearance rather odd for the genus.

Collected at Cape San Lucas, Lower California, by John Xantus.

81. **L. nitidula** Lec.—Elongate-oval, pale yellowish testaceous, head fuscous, moderately shining. Clypeus subtruncate, slightly concave, border narrowly reflexed, at base slightly coarctate, punctures coarse, not close, front more coarsely punctured, the punctures forming a dense group on each side. Thorax narrowed in front, anterior border narrowly thickened, sides arcuate, entire, fimbriate, hind angles rounded; disc with moderate punctures, regularly disposed, not closely placed. Elytral punctures coarser and rather closer than those of the thorax, the sutural costa distinct, the others obliterated, margin with short fimbriæ. Pygidium finely alutaceous, sparsely rather finely punctate. Metasternum sparsely indistinctly punctate, the hairs moderate in length, but sparse. Abdomen sparsely punctate, each puncture with a short recumbent hair. Legs with very few hairs, claws feebly arcuate with a small basal tooth. Last joint of maxillary palpi fusiform, with an obsolete impression. Length .45 inch; 11.5 mm.

MALE.—Antennal club nearly one and a half times the length of the stem. Ventral characters absent.

FEMALE.—Antennal club as long as the funiculus. Tooth of claws near the middle and slightly stronger than in the male.

VARIATIONS.—None have been observed.

This species has very decidedly the facies of a *Cyclocephala* of elongate form (e. g. *longula*), in both form and color. The rounded hind angles of the thorax is of very rare occurrence in the genus, there being but one other pronounced case in a preceding group (*ecostata*).

Occurs at Cape San Lucas, Lower California. Collected by Mr. John Xantus.

LACHNOSTERNA Hope.

Synonyms: *Trichestes* Erichs. *Ancylonycha* and *Tostegoptera* Blanch.
Eugastra, *Endrosa* and *Gynnis* Lec.

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Knoch.—Neue Beytrage zur Insectenkunde. Leipzig, 1801.

Blanchard.—Catalogue de la collection entomologique du Muséum d'Histoire Naturelle de Paris. Paris, 1850.

Burmeister.—Handbuch der Entomologie vol. iv, 2. Berlin, 1855.

LeConte.—Synopsis of the Melolonthidæ of the United States. Jour. Acad. Nat. Sci. ser. ii, vol. iii. Philadelphia, 1856.

Group I.

1. **L. lanceolata** Say (*Melolontha*), Journ. Acad. iii, p. 242; edit. Lec. 2, p. 142; Blanch. (*Tostegoptera*), p. 149; Burm., p. 356; Lec. (*Lachnosterna*) p. 237.

Group II.

2. *L. cribrosa* Lec. (*Tostegoptera*), Proc. Acad. 1853, p. 231; (*Eugastra*) Proc. Acad. 1854, p. 217; Revis. p. 234.
ventricosa Lec., Proc. Acad. 1853, p. 440; 1854, p. 217; Revis. p. 234.
3. *L. æqualis* Lec. (*Tostegoptera*), Proc. Acad. 1853, p. 440; Revis. (*Lachnosterna*) p. 238.
4. *L. farcta* Lec., Revis. p. 238.

Group III.

5. *L. torta* Lec., Revis. p. 239.
6. *L. hamata* n. sp.

Group IV.

7. *L. latifrons* Lec., Revis. p. 241.
8. *L. generosa* n. sp.
9. *L. prætermisssa* n. sp.
10. *L. prununculina* Burm. (*Ancylonycha*), p. 360.
cerasina Lec., Revis. p. 241.
11. *L. glaberrima* Blanch. (*Ancylonycha*), p. 136; Lec. (*Lachnosterna*), p. 242.
12. *L. ephilida* Say (*Melolontha*), Jour. Acad. v, p. 196; edit. Lec. ii, p. 298; Burm. (*Trichestes*), p. 359; Lec. (*Lachnosterna*), p. 241.
uniformis Blanch. (*Ancylonycha*), p. 133.
Burmeisteri Lec., Revis. p. 242.

Group V.

13. *L. longitarsis* Say (*Melolontha*), Jour. Acad. iii, p. 241; edit. Lec., ii, p. 141; Burm. (*Trichestes*), p. 359; Lec. (*Lachnosterna*), Revis. p. 240.
frontalis Lec., Revis. p. 239.
14. *L. clemens* Horn.
dispar ‡ Lec., Revis. p. 240.

Group VI.

15. *L. dispar* Burm. (*Trichestes*), p. 361.
debilis Lec. (*Gynnis*), Revis. p. 262.

Group VII.

16. *L. gracilis* Burm. (*Trichestes*), p. 361.
volvula Lec. (*Endrosa*), Revis. p. 235.
inana Lec., Revis. p. 242.
17. *L. gibbosa* Burm. (*Ancylonycha*), p. 324.
futilis ♂ Lec., Revis. p. 243.
serricornis ♀ Lec., Revis. p. 247.
18. *L. hirtiventris* n. sp.
19. *L. congrua* Lec., Revis. p. 243.
20. *L. postrema* n. sp.
21. *L. affinis* Lec., Revis. p. 252.
22. *L. prunina* Lec., Revis. p. 251.
pruinosa || Mels. (*Ancylonycha*), Proc. Acad. ii, p. 140.
fraterna ‡ Burm. (*Ancylonycha*), p. 322.

Group VIII.

23. *L. calceata* Lec., Revis. p. 250.

Group IX.

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24. *L. crassissima* Blanch. (*Ancylonycha*), p. 133.
obesa Lec., Revis. p. 251.
robusta ♀ Lec. Revis. p. 257.
25. *L. subpruinosa* Casey, Contributions, p. 38.
26. *L. errans* Lec., Proc. Acad. 1859, p. 283.

27. *L. inversa* n. sp.
28. *L. bipartita* n. sp.
29. *L. micans* Knoch (*Melolontha*), p. 77; Burm., p. 323; Lec., Revis. p. 247.
sororia ♀ Lec., Revis. p. 246.
30. *L. diffinis* Blanch. (*Ancylonycha*) p. 138.
31. *L. vehemens* n. sp.
32. *L. fusca* Froehlich (*Melolontha*), Naturforscher 26, p. 99; Lec., Revis. p. 244.
quercina Knoch (*Melolontha*), p. 74, pl. 1, fig. 7; Lec., Agass. Lake Super.
p. 226; Burm., p. 319.
ferrens Gyll (*Melolontha*), Schönh. Syn. Ins. 1, 3, App. p. 74.
fervida ‡ Oliv. (*Melolontha*), Ent. i, 5, p. 24, pl. 9, fig. 109.
var. *consimilis* ♂ Lec., Agass. Lake Super. p. 226.
var. *anxia* ♀ Lec., Agass. Lake Super. p. 226.
brevicollis Blanch., p. 132.
var. *puncticollis* Blanch., p. 133.
var. *Drakii* Kby., Faun. Bor. Am. iv, p. 133.
Race *cephalica* Lec., Revis. p. 245.
uninotata Walker, Naturalist in Vancouver, ii, p. 323.

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33. *L. politula* n. sp.
34. *L. barda* n. sp.
35. *L. marginalis* Lec., Revis. p. 250.
36. *L. spreta* n. sp.
37. *L. fraterna* Harris (*Phyllophaga*) Insects injurious to vegetation, p. 29;
Lec., Revis. p. 249.
var. *cognata* Burm., p. 323; Lec. Revis. p. 248.
var. *Forsteri* Burm., p. 325.
lugubris Lec., Revis. p. 248.
lutescens Lec., Revis. p. 249.
var. *semicribrata* Lec., Revis. p. 247.

38. *L. infidelis* n. sp.
39. *L. luctuosa* n. sp.
40. *L. corrosa* Lec., Revis. p. 249.
41. *L. scitula* n. sp.
42. *L. Knochii* Gyll. (*Melolontha*), Schönh. Syn. Ins. i, 3, App. p. 75; Burm.
(*Ancylonycha*), p. 325; Lec., Revis. p. 252.
43. *L. profunda* Blanch. (*Ancylonycha*), p. 132.
44. *L. rugosa* Mels. (*Ancylonycha*), Proc. Acad. ii, p. 140; Burm., p. 328; Lec.,
Revis. p. 252.

Group X.

45. *L. hirsuta* Knoch (*Melolontha*), p. 78; Lec., Revis. p. 254.
46. *L. comans* Burm. (*Trichestes*), p. 358.
sororia ♂ Lec., Revis. p. 246.
decidua Lec., Revis. p. 246.
rufiola ♀ Lec., Revis. p. 256.
47. *L. implicita* n. sp.
48. *L. balla* Say (*Melolontha*), Jour. Acad. v, 2 194; edit. Lec. ii, p. 297; Lec.,
Revis. p. 255.
comata Burm., p. 337.
49. *L. villifrons* Lec., Revis. p. 255.
hirticeps ♀ Lec., Revis. p. 255.
50. *L. limula* n. sp.
51. *L. nitida* Lec., Revis. p. 256.

Group XI.

52. *L. hirticula* Knoch (*Melolontha*), p. 79; Harris, Ins. Injur. to Veg. p. 29;
Burm., p. 327; Lec., Revis. p. 254.
hirsuta ‡ Say, Jour. Acad. iii, p. 243; edit. Lec. ii, p. 142.
53. *L. delata* n. sp.
54. *L. ilicis* Knoch (*Melolontha*), p. 75, pl. i, fig. 28; Lec., Revis. p. 253.
porcina Hentz, Trans. Am. Philos. Soc. iii, p. 253, pl. iii, fig. 4.
fibriata Burm., p. 326.
subtonsa Lec., Revis. p. 254.
var. *ilicis* Burm., p. 326.
55. *L. ciliata* Lec., Revis. p. 253.

Group XII.

56. *L. æmula* n. sp.
57. *L. arcta* n. sp.
58. *L. crenulata* Fröhl. (*Melolontha*), Naturf. 26, p. 94; Burm., p. 327; Lec.,
Revis. p. 258.
georgicana Gyll. Schöb. Syn. Ins. i, 3, App. p. 77.
59. *L. albina* Burm. (*Ancylonycha*), p. 328; Lec., Revis. p. 258.
60. *L. vetula* n. sp.
61. *L. rubiginosa* Lec., Revis. p. 259.
62. *L. parvidens* Lec., Revis. p. 259.

Group XIII.

63. *L. submucida* Lec., Revis. p. 260.
64. *L. glabricula* Lec., Revis. 260.
65. *L. fucata* n. sp.
66. *L. exorata* n. sp.

Group XIV.

67. *L. ignava* n. sp.
68. *L. longicornis* Blanch. (*Ancylonycha*), p. 134.

Group XV.

69. *L. quercus* Knoch (*Melolontha*), p. 72, pl. i, fig. 26; Burm., p. 340; Lec.
(*Endrosa*), Revis. p. 234.
fervida ‡ Schönh., Syn. Ins. i, 3, p. 171.
70. *L. inepta* n. sp.
71. *L. affabilis* n. sp.
72. *L. clypeata* Horn, Entomol. Americana iii, p. 145.
integra || Lec., Revis. p. 255.
73. *L. boops* n. sp.
74. *L. ecostata* n. sp.

Group XVI.

75. *L. crinita* Burm. (*Trichestes*), p. 359.
glabripennis Lec., Revis. p. 260.
76. *L. tristis* Fab. (*Melolontha*), Spec. Ins. 1, 39; Burm. (*Trichestes*), p. 358;
Lec., Revis. p. 261.
pilosicollis Knoch (*Melolontha*), p. 85, pl. i, fig. 29; Say, Journ. Acad. iii, p.
243; edit. Lec. ii, p. 143.
crinita ‡ Lec., Revis. p. 261.

Group XVII.

78. *L. heterodoxa* n. sp.

Group XVIII.

79. *L. tusa* n. sp.
80. *L. maculicollis* Lec., New Species 1863, p. 76.
81. *L. nitidula* Lec., New Species 1863, p. 77.

EXPLANATION OF PLATE III.

- Fig. 1.—Head and thorax of *L. longitarsis*.
 “ 2.— “ “ *L. tristis*.
 “ 3.— “ “ *L. latifrons*.
 “ 4.—Antenna, 10-jointed of *L. crassissima*.
 “ 5.—Antenna, 9-jointed of *L. villifrons*.
 “ 6.—Front leg of *L. exorata*.
 “ 7.—Hind leg ♂ of *L. lanceolata*.
 “ 8.—Hind leg ♀ of “
 “ 9.—Hind tibia ♂ of *L. vehemens*; *a*, *b*, *c*, abnormal? front claws ♂.
 “ 10.— “ “ ♂ of *L. fusca*.
 “ 11.— “ “ ♂ of *L. hamata*.
 “ 12.— “ “ ♂ of *L. torta*.
 “ 13.— “ “ ♂ of *L. hirtiventris*; *a*, the claw.
 “ 14.— “ “ ♂ of *L. gibbosa* (*futilis* Lec.).
 “ 15.— “ leg ♂ of *L. calceata*.
 “ 16.— “ “ ♂ of *L. prununculina*.
 “ 17.—Last two ventral segments *L. hirtiventris* ♂.
 “ 18.— “ “ “ “ *L. vetula* ♂.
 “ 19.— “ “ “ “ *L. lenis* ♂.
 “ 20.— “ “ “ “ *L. boops* ♂.
 “ 21.— “ “ “ “ *L. ephilida* ♂.
 “ 22.— “ “ “ “ *L. luctuosa* ♀.
 “ 23.—Penultimate ventral ♂ *L. fucata*.
 “ 24.— “ “ “ ♂ *L. submucida*.
 “ 25.— “ “ “ ♂ *L. implicita*.
 “ 26.— “ “ “ ♂ *L. bipartita*.
 “ 27.— “ “ “ ♂ *L. prunina*.
 “ 28.— “ “ “ ♂ *L. marginalis*.
 “ 29.— “ “ “ ♂ *L. vehemens*.
 “ 30.— “ “ “ ♂ *L. fusca*.
 “ 31.— “ “ “ ♂ *L. fusca*, race *cephalica*.
 “ 32.— “ “ “ ♂ *L. errans*.
 “ 33.— “ “ “ ♂ *L. delata*.
 “ 34.— “ “ “ ♂ *L. inversa*.
 “ 35.— “ “ “ ♂ *L. ilicis*.
 “ 36.— “ “ “ ♂ *L. generosa*.
 “ 37.— “ “ “ ♂ *L. calceata*.
 “ 38.— “ “ “ ♂ *L. profunda*.
 “ 39.— “ “ “ ♂ *L. luctuosa*.
 “ 40.— “ “ “ ♂ *L. scitula*.
 “ 41.— “ “ “ ♂ *L. corrosa*.
 “ 42.—Outer middle claw of *L. heterodoxa* ♂, outer view.
 “ 43.— “ “ “ of “ ♂, inner view.
 “ 44.—Front claw, the inner middle is also similar.
 “ 45.—Posterior claw.
 “ 46.—Claw of ♀, similar throughout.

