

# THE ANNALS

AND

## MAGAZINE OF NATURAL HISTORY.

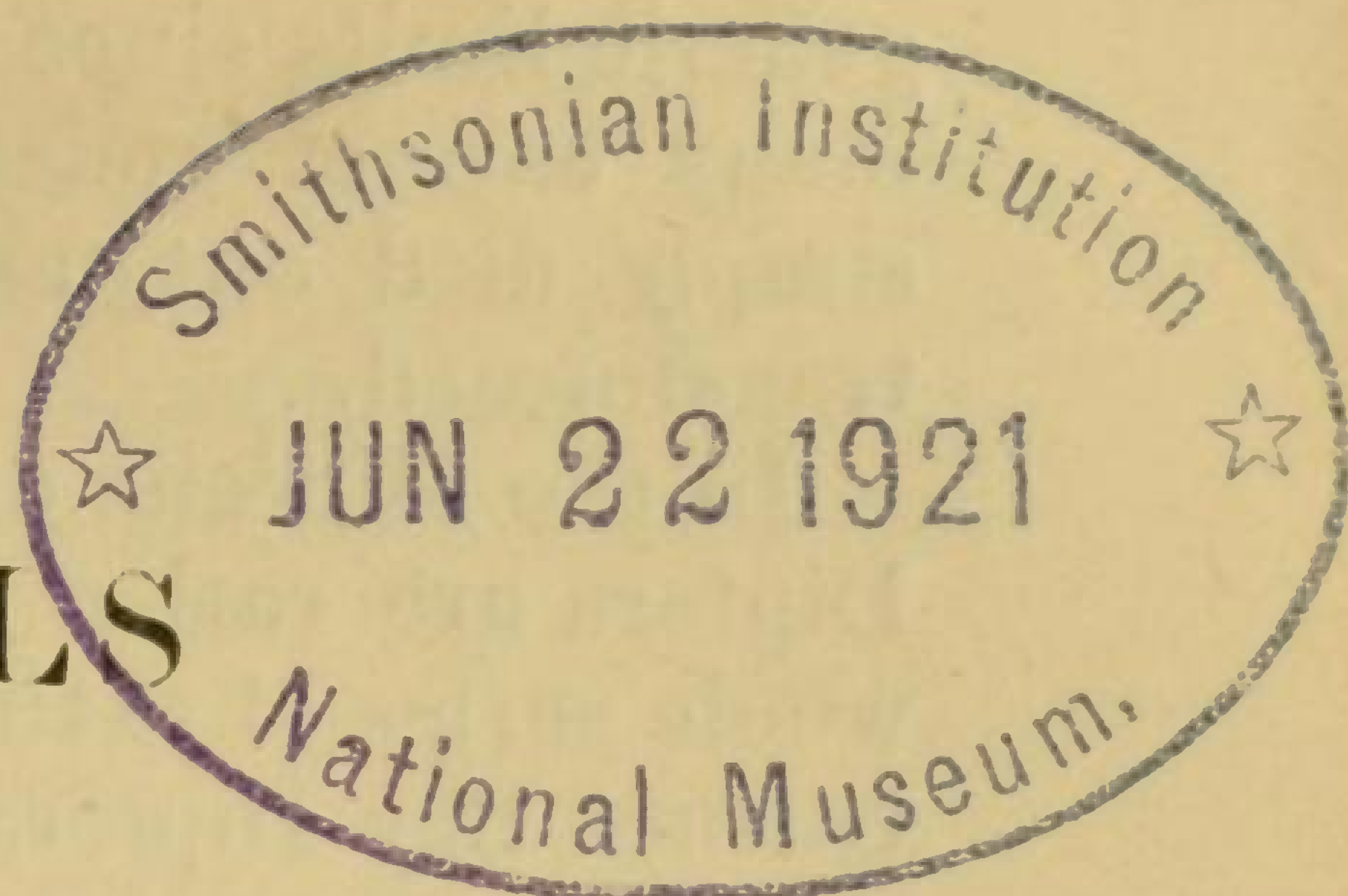
[NINTH SERIES.]

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LVII.—*Fossil Arthropods in the British Museum.*—VI.  
*Oligocene Insects from Gurnet Bay, Isle of Wight.* By  
T. D. A. COCKERELL, University of Colorado.

THE present part continues the descriptions of insects from Gurnet Bay; the abbreviations used are the same as before. In the study of the Diptera I have been constantly indebted to Mr. F. W. Edwards for advice, but he is, of course, not responsible for my treatment of the species. In sorting out the materials I found a long series of Culicidæ, which I have not studied, as Mr. Edwards has kindly promised to investigate them at a later date. All the species now described are figured, and I have not thought it worth while to describe in words the features which can be much better understood from the illustrations. Thirty-seven species of Diptera are described in the present paper, all apparently referable to existing genera, or so close to them that new generic names have not seemed necessary. Among the fifty insects of various orders now described, only one new generic name (for a moth) has been required. Thus it appears that the insect-fauna of the Isle of Wight in Oligocene times was very like that now inhabiting the earth, and in large part similar to that now found in the same locality. The genera of Diptera, in particular, are millions of years old, and there has been no general evolutionary movement transgressing





generic limits since Oligocene times. There are, of course, many extinct genera of Tertiary Diptera, but these have simply died out, and the fauna as a whole has not been transformed.

In the Miocene of Florissant, Colorado, extinct genera of Diptera are rather numerous, and, in particular, there is a whole series of extinct types of Bombyliidæ. So far as the Gurnet Bay Diptera have been investigated, no trace of such a series of extinct genera has been found. The extinct Dipterous genera described (in former papers) from Gurnet Bay are *Paltostomopsis* (Blepharoceridæ), *Bibiodites* (Bibionidæ), *Protoberis* (Stratiomyidæ), *Stenomyites* (Ortalididæ), and *Protoscinis* (Chloropidæ). Another supposed extinct genus proved to be synonymous with the rare living genus *Styringomyia*. More than once, during Tertiary times, migrations have brought numerous elements of the Old World fauna into direct conflict with that of America. It seems probable that in the struggle for existence whole groups of American genera, as in Bombyliidæ and Aphididæ, perished. Was there any corresponding phenomenon in Europe? The Gurnet Bay fossils do not suggest it, although some of the genera (of ants and termites) most abundantly represented in individuals have retreated to the Oriental and Australian regions. It must be said, however, that all the bees in Baltic Amber (Oligocene) belong to extinct genera. It remains uncertain whether they perished on account of the competition of other types migrating from elsewhere, or whether (as seems more likely) the whole bee-fauna has undergone evolutionary advance comparable with that of the mammals. In that case, the bees constitute an exception to the general statement made above.

During October, my wife and I visited the Isle of Wight for the express purpose of examining the locality of the insect beds. Following the directions kindly supplied by Mr. G. W. Colenutt of Ryde, we had no difficulty in finding the principal locality, which is at the junction of Gurnet (or Gurnard) and Thorness bays, in the Bembridge beds. The exposure of insect-bearing rock was on the shore, and was entirely worked out by Mr. A'Court Smith in the course of a number of years. So far as can be seen, it will never again be possible to make a large collection of Gurnet Bay fossil insects. All we could find consisted of stray pebbles on the shore, which on being broken showed the characteristic surfaces, with ants (principally *Æcophylla*) and in one case an undescribed Homopterous insect. There appears to be no doubt whatever that the insect-bearing rock belongs to



the Bembridge beds, and is essentially contemporaneous with the fauna including *Palæotherium* (of which my wife found a mandible at Yarmouth) and many interesting mollusca. In a piece of typical insect-bearing rock my wife found a good example of the shell *Planorbis discus*, Edwards.

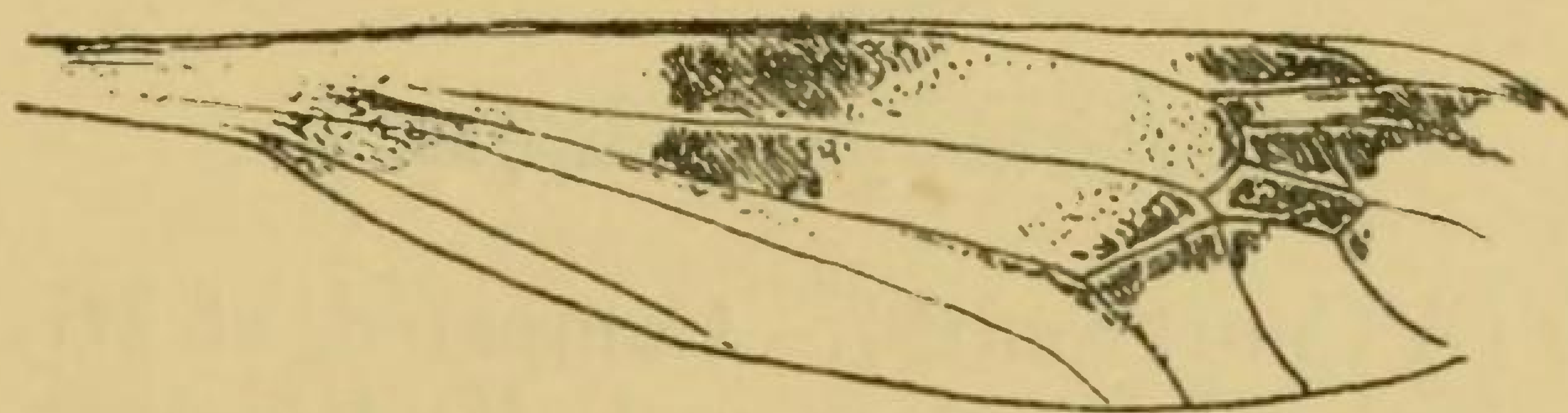
## D I P T E R A.

## Tipulidæ.

*Tipula callarche*, sp. n. (Fig. 1.)

Wing about 9·8 mm. long, hyaline, heavily marked with dark brown, as shown in figure, the dark areas broadly surrounded by pale reddish; thorax small.

Fig. 1.

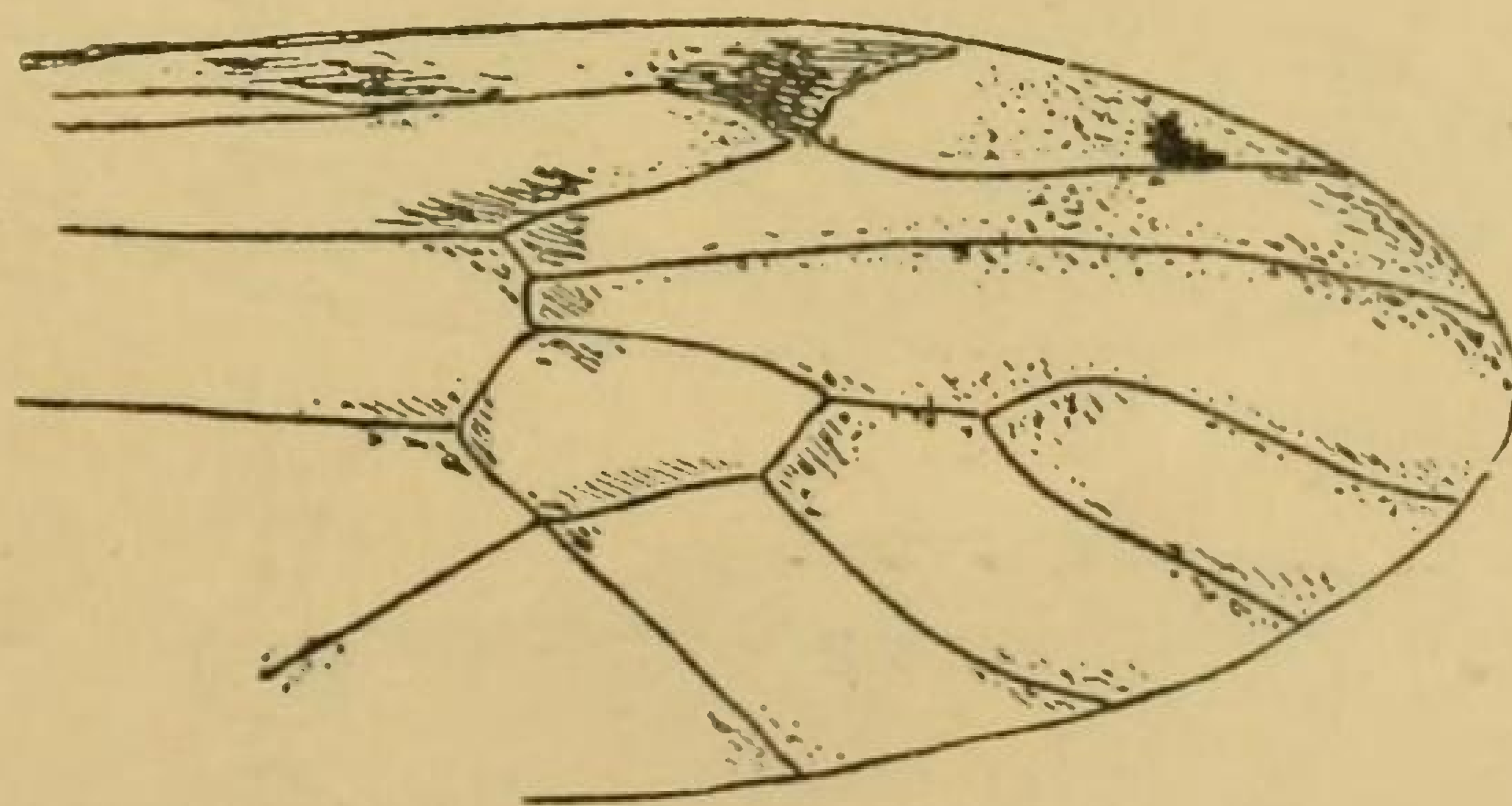
*Tipula callarche*, sp. n.

In. 17381 (A'Court Smith). A distinct and striking species.

*Tipula acourti*, sp. n. (Fig. 2.)

Stigma to apex of wing 4·5 mm., width of wing at stigma 5 mm.; wing strongly suffused with brown along the veins; venation shown in figure.

Fig. 2.

*Tipula acourti*, sp. n.

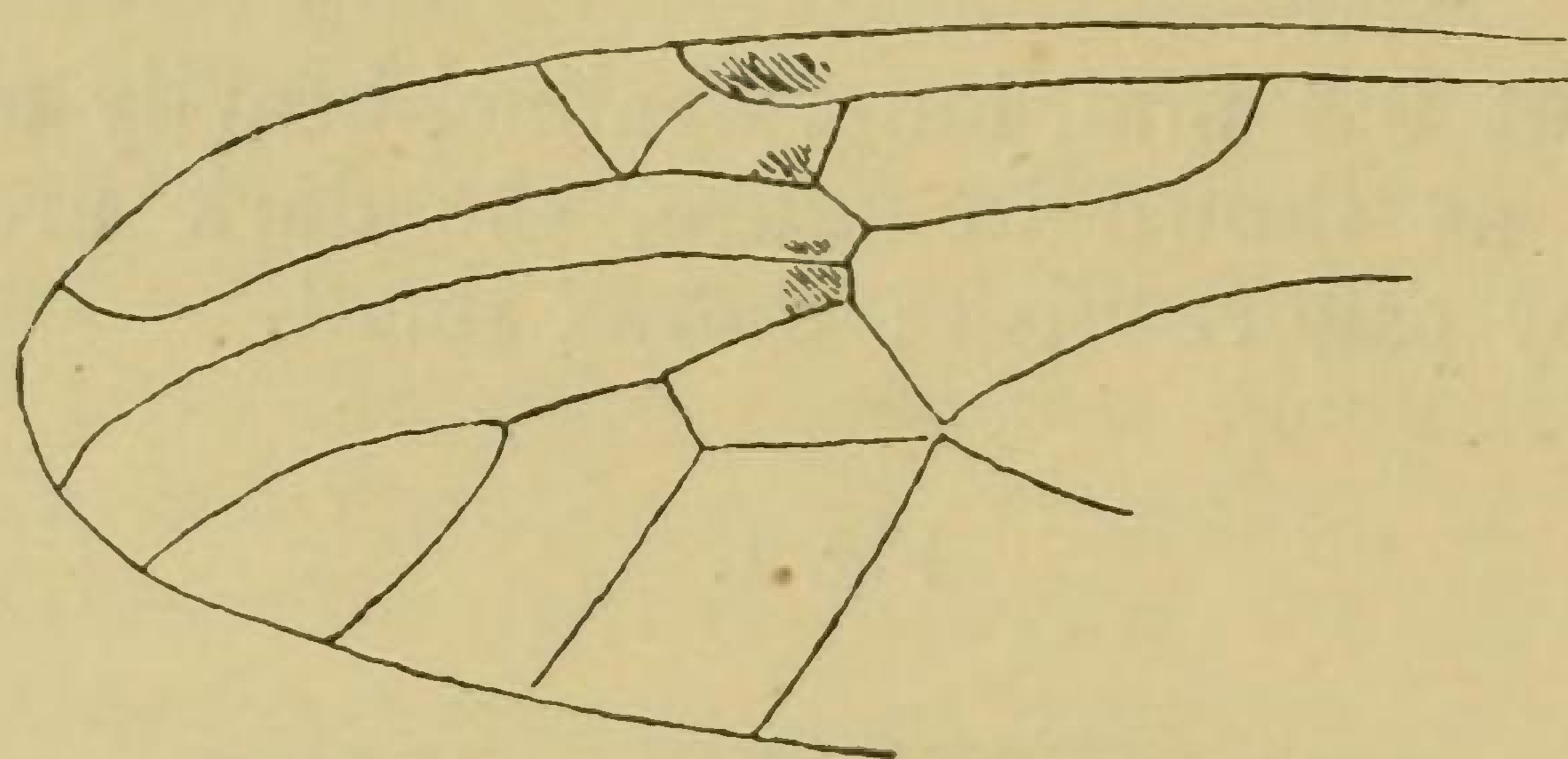


I. 8901 (Brodie collection). Very like *T. splendens*, Brunetti, agreeing in the venation. It also greatly resembles *T. tessellatipennis*, Brunetti.

*Megistocera gurnetensis*, sp. n. (Fig. 3.)

Wing hyaline, with colourless veins; a dusky stigmatic spot, and two others below it. Stigma to end of wing 3·8 mm.; origin of *Rs* to end of wing 5·2 mm.; width of wing 3·1 mm.

Fig. 3.



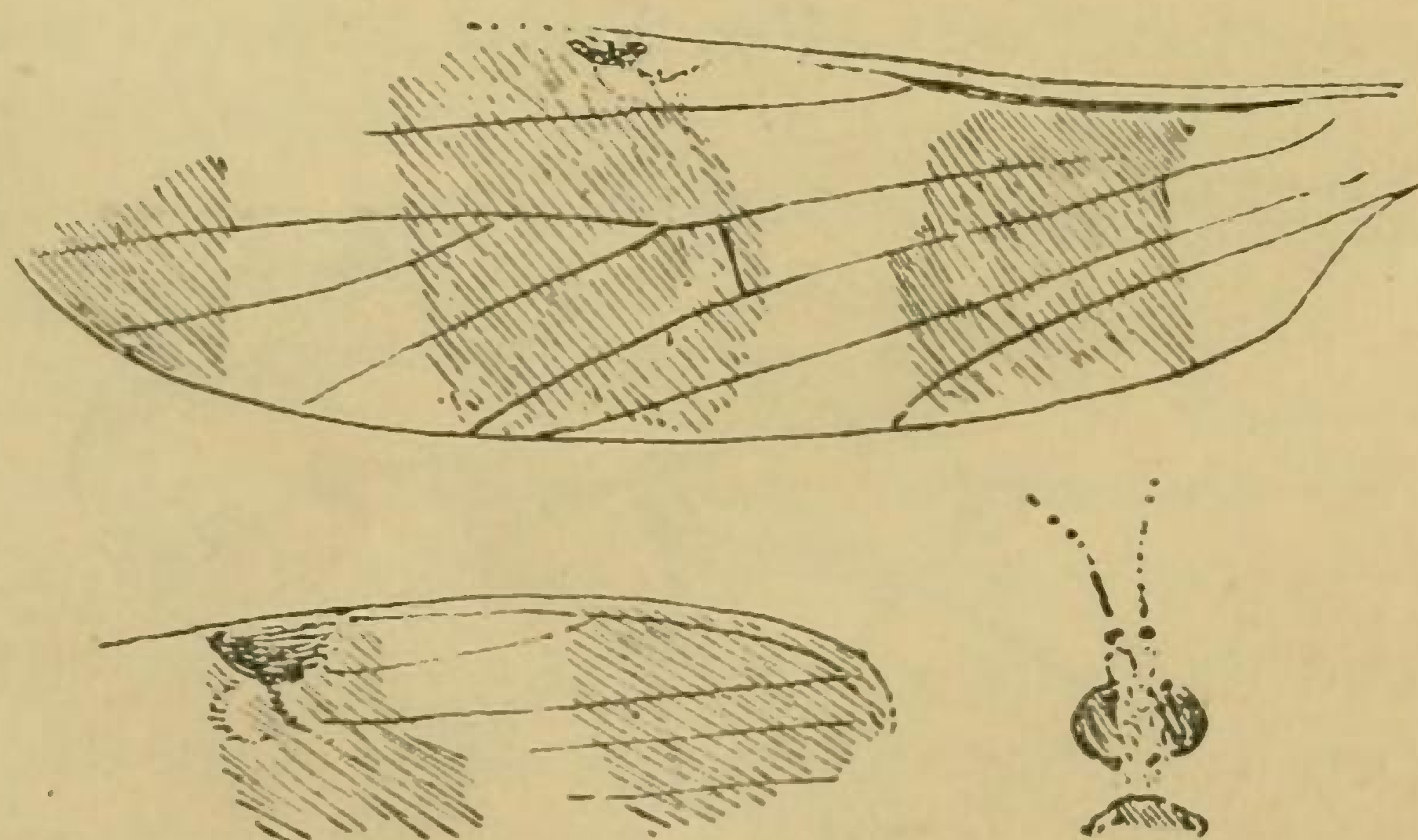
*Megistocera gurnetensis*, sp. n.

In 17090 (A'Court Smith). Compared, at Mr. Edwards's suggestion, with *Dolichopeza* and *Megistocera*. It agrees much better with the latter, and can well be congeneric with *M. fuscana*, Wulp. The second basal cell differs, being in the fossil more as in *Tipula*.

*Gymnastes fasciatipennis*, sp. n. (Fig. 4.)

Wing slightly over 3 mm. long, with three broad dark grey bands (the third apical), alternating with narrower hyaline ones, the middle hyaline one narrowest in middle.

Fig. 4.



I. 10242.

I. 9704.

*Gymnastes fasciatipennis*, sp. n.



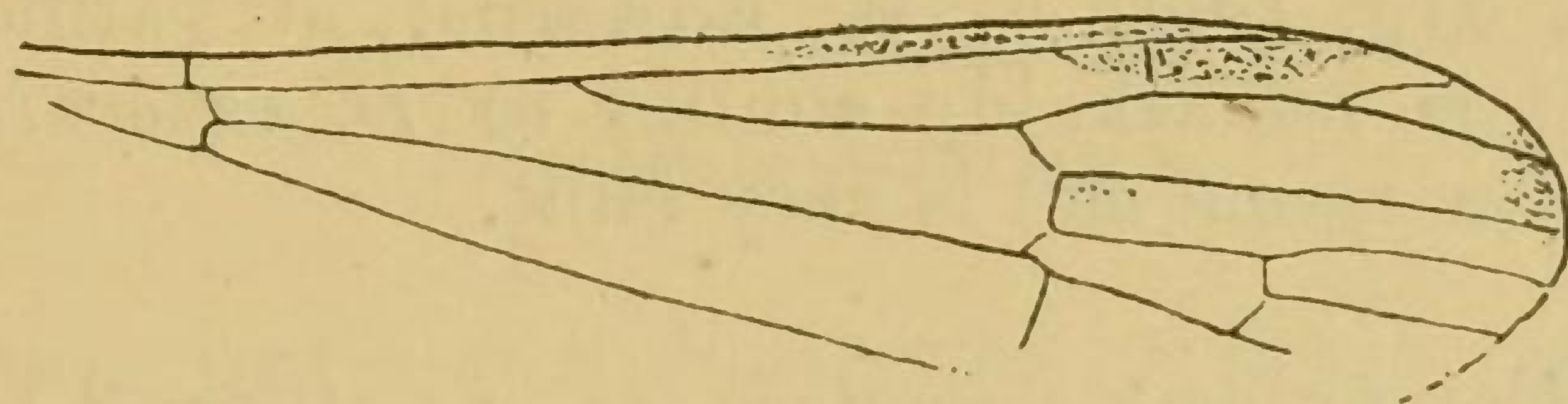
I. 10242 (Brodie collection). Another specimen (I. 9704, with reverse 9729), also from the Brodie collection, is referred here. It is 3.3 mm. long; head and thorax dark brown, abdomen intense black; wing nearly 3 mm. I. 10242 is the type.

The venation cannot all be made out, and I have drawn only what I could clearly see. The species resembles *G. violaceus*, Brunetti, but differs by having the lower cross-vein basad of the base of the discal cell. The apex of the discal cell apparently fails, as in modern *Gymnastes*. The position of the lower cross-vein agrees with various species of *Erioptera*, but the costo-apical region differs.

*Empeda hyalina*, sp. n. (Fig. 5.)

Wing 4 mm. long, hyaline, with large red-brown stigmatic spot, and extreme apex suffusedly darkened.

Fig. 5.



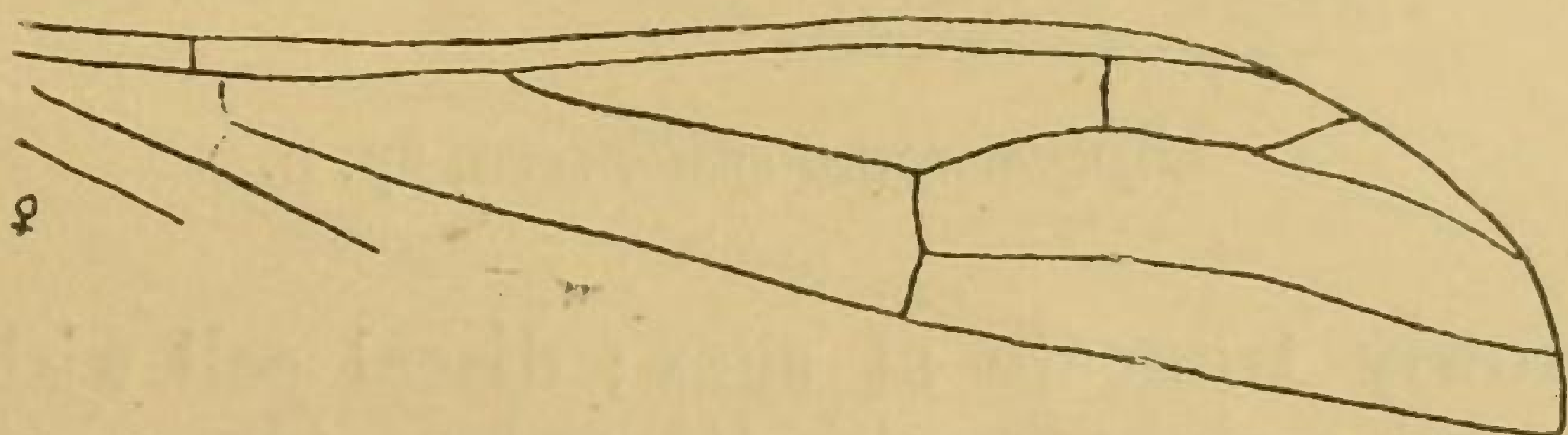
*Empeda hyalina*, sp. n.

Hooley, 1893.4. The costo-apical region of the wing agrees with *E. inconspicua*, Brunetti, not with *E. nubila*, Schum. The discal cell, however, is precisely as in *Phyllolabis obscurus*, Doane.

*Empeda ferruginea*, sp. n. (Fig. 6.)

♀. Length 4.4 mm.; dark fuscous; wings 4.4 mm. long, pale ferruginous.

Fig. 6.



*Empeda ferruginea*, sp. n.

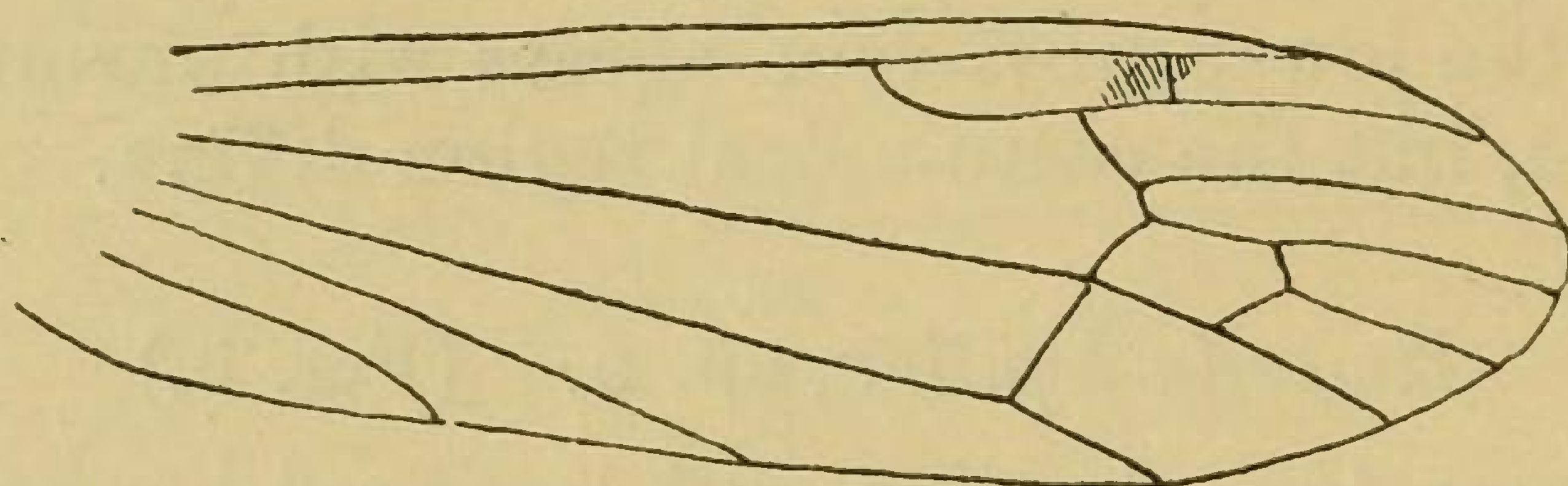
I. 8963 (Brodie collection). Similar to the last, but larger and differently coloured.



*Dicranomyia excavata*, sp. n. (Fig. 7.)

Wing about 6·5 mm. long ; hyaline, with brownish veins, and a cloud at the marginal cross-vein, exactly as in *D. simulans*, Walker. It differs from *simulans* by having the præfurca strongly curved at base, and in this respect agrees with *D. whartoni*, Needham.

Fig. 7.

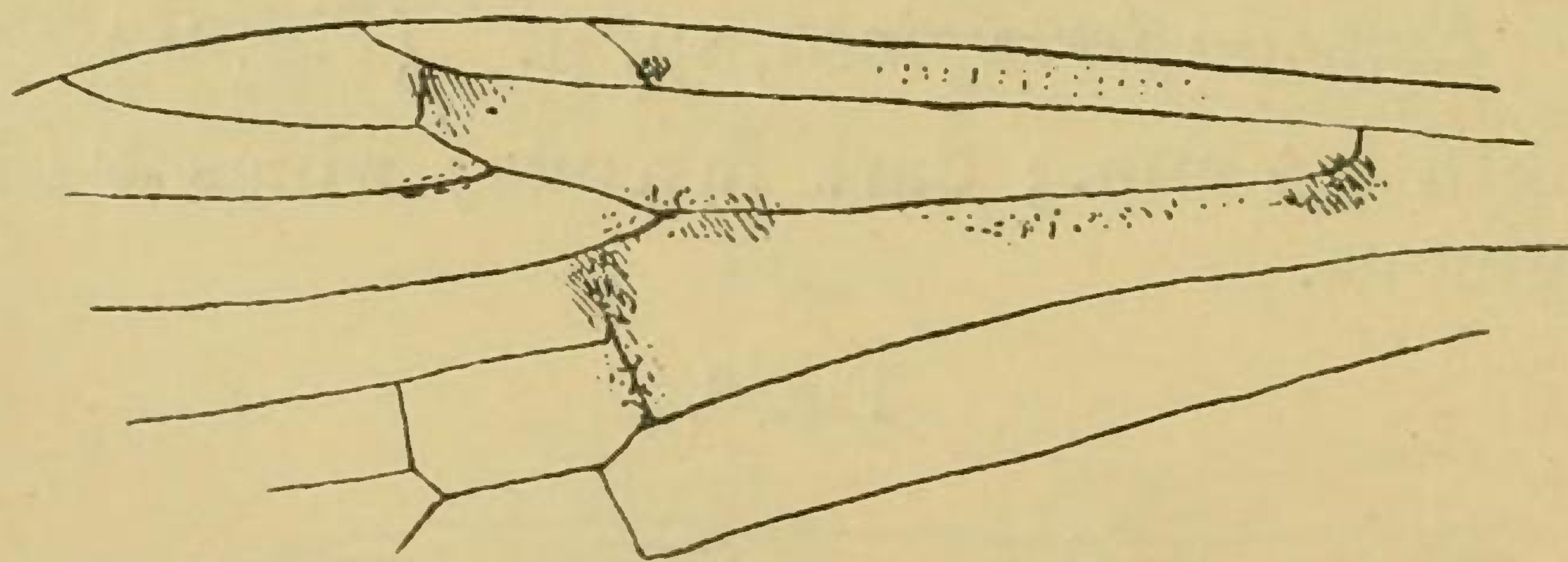
*Dicranomyia excavata*, sp. n.

I. 8884 (Brodie collection). I collected the living *D. chorea*, Mg. (det. F. W. Edwards), at Yarmouth, I. of Wight. It is remarkably similar to *D. excavata*, but the spot in the marginal cell is very faint.

*Epiphragma spilopectera*, sp. n. (Fig. 8.)

Wing about 11·5 mm. long (not quite 11 mm. preserved, the apex missing), quite broad, pale reddish grey, with fuscous spots and clouds as shown in figure ; first marginal cell about 4·5 mm. long, slender, obtuse at base, squarely

Fig. 8.

*Epiphragma spilopectera*, sp. n.

but narrowly truncate at apex ; discal cell with its upper apical corner a right angle, its outer side vertical, but its inner side (on first basal) distinctly oblique, its side on second basal about three-fifths that on first basal.

I. 9015 (Brodie collection). I am indebted to Mr. Edwards for the suggestion that this may be referable to *Epiphragma*.

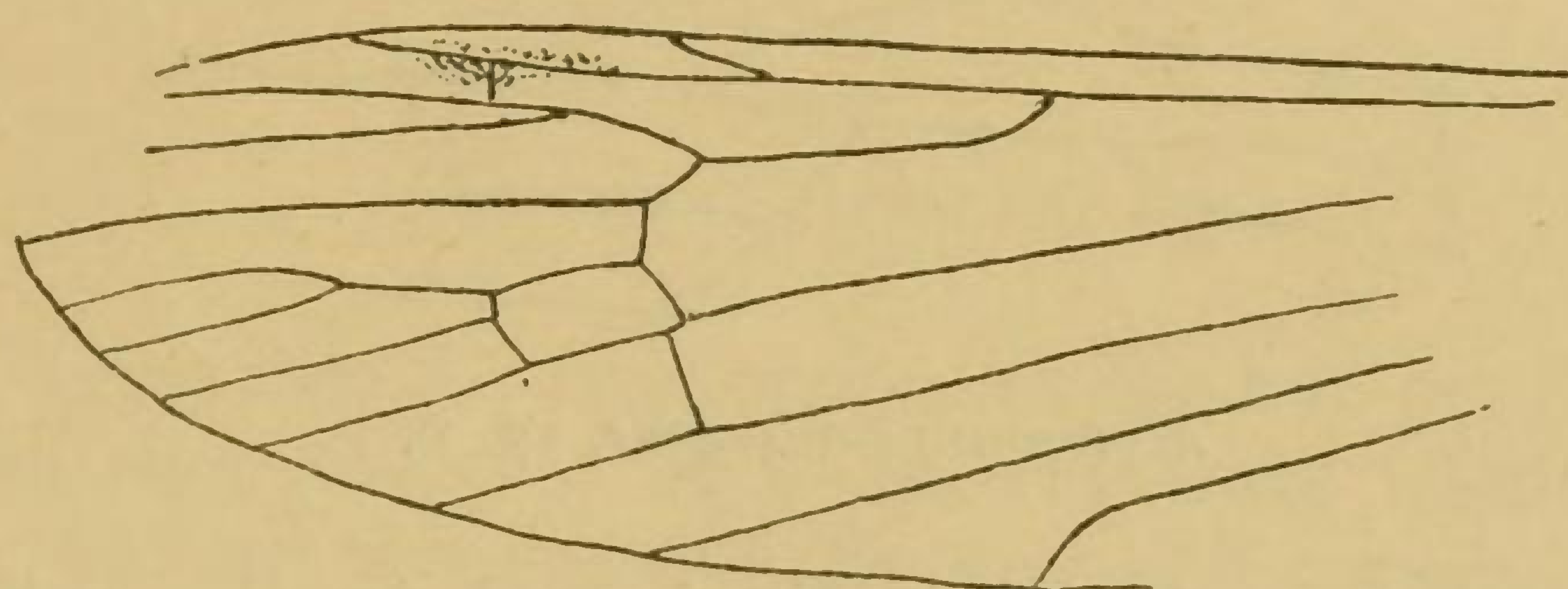


It is not much like *E. fascipennis*, Say, but I find nothing else which it closely resembles. In the form of the discal cell and other features it is not unlike *Limnophila quadrata*, O.-S.

*Limnophila deleta*, sp. n. (Fig. 9.)

Length about 6 mm. ; wing 6 mm. long, reddish hyaline, with pale veins and a dusky stigmatic spot. In the discal cell and the parts above it, there is a close resemblance to the Gurnet Bay fossil *Rhipidia brodiei*, Ckll., but in

Fig. 9.



*Limnophila deleta*, sp. n.

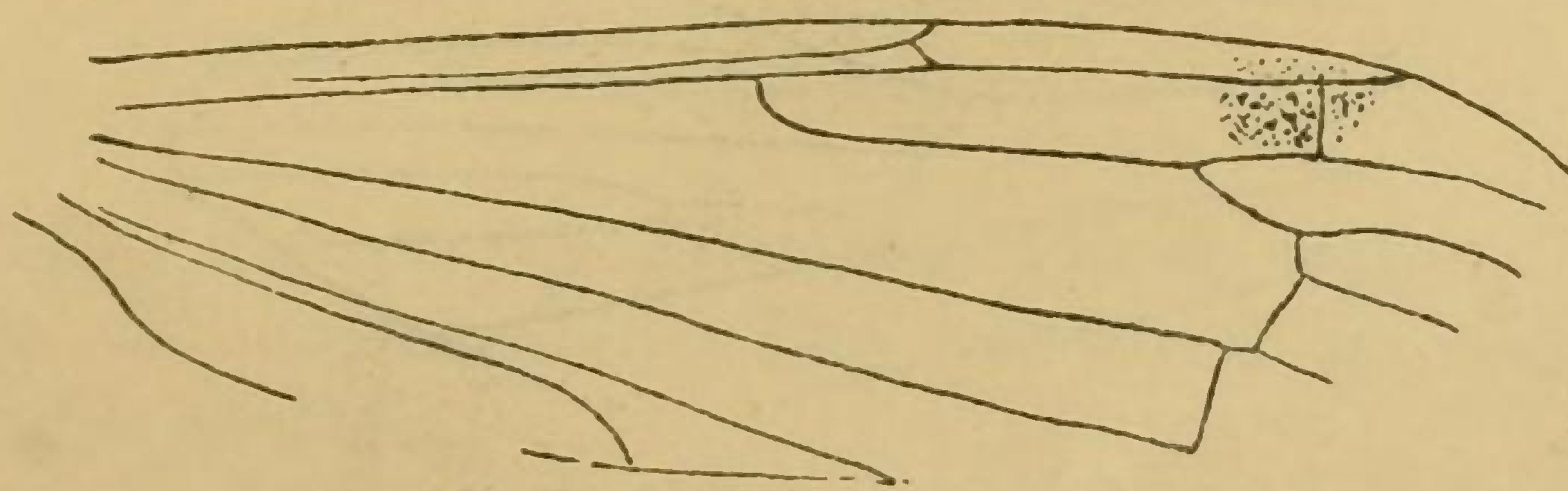
that the first basal on submarginal is much longer than its face on first posterior. *L. deleta* differs very little from *L. montana*, O.-S., but the base of præfurca is more bent, and the first submarginal cell is more acute at base, and with a longer stem.

I. 9053 (Brodie collection).

*Limnobia spilota*, sp. n. (Fig. 10.)

Wing about 7 mm. long, clear hyaline, with fuscous

Fig. 10.



*Limnobia spilota*, sp. n.

veins and a large reddish stigmatic spot. It is much like *L. tinctinervis*, Brunetti, which agrees in the spot in the



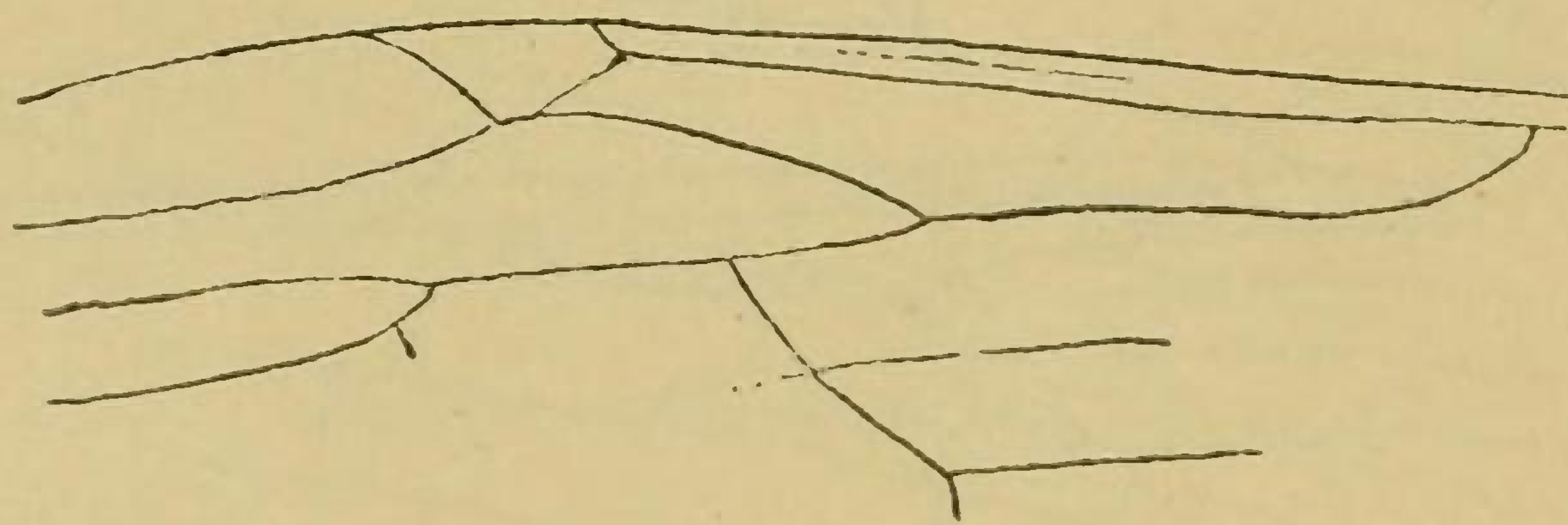
marginal cell. The præfurca is as in *L. cinctipes*, Say. The thorax and abdomen are dark fuscous.

In. 17114 (A'Court Smith).

*Mongoma pallescens*, sp. n. (Fig. 11.)

Wing 4 mm. long, or slightly more; hyaline, with pale yellowish veins. Only part of the venation can be made out, but the upper part of the wing closely resembles *M. pennipes*, O.-S., and *M. fragillima*, Westw. The second

Fig. 11.



*Mongoma pallescens*, sp. n.

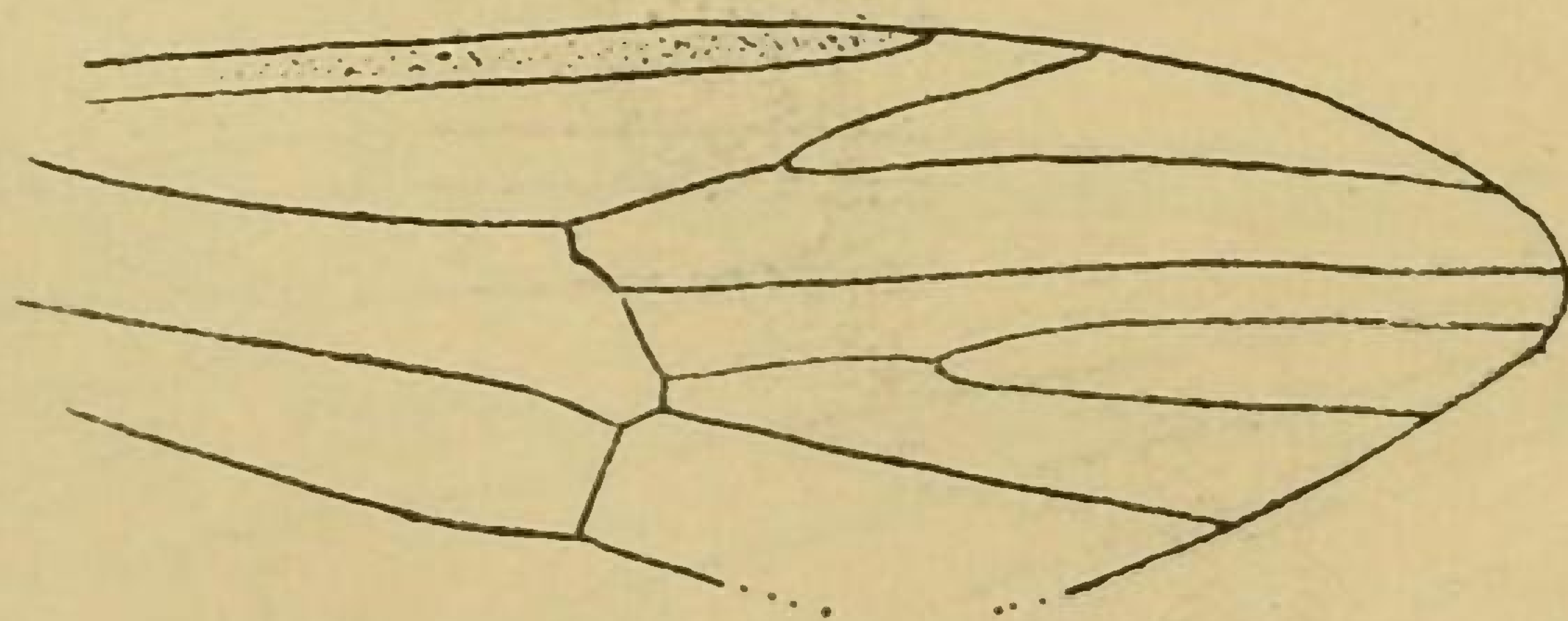
marginal cell is rather broadly joined to the submarginal below it, a feature which readily distinguishes the species from *M. cruciferella*, Ckll. (A new specimen of *M. cruciferella* (In. 17259), with wing about 6 mm. long, has been found in the collection.)

I. 8898 (Brodie collection).

*Gonomyia ferrea*, sp. n. (Fig. 12.)

Wing pale ferruginous, with bright ferruginous nervures; subcostal cell red. The part preserved is about 3 mm. long; from end of second basal cell to apex of wing is nearly 2 mm.

Fig. 12.



*Gonomyia ferrea*, sp. n.

H. 835. This is very near *G. cognatella*, O.-S., but has a longer first submarginal cell. In this character it also differs from *G. aperta*, Brunetti.

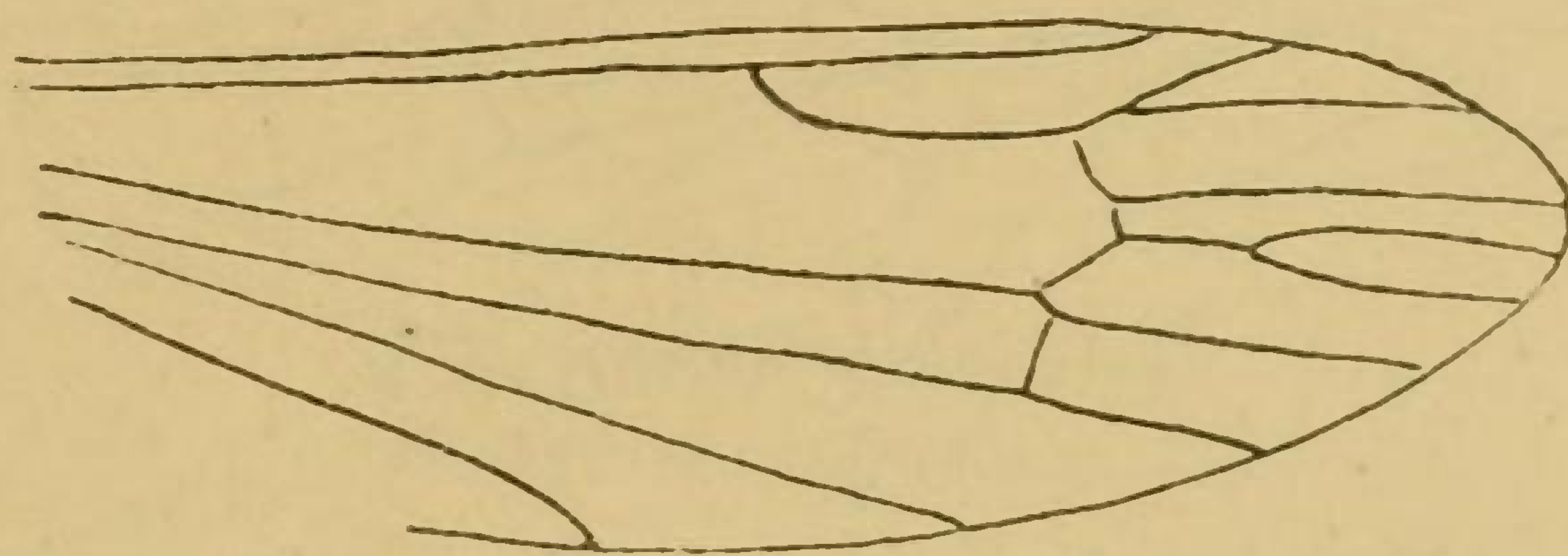


*Gonomyia lutescens*, sp. n. (Fig. 13.)

Wing 5 mm. long, very pale luteous, with pale veins, more or less shaded with grey.

I. 9217 (Brodie collection). I. 9728 is the same species, and shows narrow thorax and black abdomen. In. 17099 seems to be the same, but the præfurca is distinctly

Fig. 13.

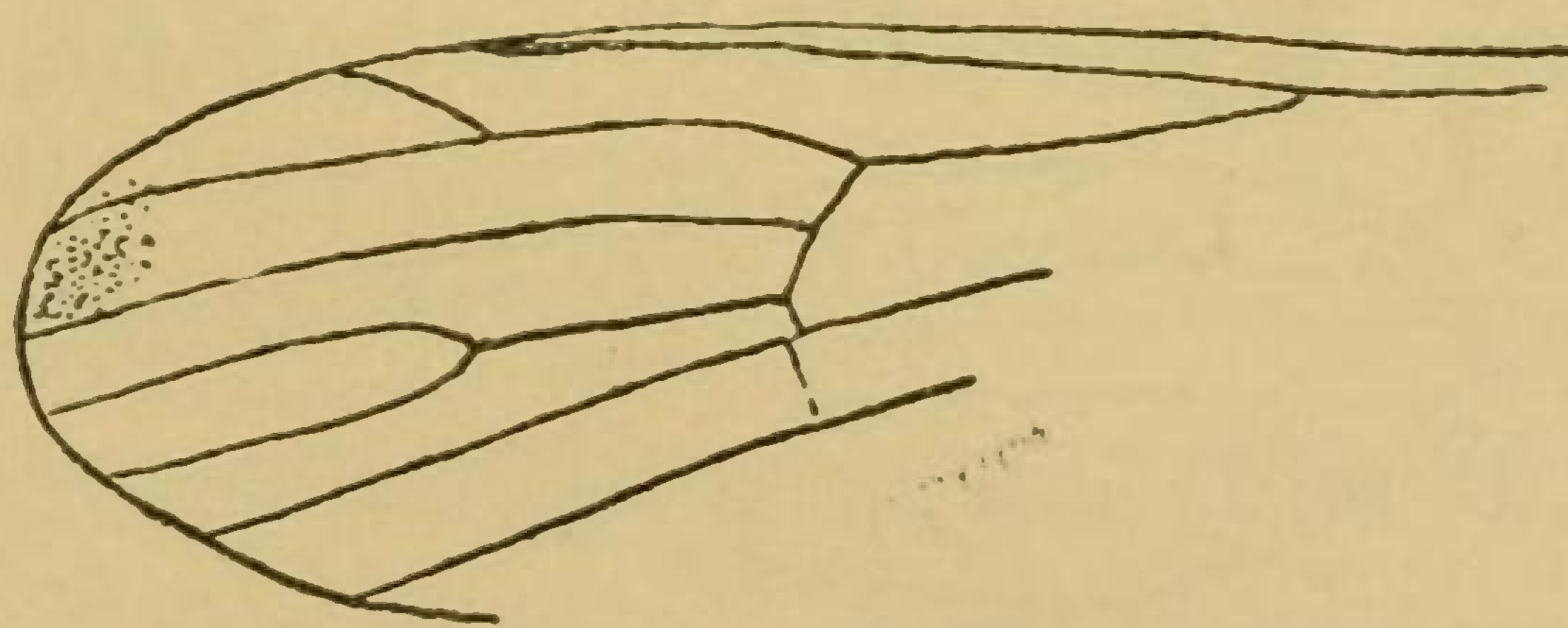
*Gonomyia lutescens*, sp. n.

longer. Very like *G. cognatella*, O.-S., but præfurca as in *G. sulphurella*, O.-S. This is certainly distinct from *G. ferrea*, having the stem of the first submarginal cell only about half as long, and the wing not reddened.

*Gonomyia grisea*, sp. n. (Fig. 14.)

Wing pale grey, with pale veins, its length 4 mm.; a slight dusky cloud at end of second submarginal cell; stem of first submarginal cell very long.

Fig. 14.

*Gonomyia grisea*, sp. n.

H. 1534. Except for the costo-apical region, this also resembles *G. cognatella*. The præfurca is much more curved in *G. aperta*.

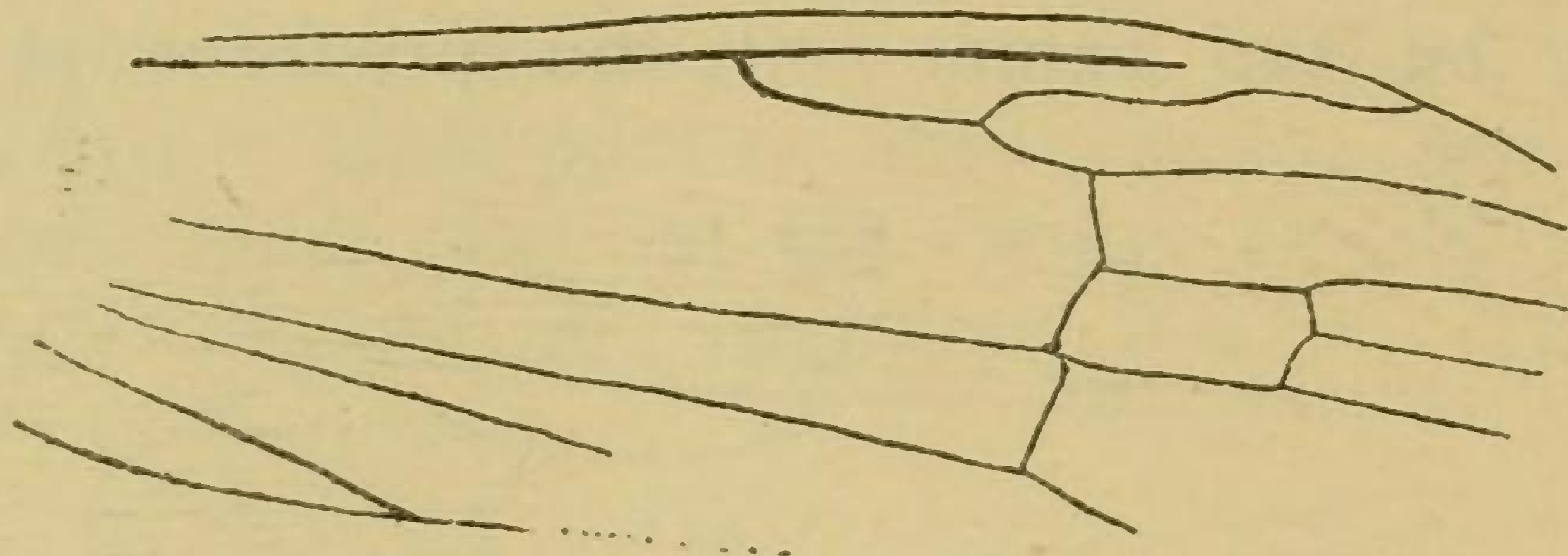
*Limnophila aliena*, sp. n. (Fig. 15.)

Wing about 5 mm. long, pale luteous; abdomen dark brown. The venation is peculiar, and the generic reference



is provisional. The undulation of  $R_2$  is nearly as in *L. toxoneura*, O.-S., but that has a marginal cross-vein, absent in the fossil. *L. munda*, O.-S., also seems related. The first

Fig. 15.

*Limnophila aliena*, sp. n.

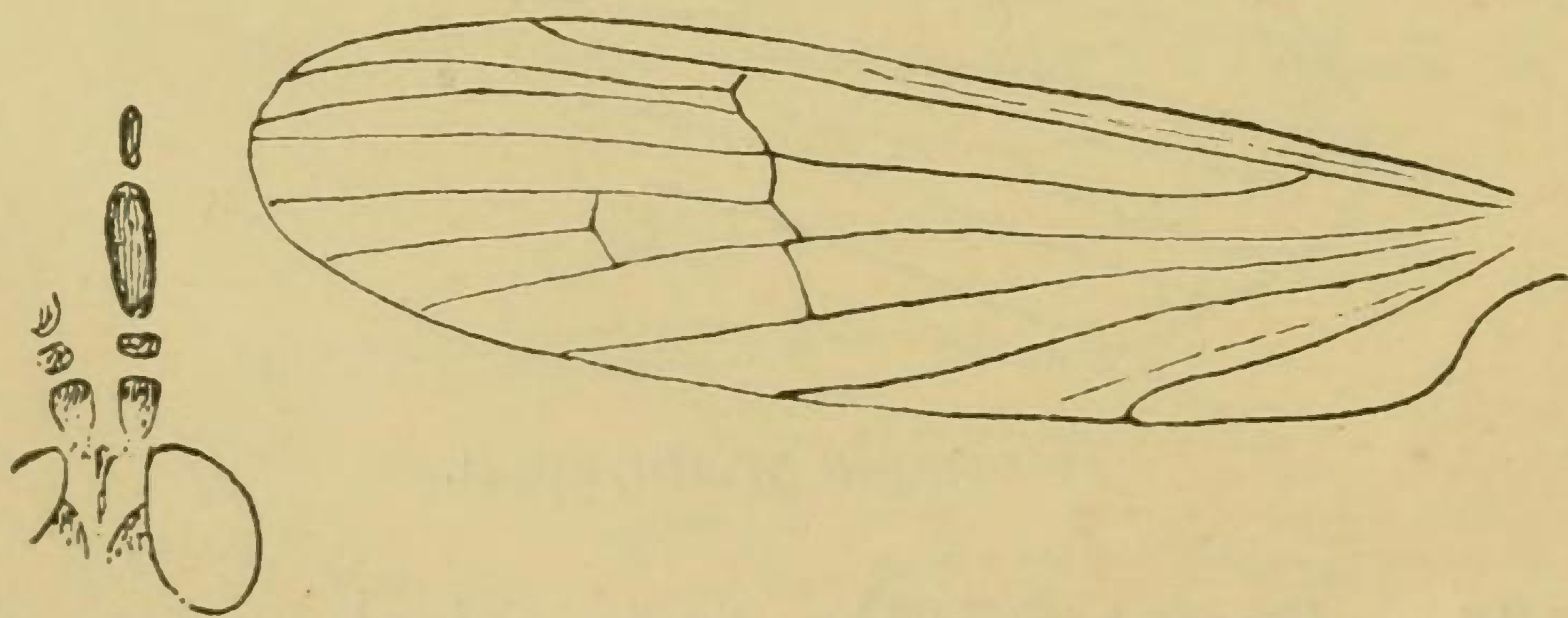
vein from the discal cell is simple throughout, not forked as in *L. deleta*. It also differs from *L. deleta* in having the second anal straight to the end, not curved.

I. 9018 (Brodie collection).

*Limnophila incognita*, sp. n. (Fig. 16.)

Length nearly 6 mm., greyish fuscous ; wing 6 mm. long, reddish. Remarkable for the long præfurca, which goes a short distance basad of the level of end of second anal. The three veins from the discal cell are all simple, and the discal cell itself is long and narrow, broadening apically, with the face on the second posterior cell shorter than that on the third.

Fig. 16.

*Limnophila incognita*, sp. n.

I. 9186 (Brodie collection). It resembles *L. quadrata*, O.-S., in the simple  $M_1$ , but in *quadrata* the cross-vein below the discal cell is nearer the middle of that cell, and  $R_s$  forks basad of the base of first posterior cell.

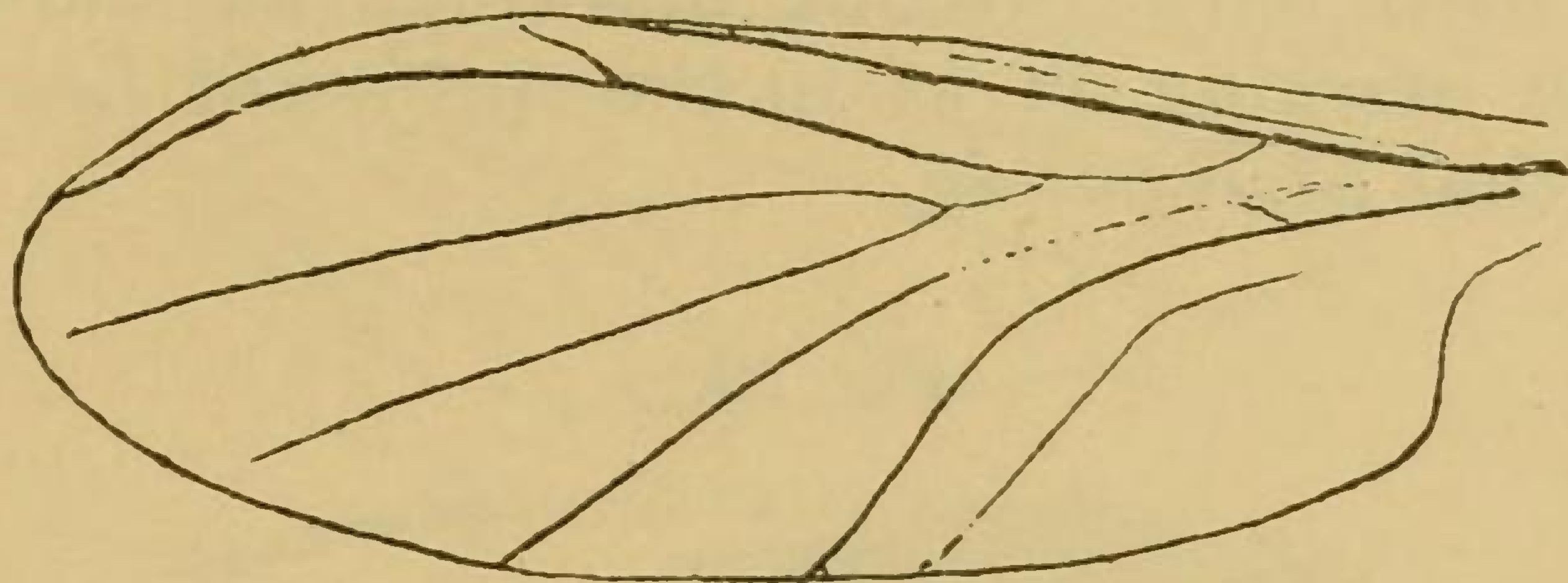


**Mycetophilidæ.**

*Platyura obliqua*, sp. n. (Fig. 17.)

Wing 4 mm. long and about 1·3 wide, without spots; head and thorax very small. By the long oblique 3 *a* ( $R_{2+3}$ ) this

Fig. 17.



*Platyura obliqua*, sp. n.

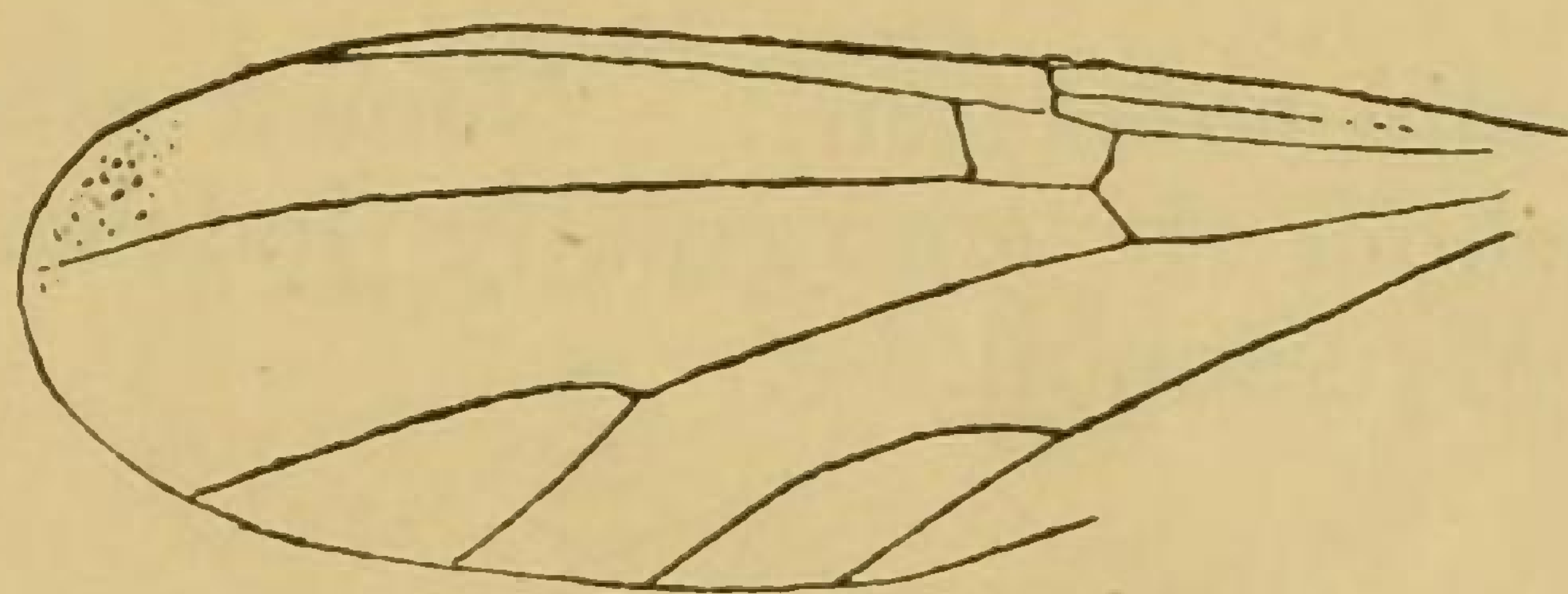
resembles *Palæoplatyura*; except for this, the wing greatly resembles that of *Platyura ignobilis*, Williston.

I. 9657 (Brodie collection).

*Mycomya oblita*, sp. n. (Fig. 18.)

Wing about 3 mm. long, hyaline, slightly dusky at apex;

Fig. 18.



*Mycomya oblita*, sp. n.

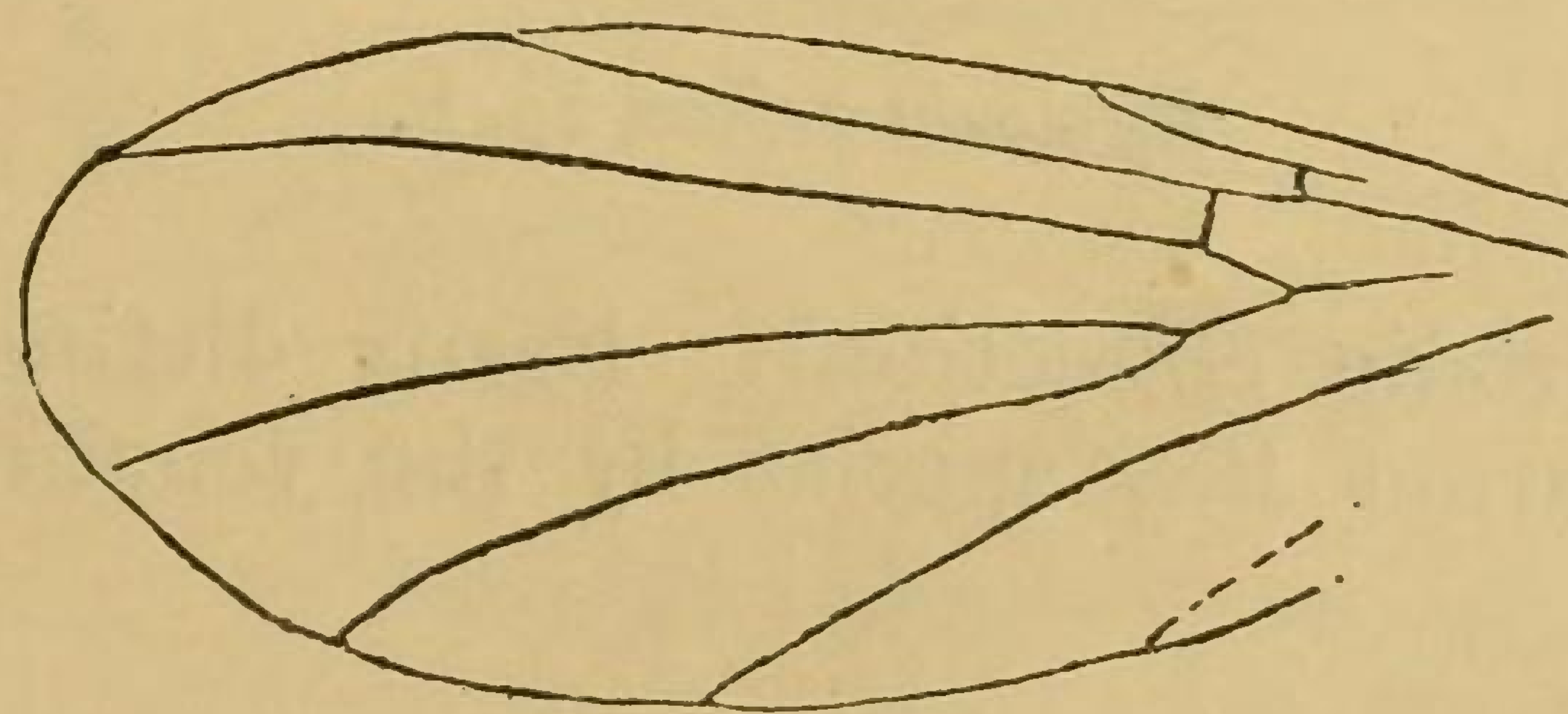
abdomen reddish fuscous. In the long stem of media this agrees with *M. littoralis*, Say.

I. 8973 (Brodie collection).

*Acnemia simplex*, sp. n. (Fig. 19.)

Wing about 2 mm. long, very broad and short, pale reddish; venation typical for genus, with simple cubitus.

Fig. 19.



*Acnemia simplex*, sp. n.

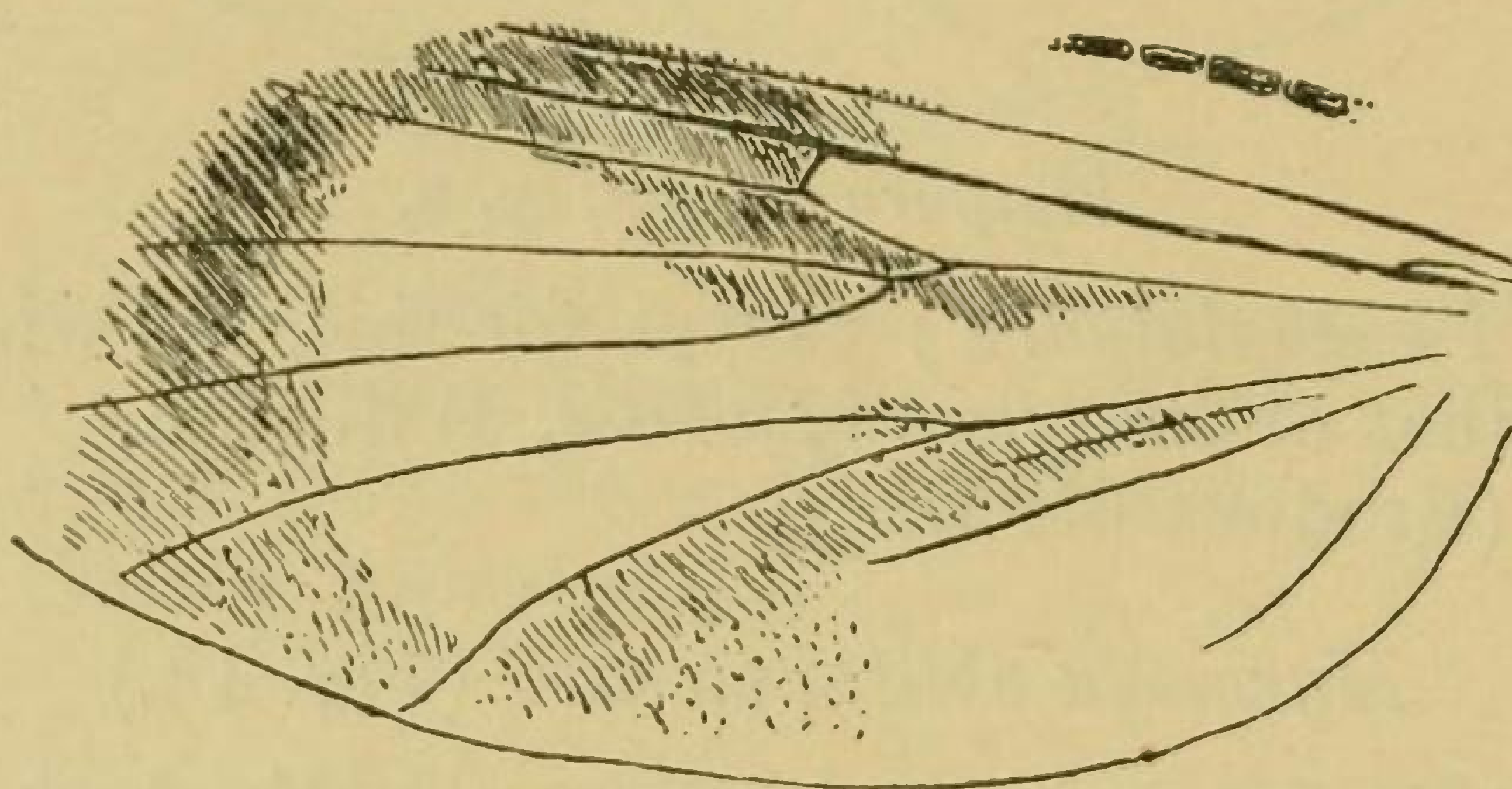


I. 9597 (Brodie collection). A species of this genus (*A. bolsiusi*, Meunier) occurs in Baltic amber.

*Rymosia edwardsi*, sp. n. (Fig. 20.)

Thorax dark brown; wing 5.1 mm. long, beautifully iridescent, with dark fuscous markings as shown in the figure. The marking is as in the species of *Leia*, but the venation is that of *Rymosia*.

Fig. 20.



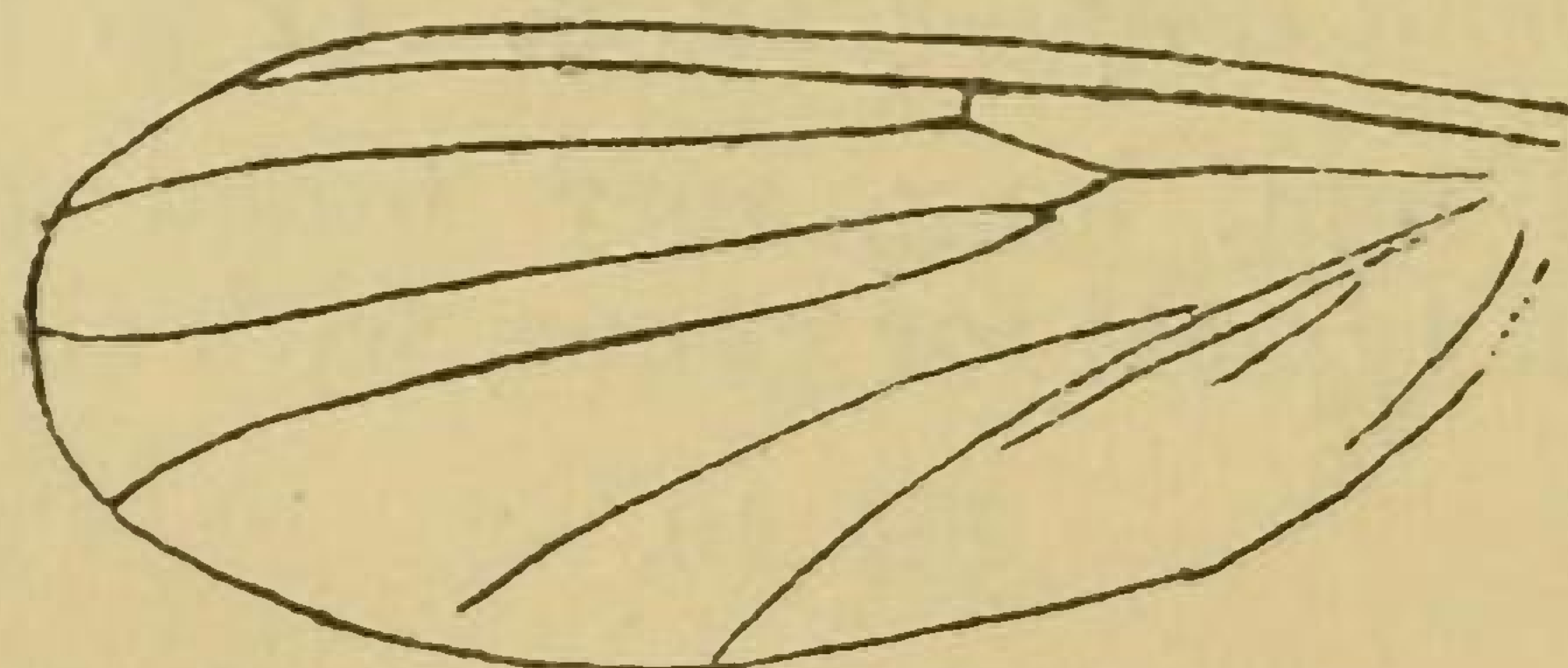
*Rymosia edwardsi*, sp. n.

I. 9336 (Brodie collection). Named after Mr. F. W. Edwards, to whom I am greatly indebted for advice concerning the Mycetophilidæ.

*Rymosia grisea*, sp. n. (Fig. 21.)

Wing 2.4 mm. long, pale grey (not at all reddish), with dusky veins; no spots.

Fig. 21.



*Rymosia grisea*, sp. n.

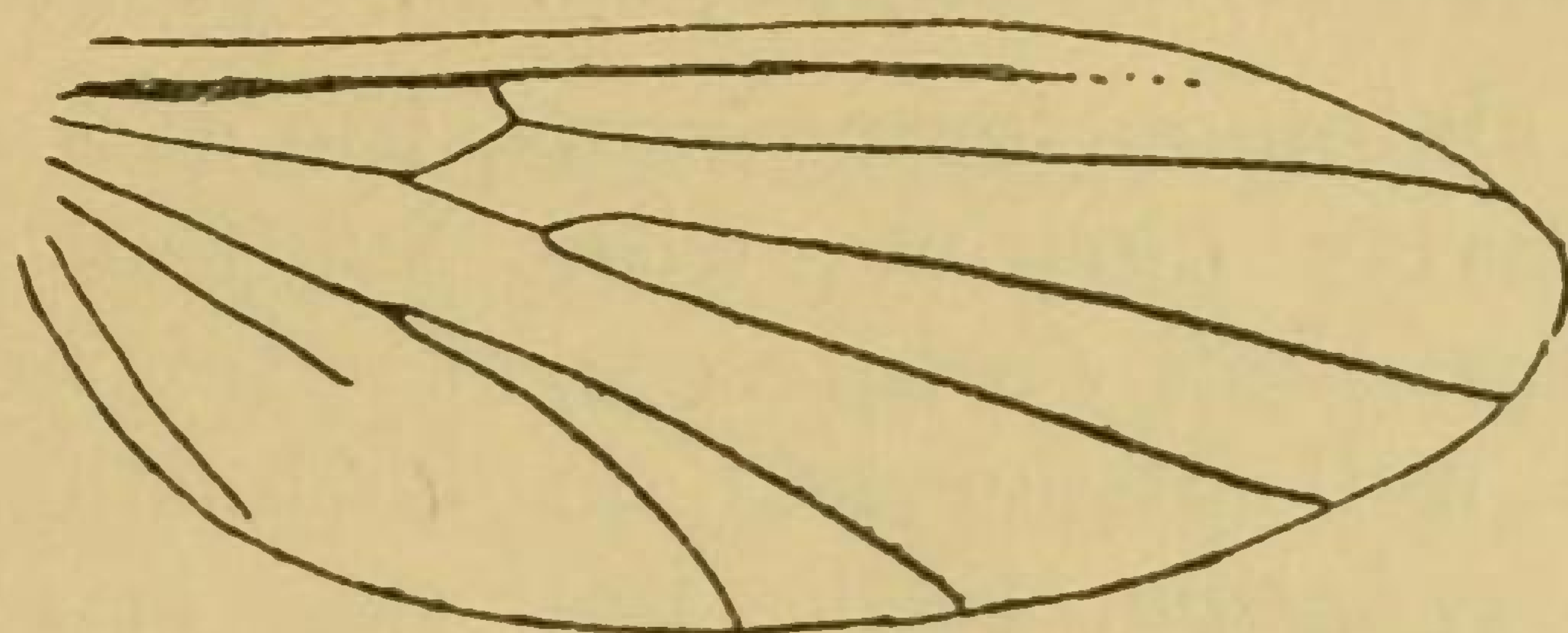
I. 8865 (Brodie collection). Easily distinguished from the other Gurnet Bay species by the venation, as shown in the figure.



*Rymosia rufescens*, sp. n. (Fig. 22.)

Wing 2.5 mm. long, very pale reddish, with mainly dark

Fig. 22.



*Rymosia rufescens*, sp. n.

veins. Very like *R. ferruginea*, but easily separated by the shorter fork of the cubitus.

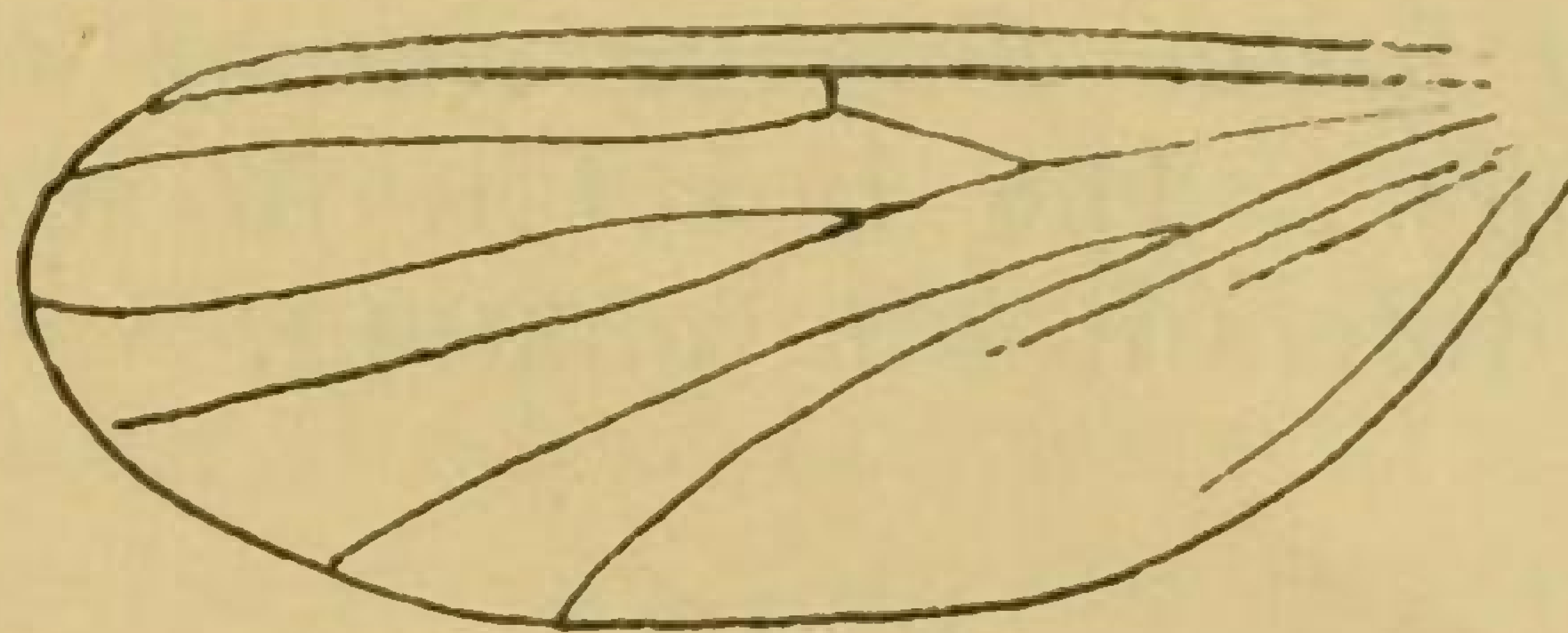
I. 8956 (Brodie collection).

*Rymosia ferruginea*, sp. n. (Fig. 23.)

Thorax and abdomen piceous, the abdomen very slender; wing about 2 mm. long, deep ferruginous, with fuscous veins.

I. 9802 (Brodie collection).

Fig. 23.

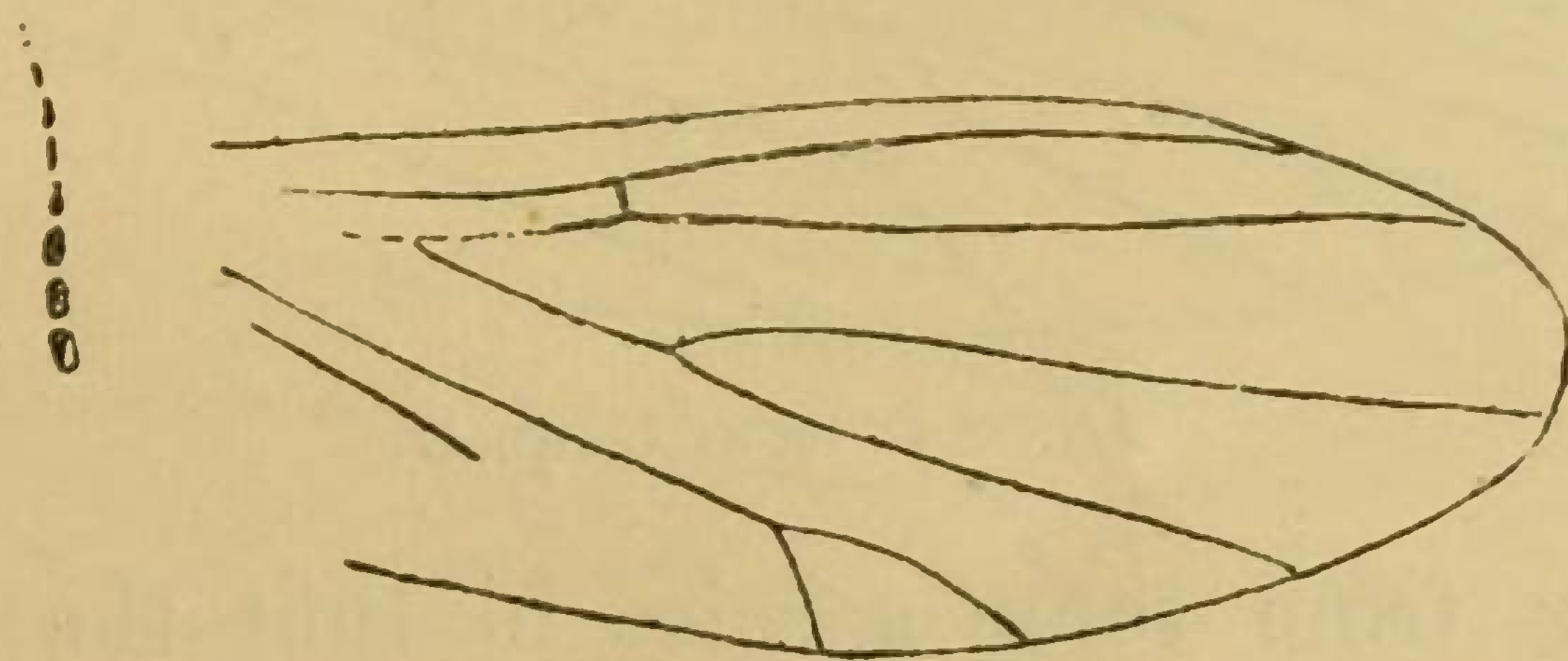


*Rymosia ferruginea*, sp. n.

*Phronia* (?) *virgata*, sp. n. (Fig. 24.)

Wing nearly 3 mm. long, pale greyish; abdomen brown, with the sutures beyond the middle pallid.

Fig. 24.



*Phronia* (?) *virgata*, sp. n.

I. 9789 (Brodie collection). Looks like the small species



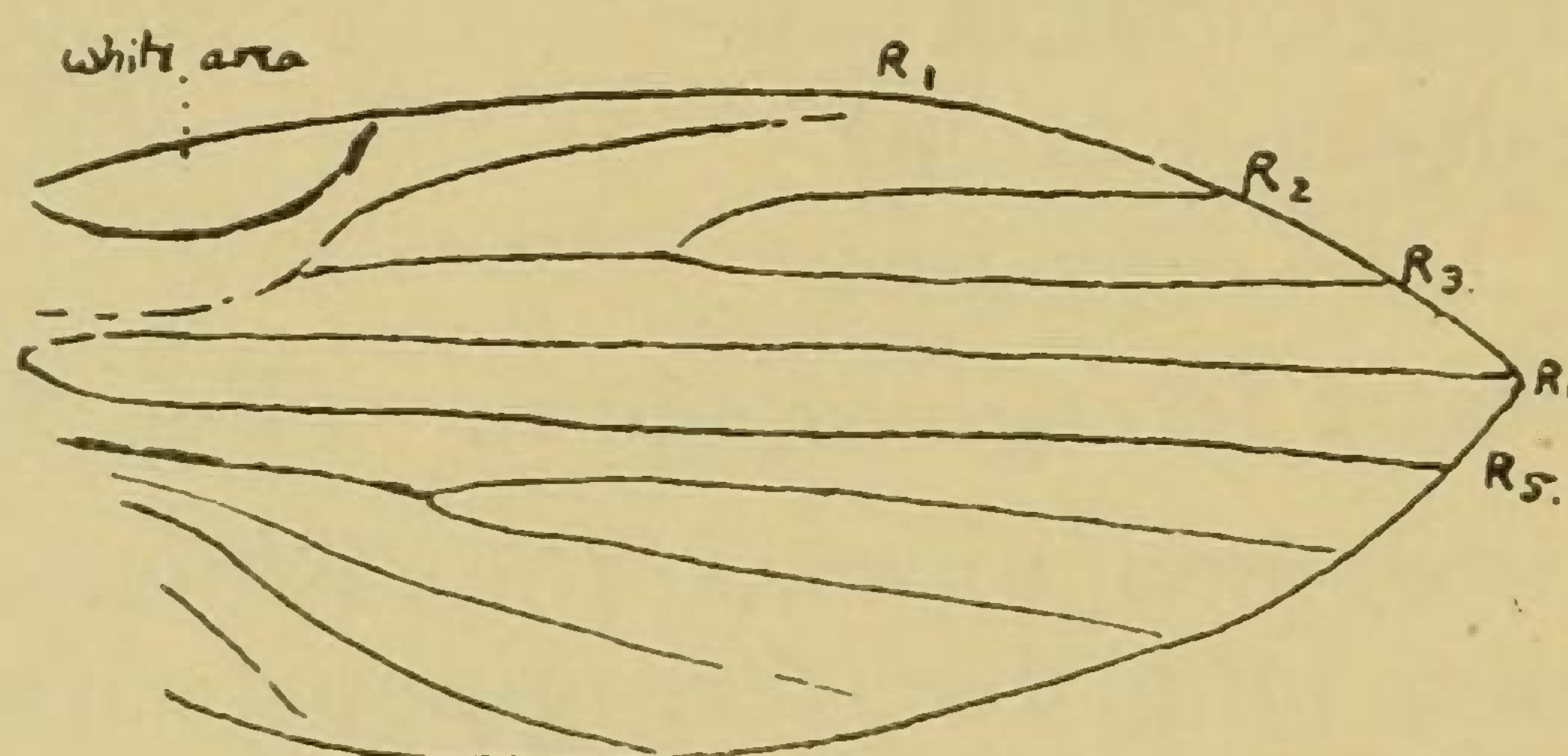
of *Rymosia*, but easily separated by the very long stem and short broad fork of cubitus.

### Psychodidæ.

*Psychoda* (?) *leucospila*, sp. n. (Fig. 25.)

Thorax and abdomen ferruginous, the abdomen parallel-sided, comparatively narrow; wing hyaline, about 2 mm. long, with a large chalky-white costal patch near base, quite the same (and well preserved) on both sides. Venation nearly as in *P. primæva*, Ckll., but that is a larger species and does not show the white patches.

Fig. 25.



*Psychoda* (?) *leucospila*, sp. n.

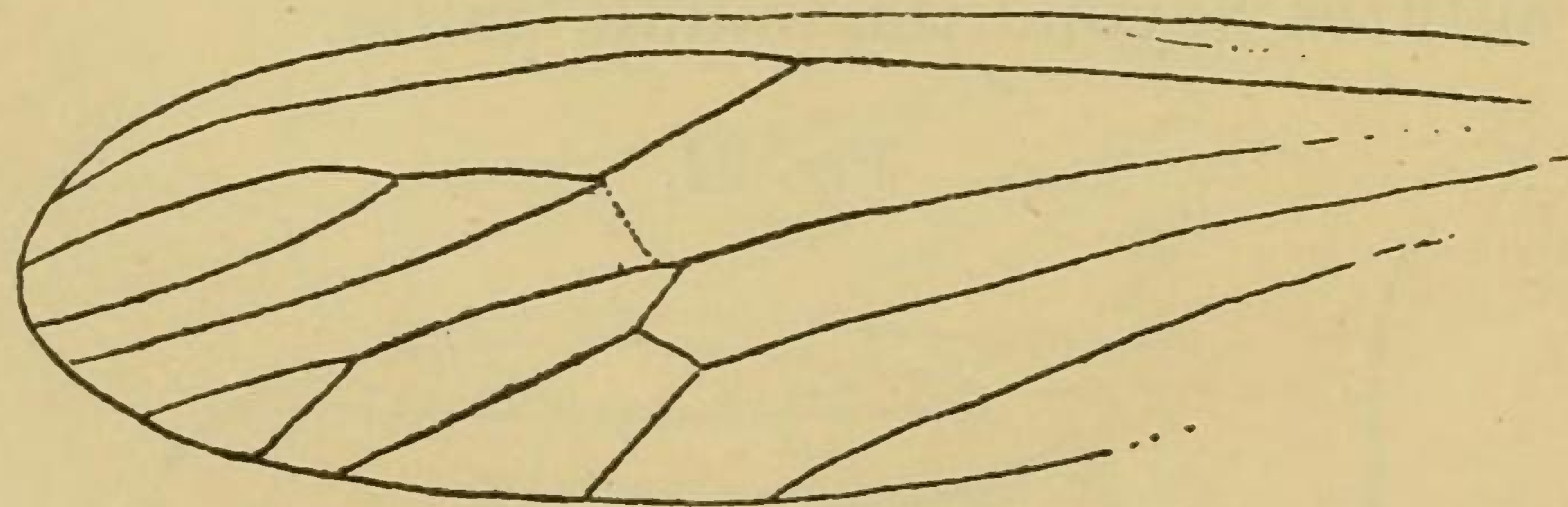
I. 9463 (Brodie collection). No species could be found among the living forms showing similar white areas at the base of the wings. The insect is in some respects like *Trichomyia*, but differs in the venation.

### Dixidæ.

*Dixa priscula*, sp. n. (Fig. 26.)

Wings hyaline, 4 mm. long. Venation typical for *Dixa*,

Fig. 26.



*Dixa priscula*, sp. n.

but differing from some species in that the *M-Cu* cross-vein arises before the lower end of the *R-M* cross-vein. The media is straight, instead of being bent at the cross-veins.

H. 708.

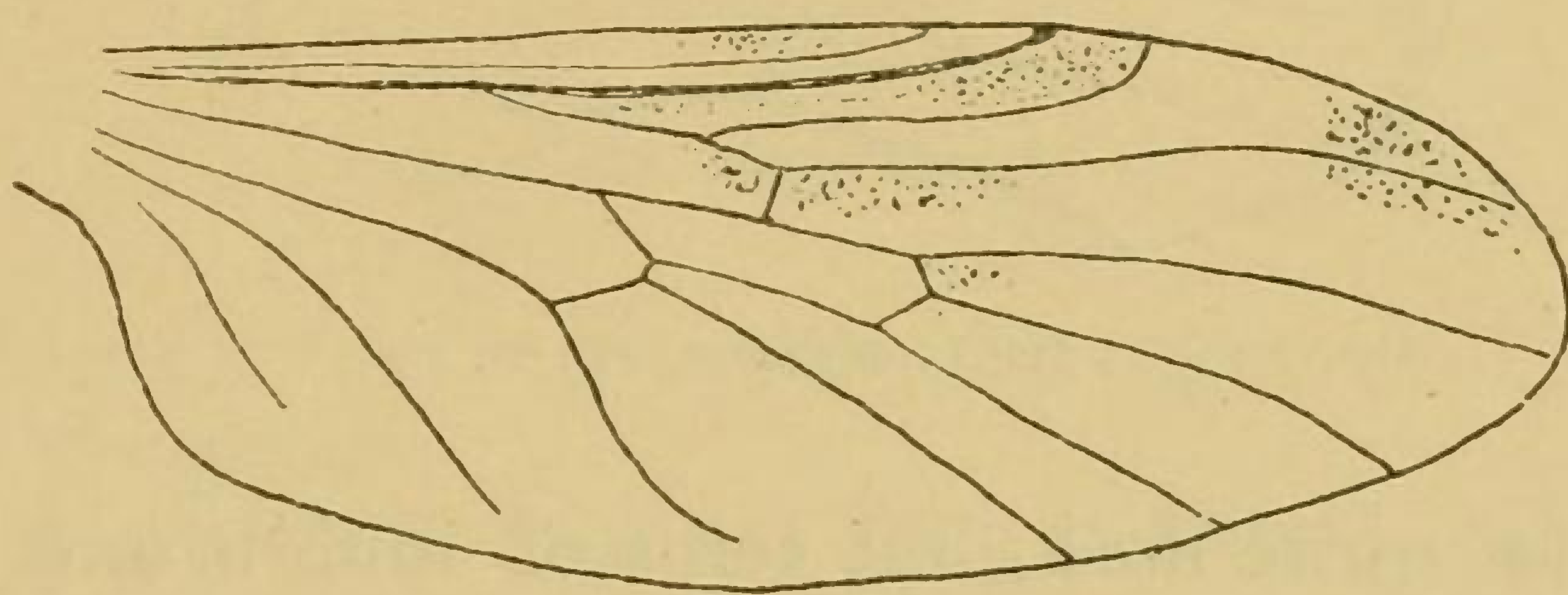


**Rhyphidæ.***Rhyphus hooleyi*, sp. n. (Fig. 27.)

Wing 5·2 mm. long; hyaline, mottled with pale brown, veins pale. A distinct costo-apical cloud, one in the region of the anterior cross-vein, and one about the end of the discal cell.

H. 456, collected in 1891. Closely allied to the living *R. punctatus*, Fab., with which it agrees in the position of the discal and lower cross-veins; in *R. pulchricornis*, Brunetti, these are nearly equally distant from the base of the discal cell. It is also closely similar to *R. distinctus*, Brunetti.

Fig. 27.

*Rhyphus hooleyi*, sp. n.

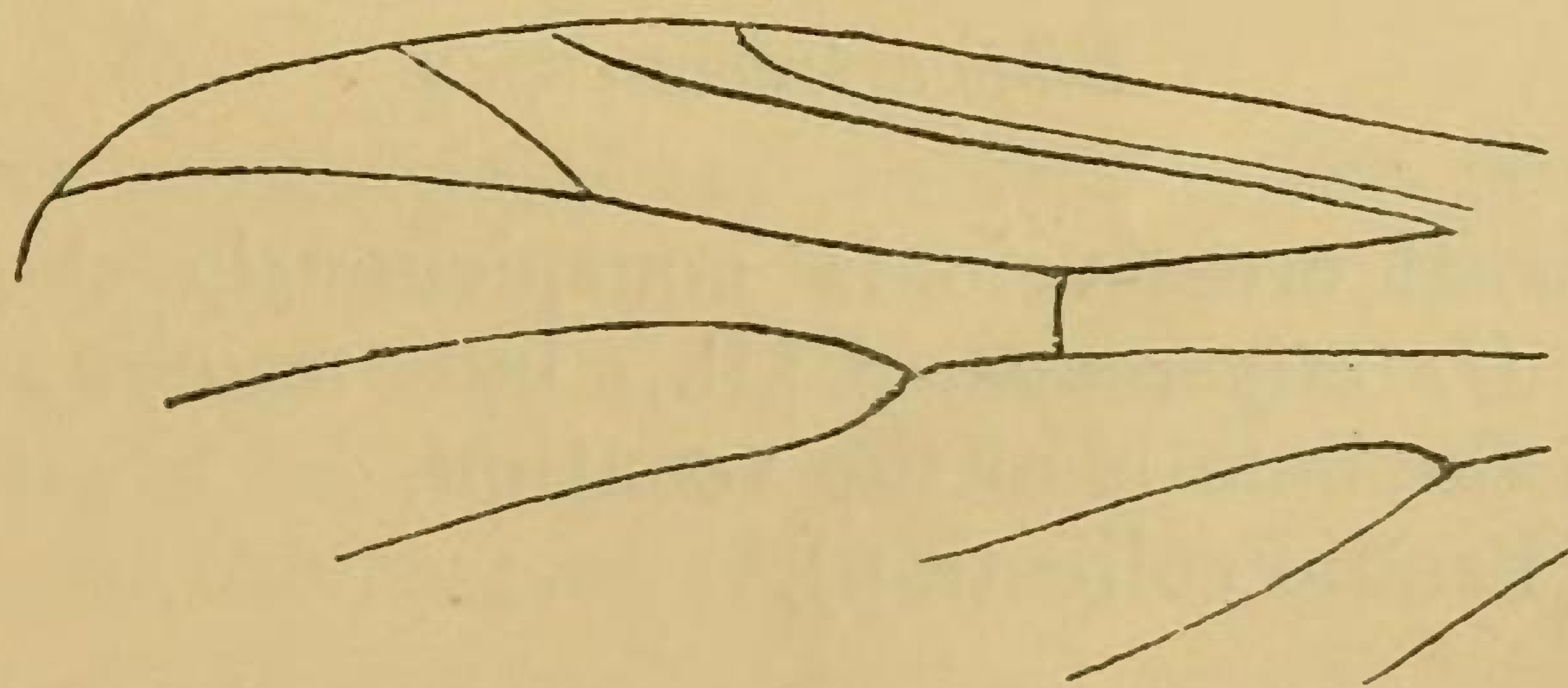
An imperfect specimen, In. 17136 (A'Court Smith), with reverse I. 9063 (Brodie collection), has the spots darker, but seems to belong to the same species. It has a distinct spot in the base of the submarginal cell, and the veins at the end of the second basal are surrounded by a cloud. There are also dark clouds along the lower division of fifth and the sixth vein. Experience has shown that the depth of colour and distinctness of the spots in such insects differ according to the exact conditions of preservation.

I collected the living *R. punctatus*, Fb. (det. F. W. Edwards), at Gurnet Bay, October 7.

**Bibionidæ.***Plecia acourti*, sp. n. (Fig. 28.)

Head small; thorax small and narrow. Dark fuscous, the

Fig. 28.

*Plecia acourti*, sp. n.



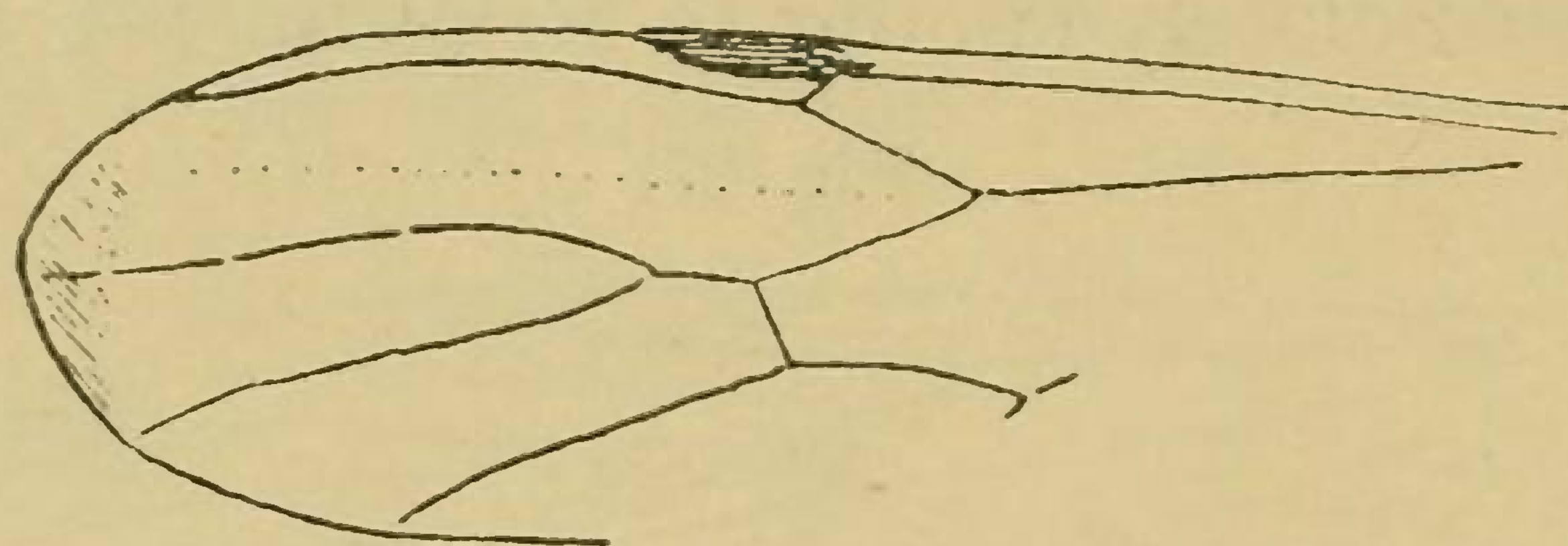
wings about 6·4 mm. long and entirely dark fuliginous. Venation as shown in figure.

In. 17098 (A'Court Smith).

*Bibio oblitus*, sp. n. (Fig. 29.)

Wing 4 mm. long; hyaline, with the stigma very dark, and apical region smoky but not dark; stigma and third

Fig. 29.



*Bibio oblitus*, sp. n.

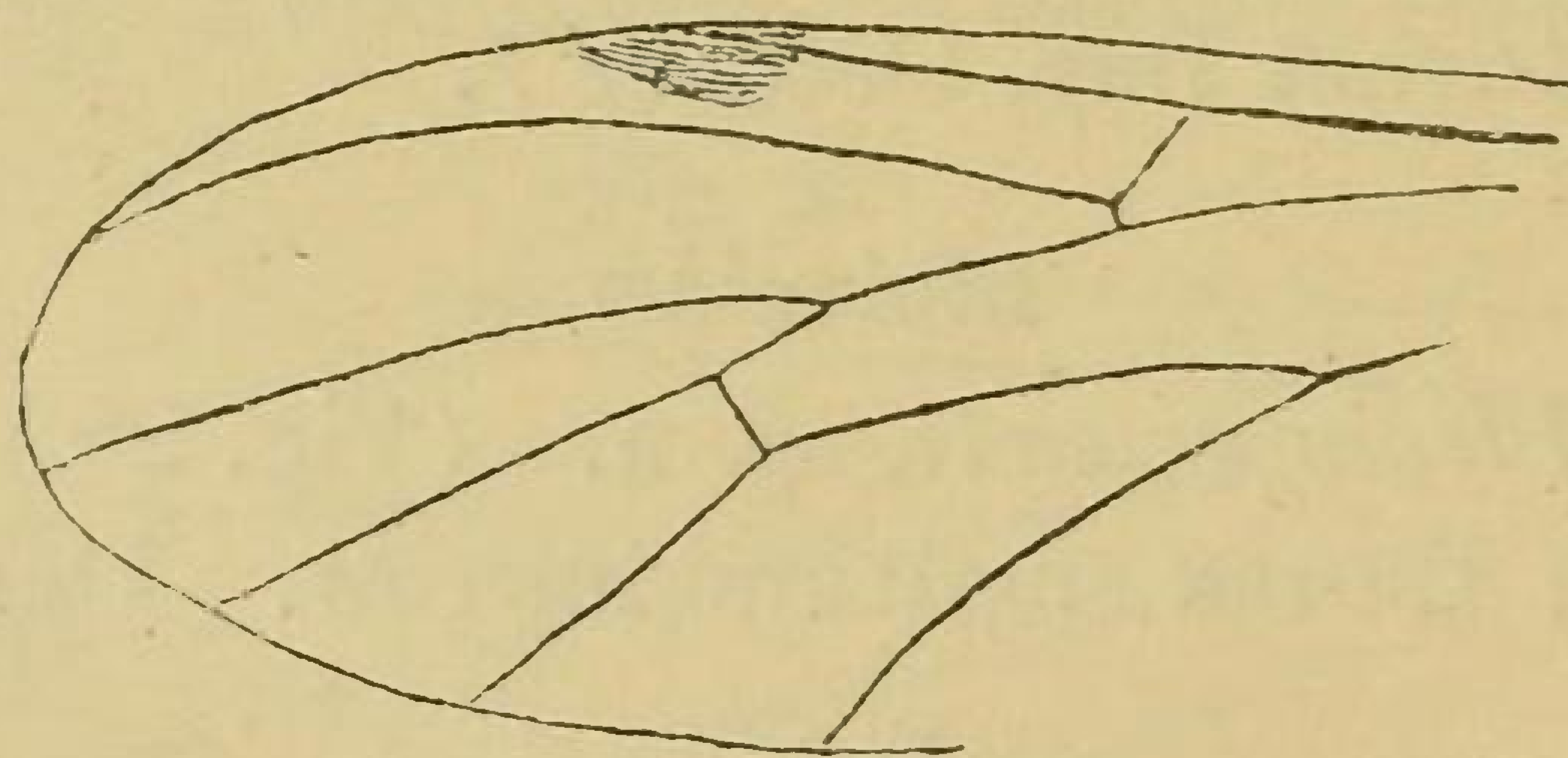
vein fuscous, quite dark, but veins of middle and lower part of wing colourless and very slender. Allied to *B. gurnetensis*, Ckll., but smaller, and differing in the details of the venation.

I. 9604 (Brodie collection).

*Bibio extremus*, sp. n. (Fig. 30.)

Wing 5 mm. long, hyaline; stigmatic spot large; venation similar to that of *B. obscuripennis*, Meij., except

Fig. 30.



*Bibio extremus*, sp. n.

that the discal cross-vein is conspicuously shorter. Also related to *B. oligocenus*, Ckll., but much smaller, and differing in the details of the venation.

I. 8860 (Brodie collection).

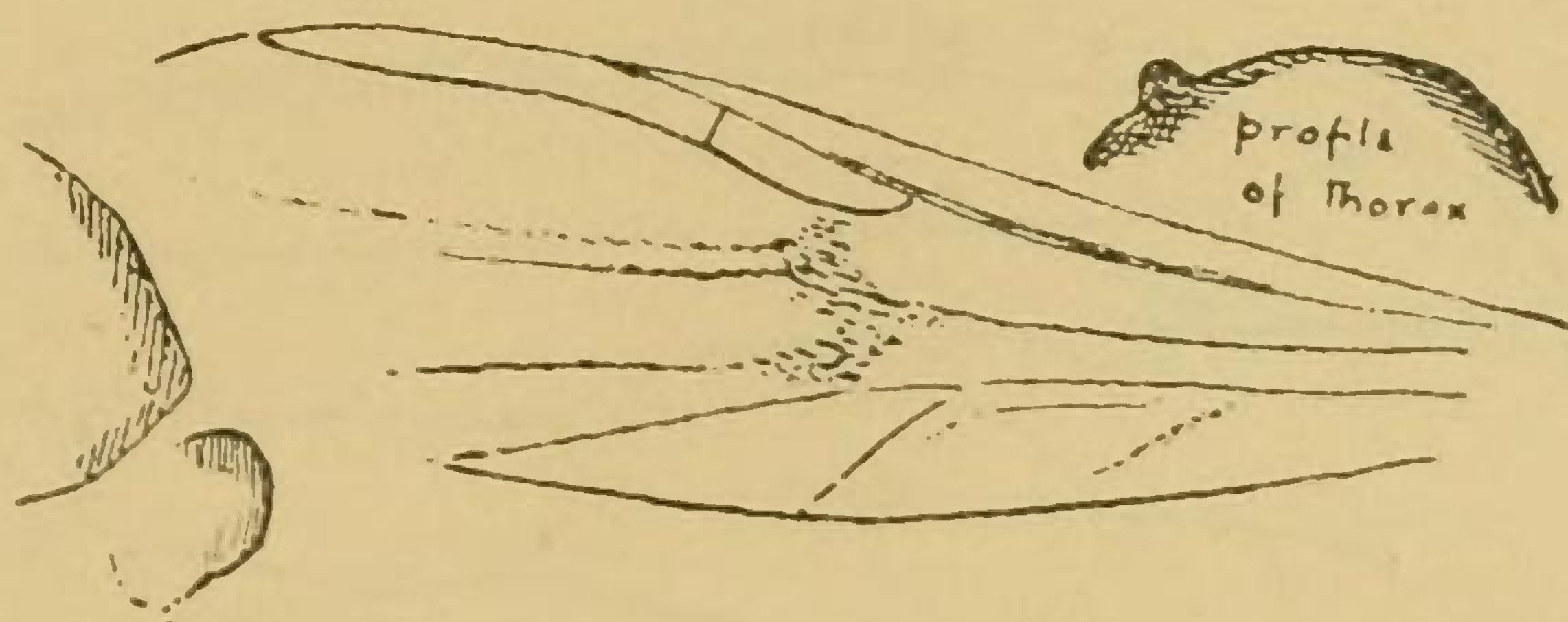


## Chironomidæ.

*Palpomyia edwardsi*, sp. n. (Fig. 31.)

Head very small; thorax strongly arched in lateral profile; scutellum prominent; wings 3 mm. long, hyaline,

Fig. 31.

*Palpomyia edwardsi*, sp. n.

faintly reddish; nervures pale ferruginous. Venation normal for the genus.

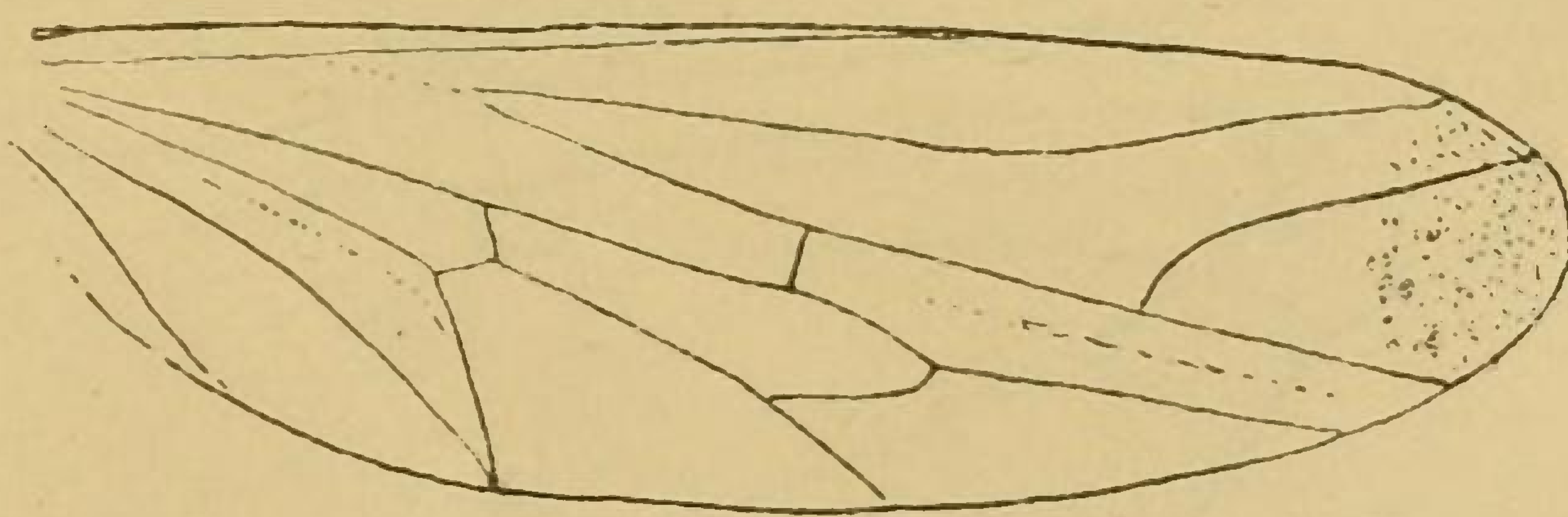
I. 9757 (Brodie collection). I am indebted to Mr. F. W. Edwards for the generic reference.

## Bombyliidæ.

*Systropus acourti*, sp. n. (Fig. 32.)

Wing about 4.9 mm. long, greyish hyaline, with dark veins; abdomen long and slender, dark, with a dorsal stripe broken into spots, the form cylindrical, not clavate, its length about 4.9 mm. Marginal cell narrow; cubital fork

Fig. 32.

*Systropus acourti*, sp. n.

wider than the submarginal cell above it; first posterior cell with a strong fold down its middle; anterior cross-vein considerably beyond middle of discal cell; anal cell closed. The apical part of the wing is suffusedly blackish.

In. 17208 and the reverse 17293 (A'C. Sm.).

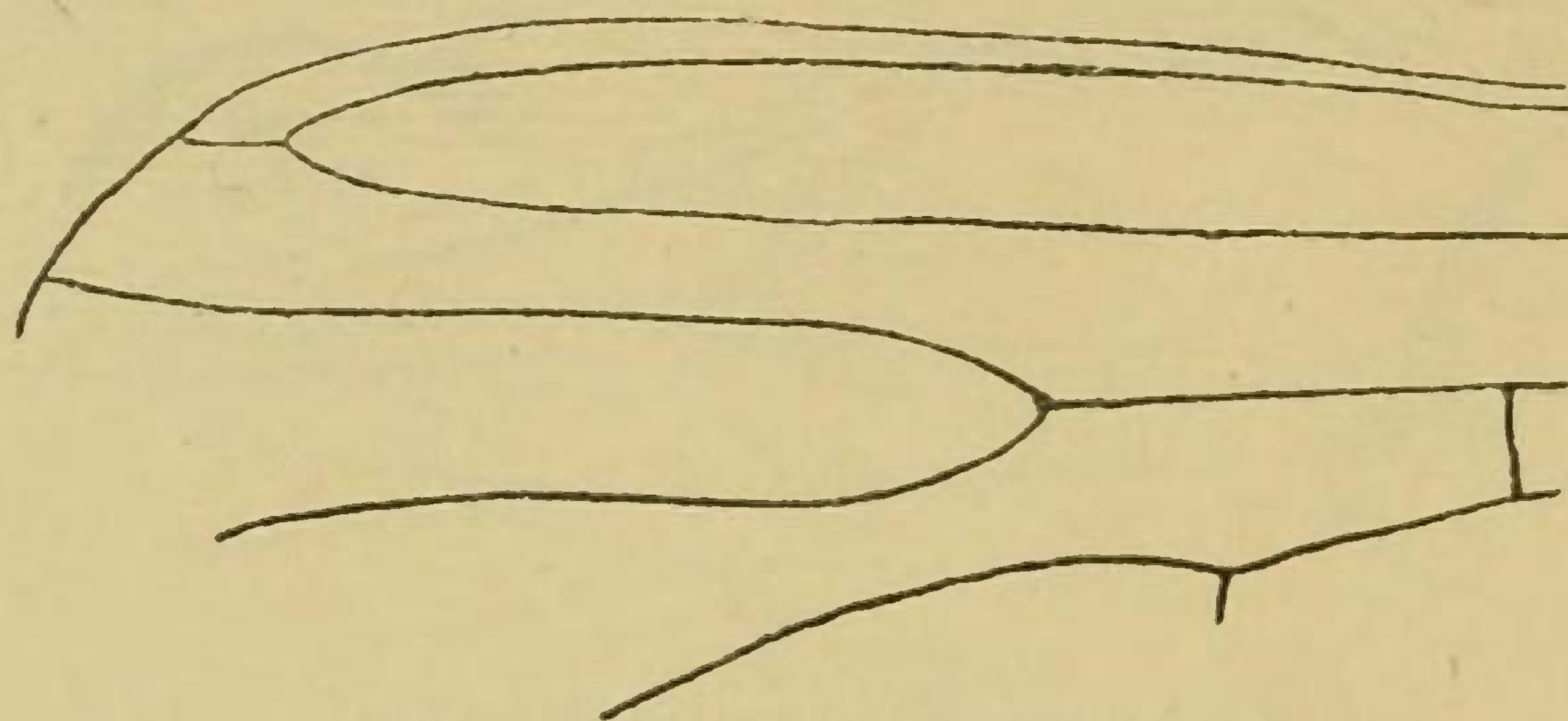


Asilidæ.

*Asilus gurnetensis*, sp. n. (Fig. 33.)

A fragment of a pale ferruginous wing, 6·8 mm. long, from just below anterior cross-vein to apex. The venation,

Fig. 33.



*Asilus gurnetensis*, sp. n.

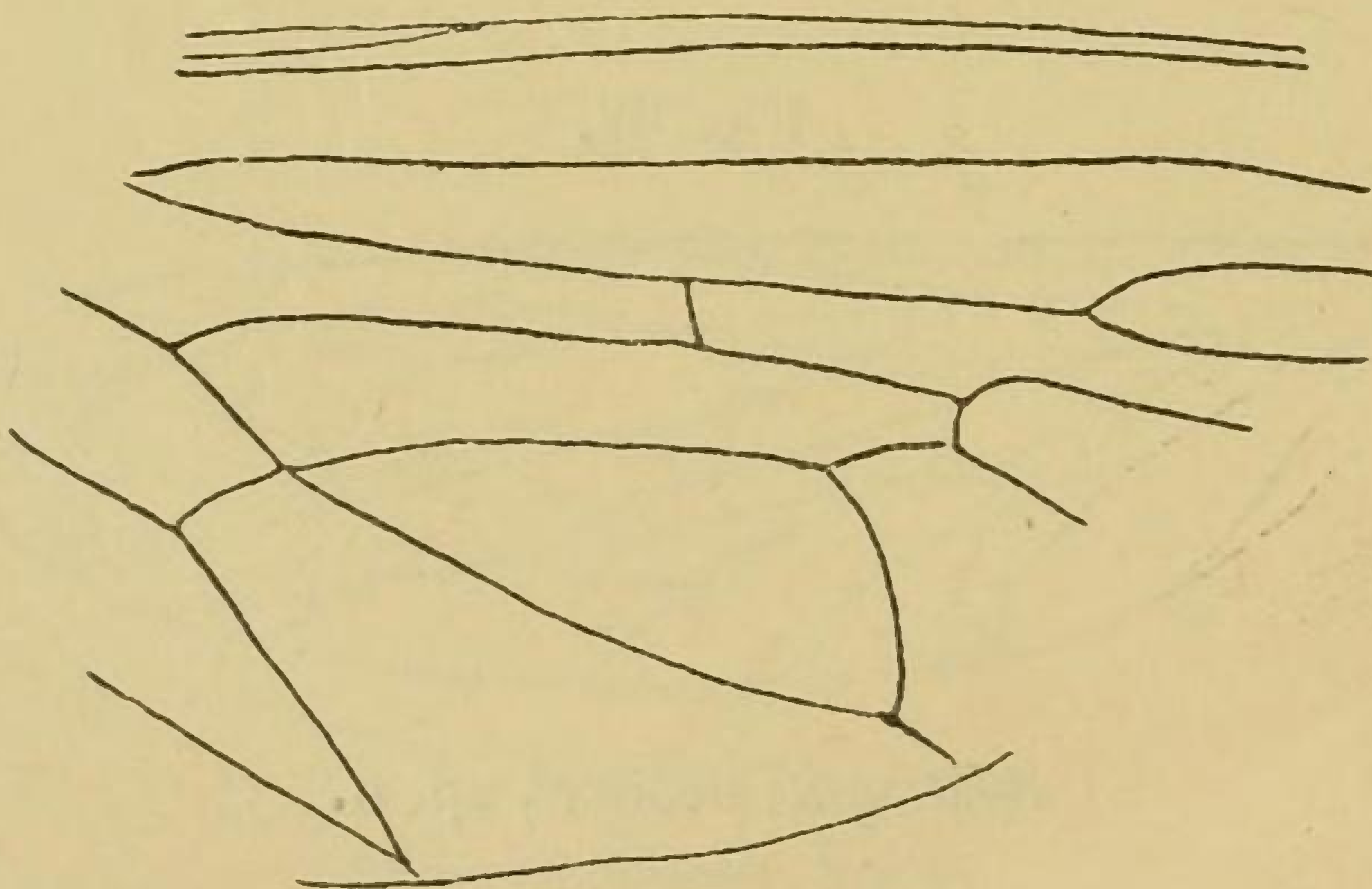
so far as visible, is exactly as in the living *Philonicus albiceps*, Mg., but the fossil species is somewhat larger. *Philonicus* is separated from *Asilus* by abdominal characters, so the fossil is referred to *Asilus* in the broad sense.

H. 1174.

*Proctacanthus fractus*, sp. n. (Fig. 34.)

Wing greyish hyaline, with dark veins; membrane

Fig. 34.



*Proctacanthus fractus*, sp. n.

transversely corrugated. Length of fragment 5 mm., probable length of wing 8 or 9 mm., thus very small for the genus.

H. 1536.

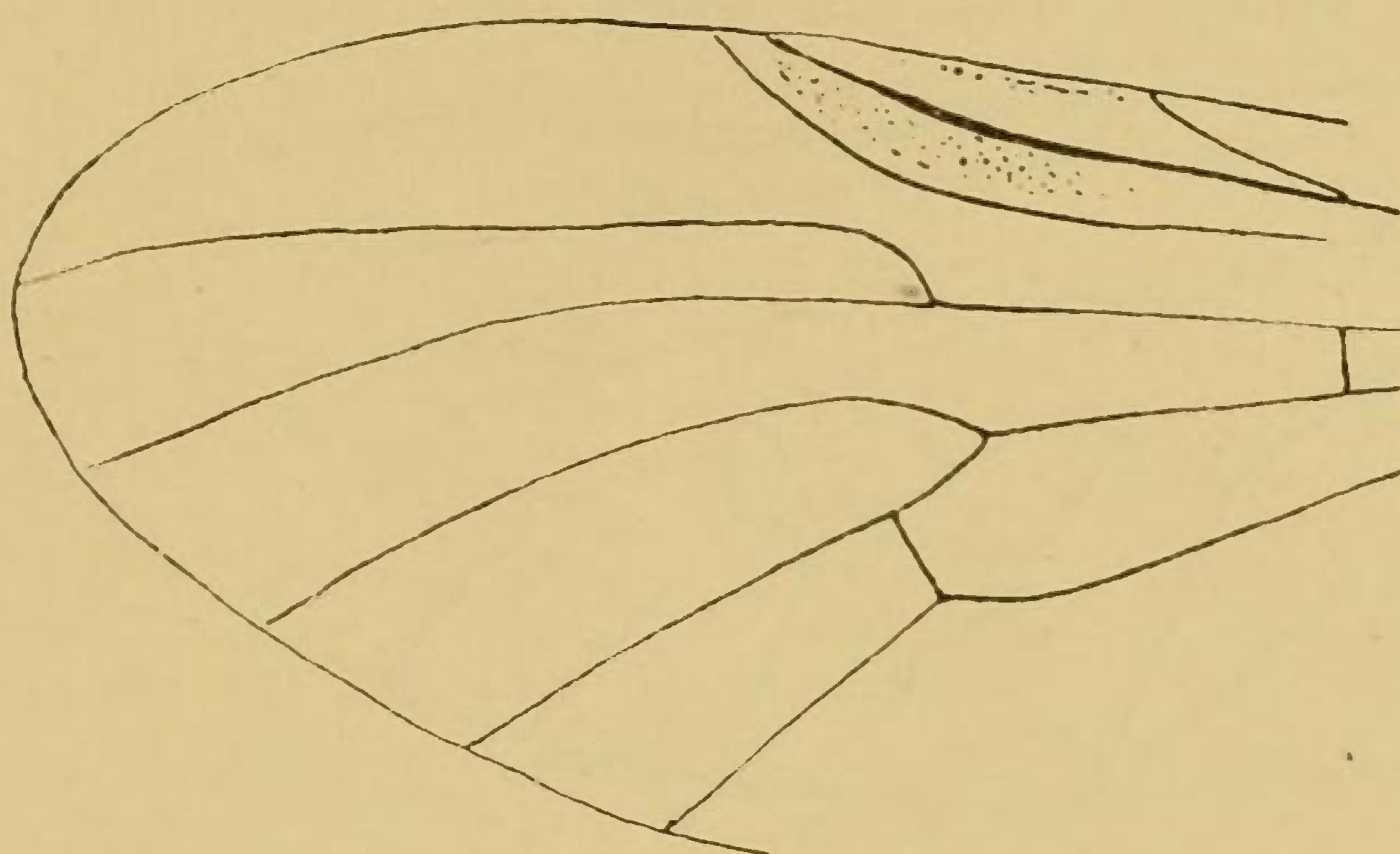


Leptidæ.

*Chrysopilus anglicus*, sp. n. (Fig. 35.)

Wings hyaline, with dark veins, and dusky stigmatic region. Length of fragment, as shown in figure, 4.5 mm.

Fig. 35.



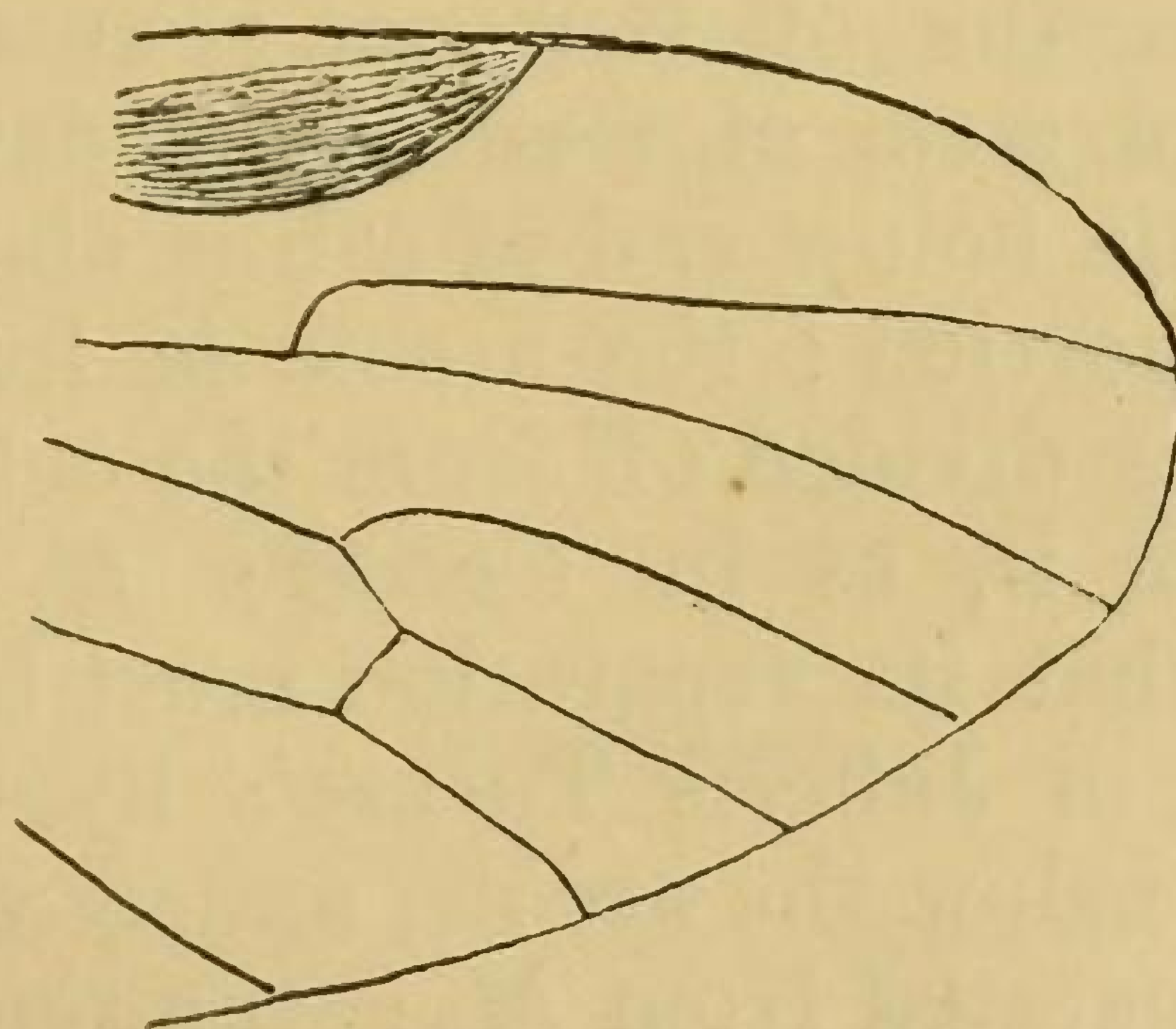
*Chrysopilus anglicus*, sp. n.

H. 410. The name of the genus is often written *Chrysopila*, but *Chrysopilus*, Mcq., 1826, is the earlier form.

*Chrysopilus stigmaticus*, sp. n. (Fig. 36.)

Fragment as figured about 3 mm. long. Similar to the

Fig. 36.



*Chrysopilus stigmaticus*, sp. n.

last, but wings pale ferruginous, with dark fuscous stigmatic area.

H. 1395.

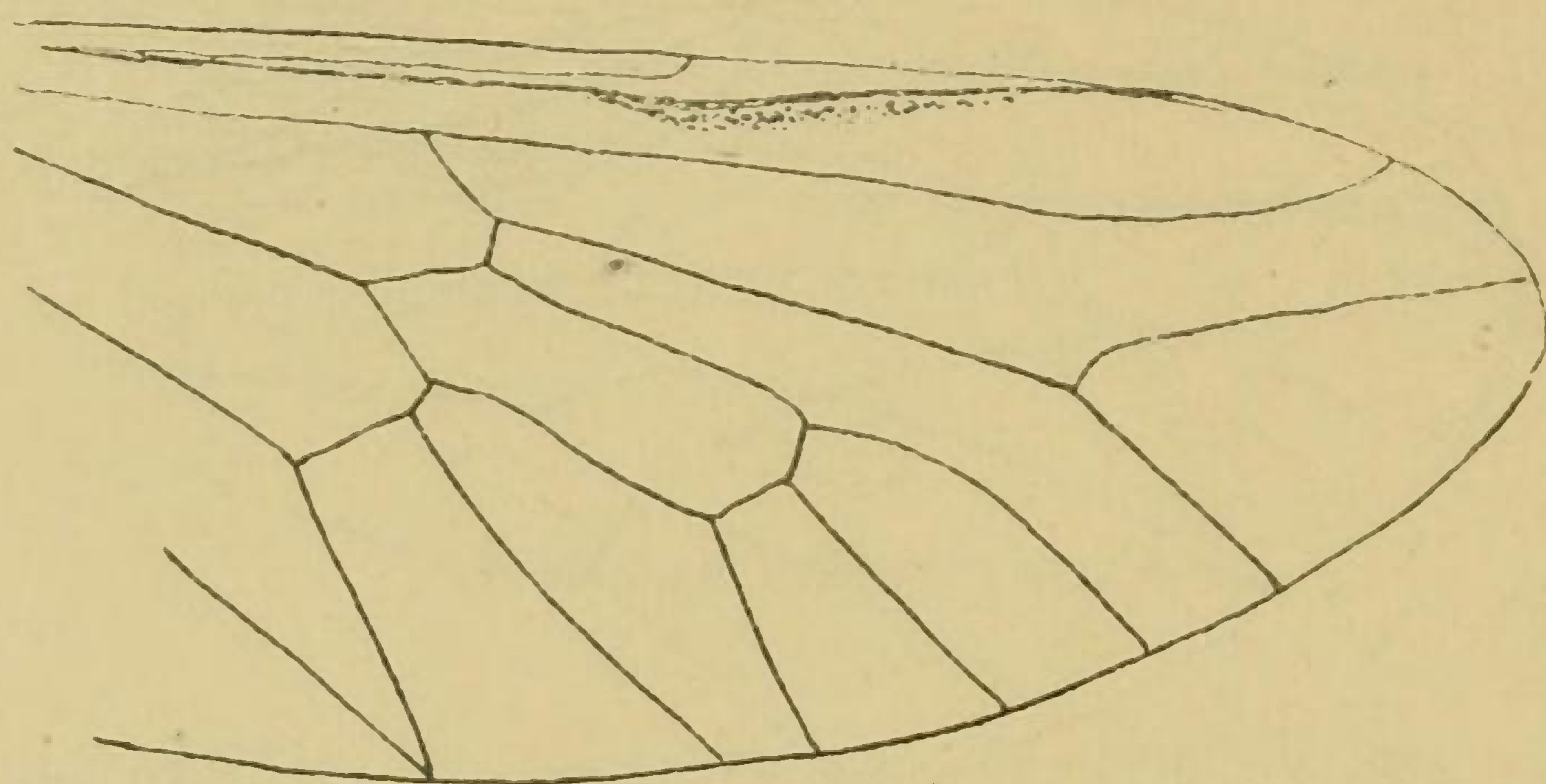


## Tabanidæ.

*Chrysops vectensis*, sp. n. (Fig. 37.)

Length 9.2 mm., abdomen about 2.5 mm. broad; wings 6.7 mm. long, reddish, when directed posteriorly extending considerably beyond abdomen.

Fig. 37.

*Chrysops vectensis*, sp. n.

H. 46. Branchiopoda bed. The anal cell is as in *C. sepulcralis*, Fab. The small size indicates *Chrysops* rather than *Tabanus*, and the somewhat contracted fourth posterior cell agrees best with the Pangoninae.

## LEPIDOPTERA.

GURNETIA, gen. nov. (Cossidæ.)

Broad-winged moths of fair size; anterior wing with areole, chorda, and stem of media well developed, but the V-like fork of media below end of cell is absent through the lack of its upper portion; the areole is long, and has the appearance of being divided off from the cell, as in *Zeuzera*, not mainly beyond it, as in *Cossus*;  $R_1$  runs so nearly parallel with  $R_2$  that its separation must be far basad (not near the areole as in Jefferis Turner's hypothetical Protocossid);  $R_5$  arises below the areole, and is very close to  $M_1$ , which is widely separated from  $M_2$ ; the separation of  $M_3$  is essentially as in *Cossus*, and not at all as in *Zeuzera*;  $Cu_2$  is very distinctly curved. The membrane is covered with fine transverse striæ (11 or 12 in a mm.), on which the scales were set.

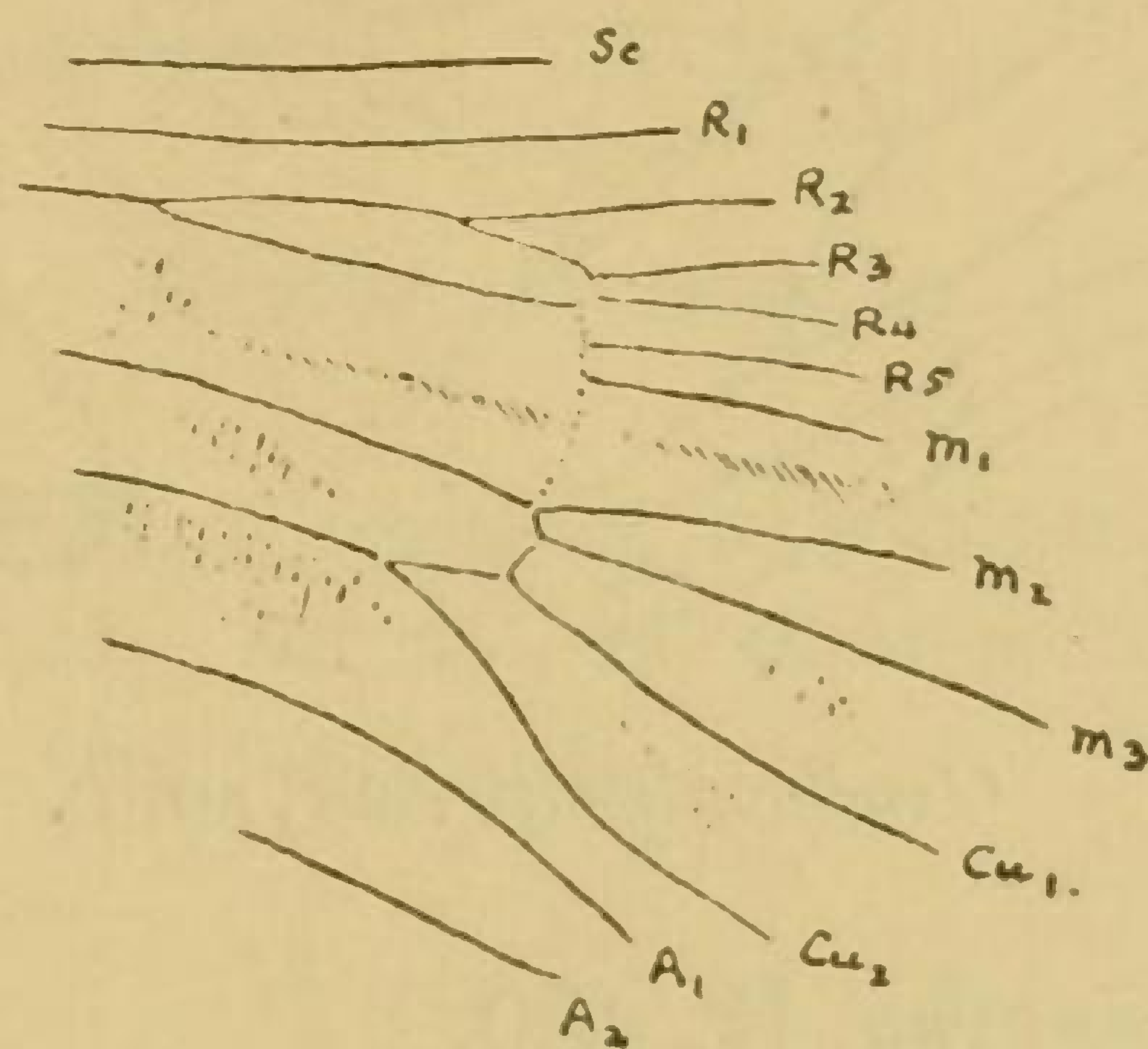


*Gurnetia durranti*, sp. n. (Fig. 38.)

Greatest diameter of part preserved (see figure) 11.4 mm.; membrane colourless, veins pale yellowish; areole 3.4 mm. long.

H. 39. I had concluded that this must represent a new Cossid genus, but should have hesitated to publish it but for the kind advice of Mr. J. H. Durrant, who carefully examined it with me and gave me the benefit of his wide

Fig. 38.

*Gurnetia durranti*, sp. n.

knowledge of Lepidopterous venation. It is certainly Lepidopterous, although in Trichoptera only three veins usually arise from the areole (discoidal cell), and there is a general similarity to the type of venation represented by *Limnephilus*. The position of  $R_5$  below the areole disagrees with Jefferis Turner's hypothetical ancestor of the Cossidæ, but agrees with the Tineid *Nemophora swammerdamella* (L.).

## ORTHOPTERA.

## Gryllidæ.

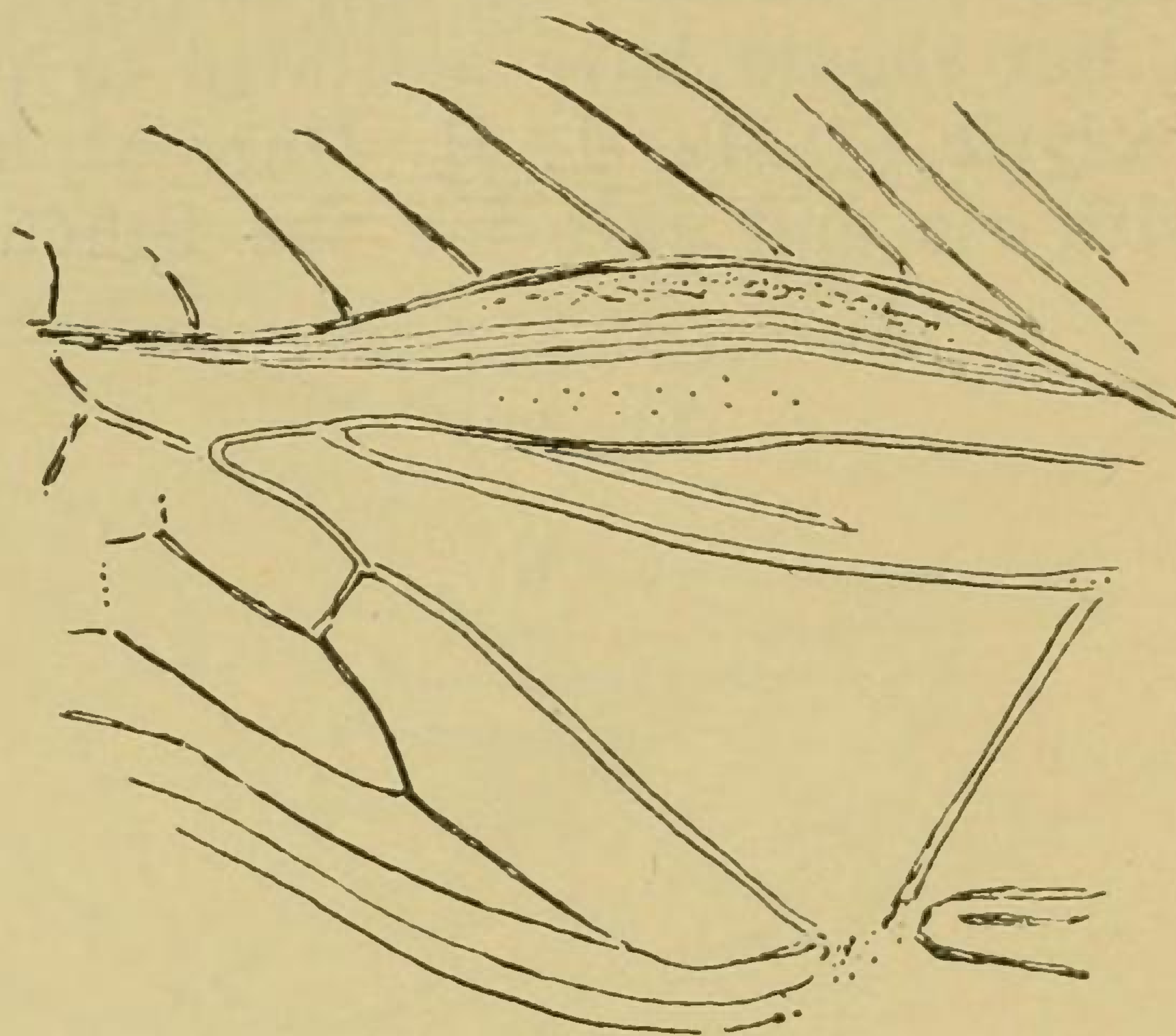
It is very interesting to find tegmina of male crickets quite as specialised as those of to-day, and apparently not differing from the modern genera. There is no advantage in trying to describe the complicated patterns in words, as the figures show what there is to be seen.



*Gryllotalpa prima*, sp. n. (Fig. 39.)

Length of fragment figured 6·5 mm., pale ochreous, with pale yellowish-ferruginous veins.

Fig. 39.

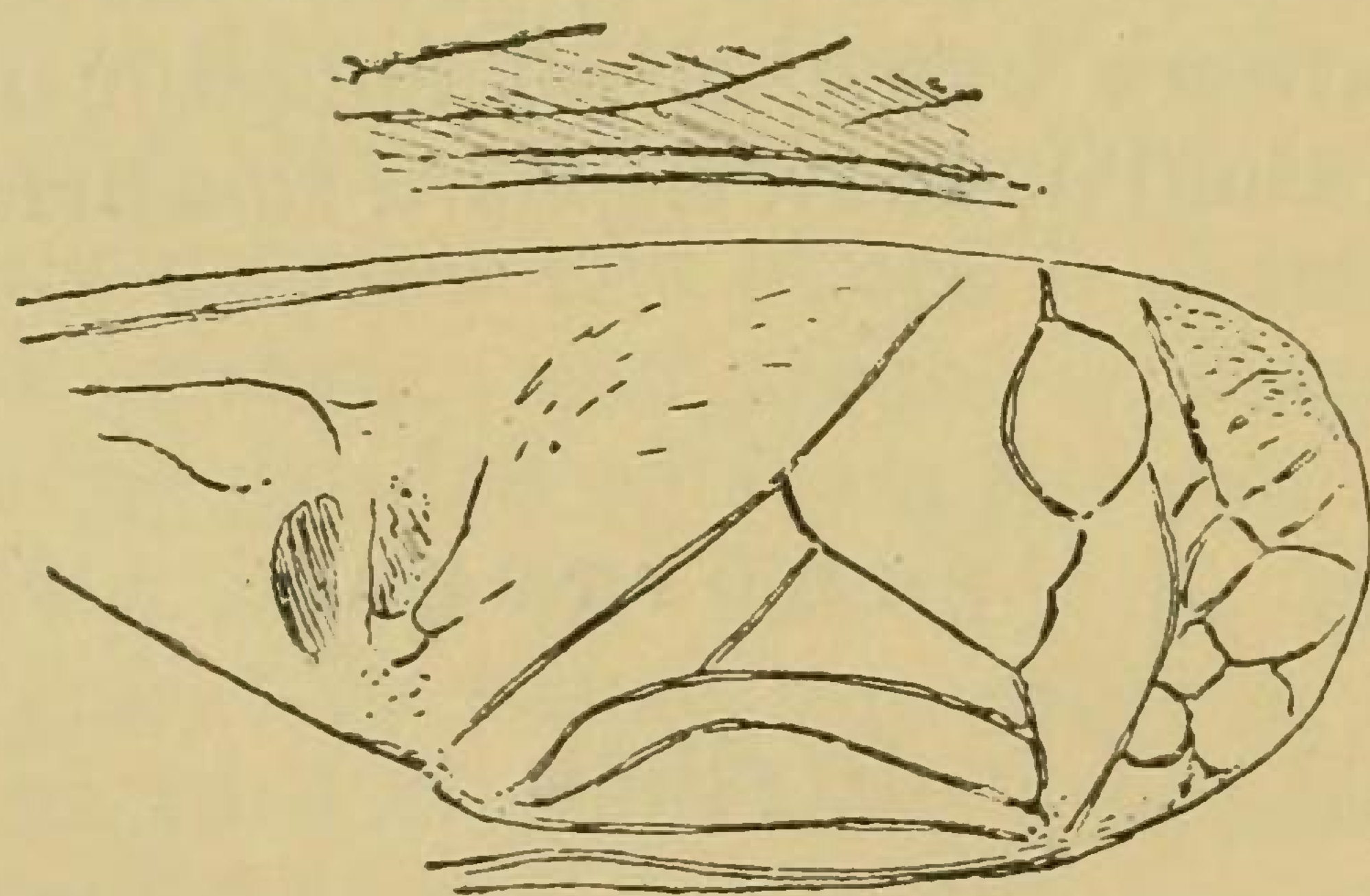
*Gryllotalpa prima*, sp. n.

H. 181, with reverse, H. 480.

*Gryllus vetus*, sp. n. (Fig. 40.)

Length of tegmen as preserved 5 mm., width 3·4 mm.; all beyond the long oblique nervure dark reddish brown, the

Fig. 40.

*Gryllus vetus*, sp. n.

rest pale, with two dark spots as shown in figure. Region above the longitudinal division perfectly black.

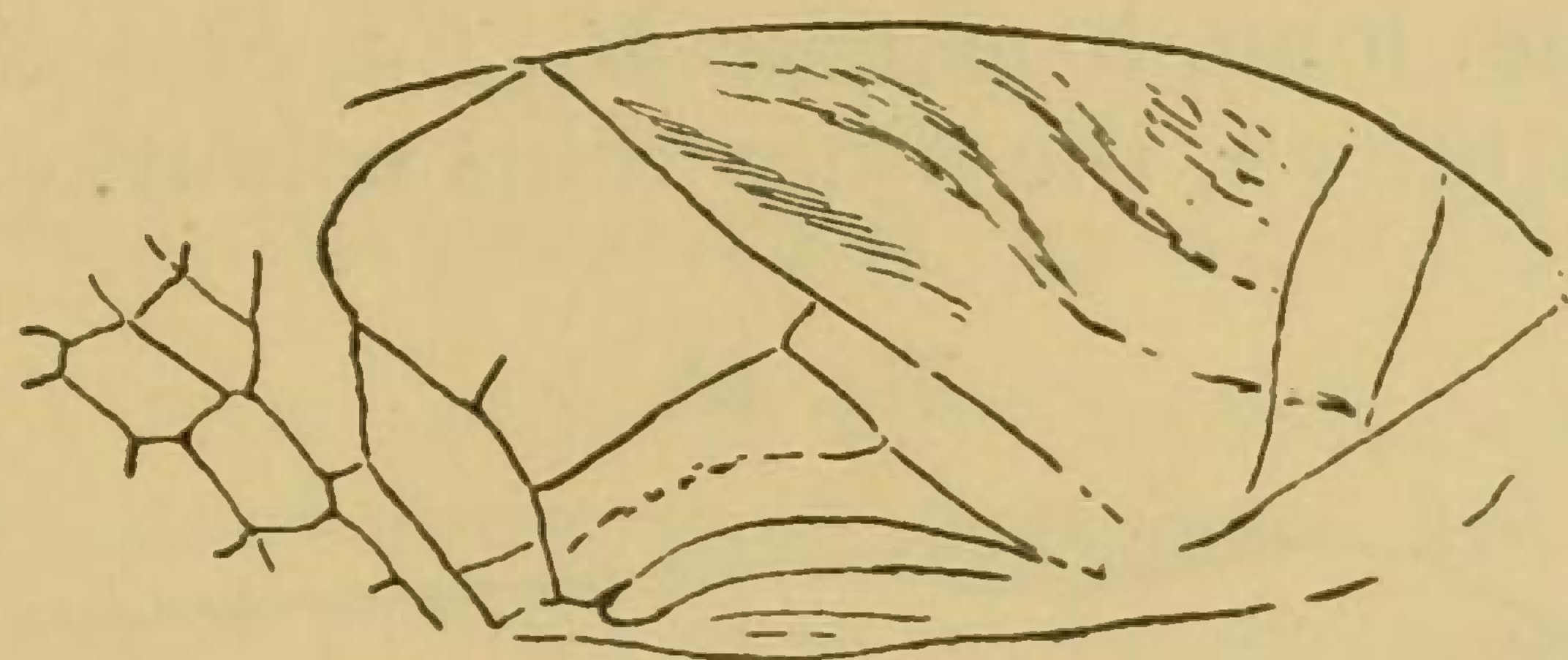
H. 152.



*Gryllus oligocenus*, sp. n. (Fig. 41.)

Length of tegmen 4·3 mm., width (excluding part above longitudinal division) 2 mm.; basal half reddish brown, shaded with yellowish, apical part paler, with two dusky spots near lower margin.

Fig. 41.

*Gryllus oligocenus*, sp. n.

H. 1210. Possibly only a variation of the last, but apparently distinct, as it is considerably smaller, and differs notably in the venation.

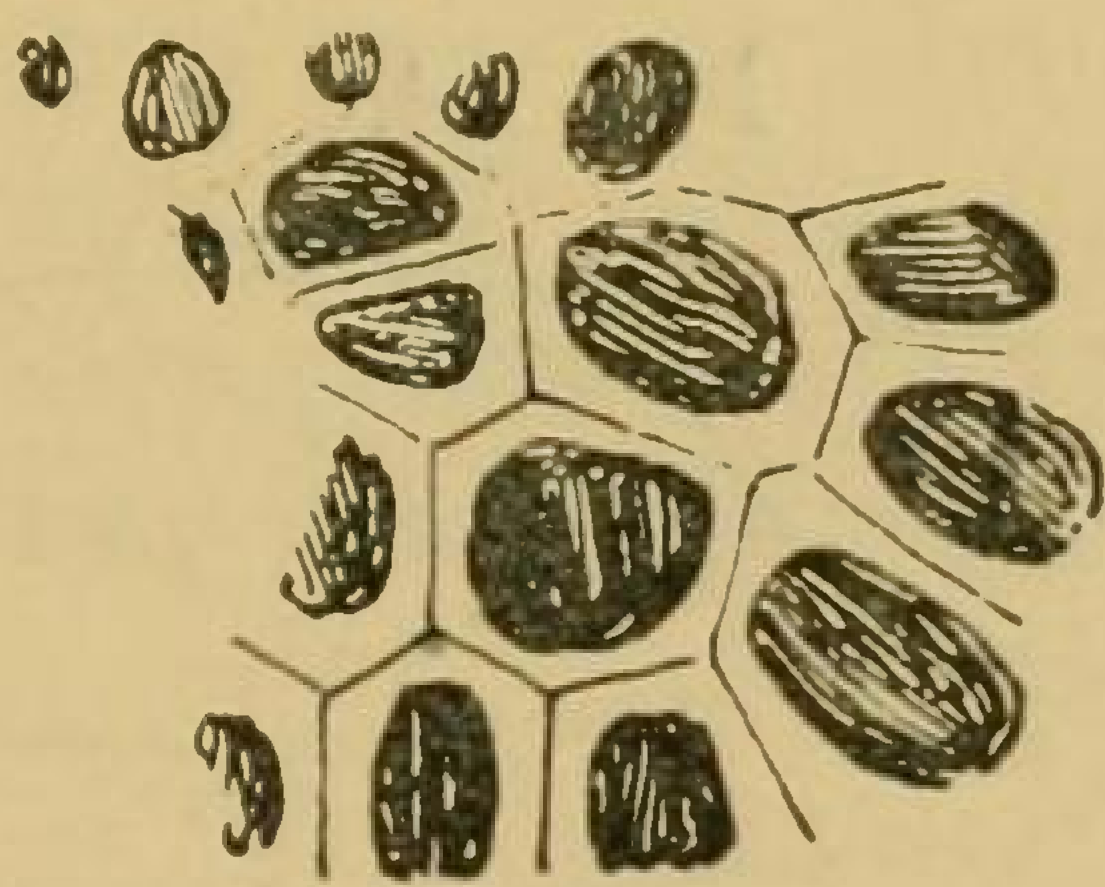
## HOMOPTERA.

## Fulgoridæ.

*Poekilloptera* (?) *melanospila*, sp. n. (Fig. 42.)

A fragment of a wing, 13 mm. long and 8 wide, with colourless veins, enclosing large intense black spots, the larger ones about 2 mm. across.

Fig. 42.

*Poekilloptera* (?) *melanospila*, sp. n.

H. 48. On comparison, this exactly agrees in character and markings with the anterior wing of *Poekilloptera phalænoides* (L.), from the Neotropical Region. This is a



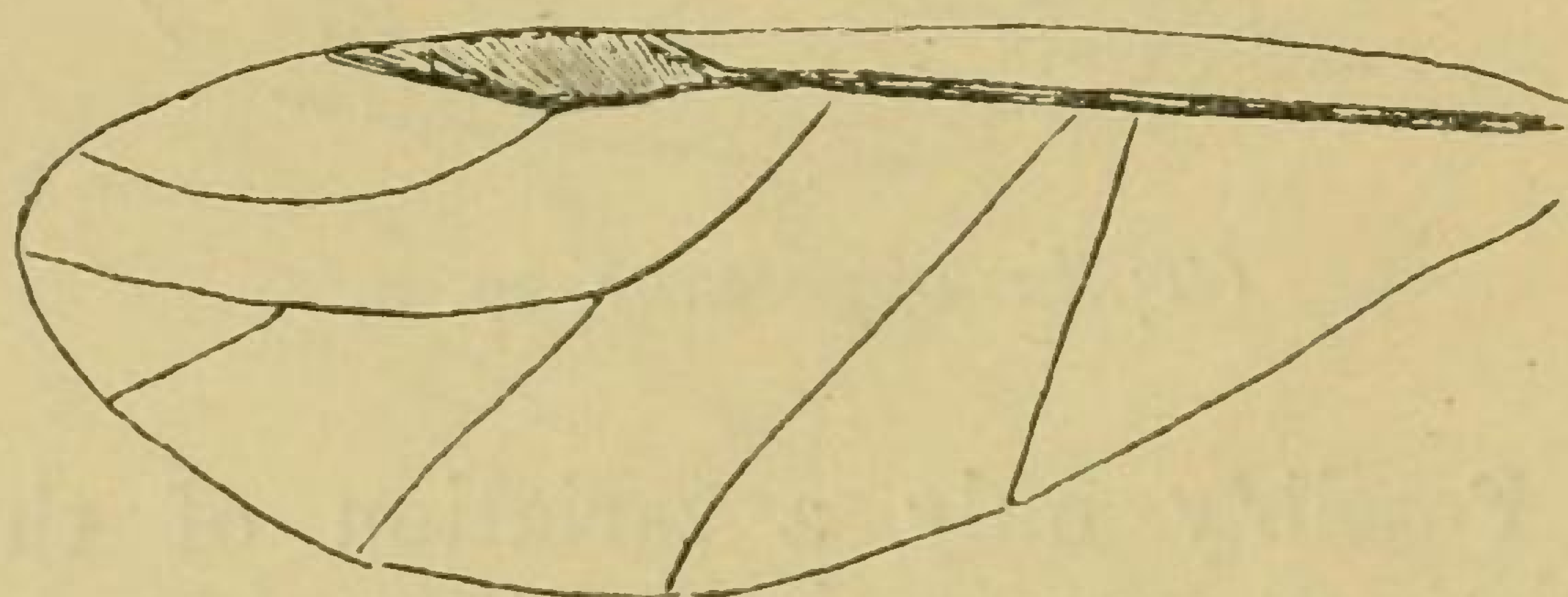
very surprising discovery, but I know of no organism which the fossil could represent, except the genus to which I refer it. The other Flatinae are variously marked, but not in this manner.

**Aphididæ.**

*Aphis* (sens. lat.) *gurnetensis*, sp. n. (Fig. 43.)

Wing 3.2 mm. long, hyaline;  $M_2$ ,  $Cu$ ,  $Sc + R$ , and margin of stigma dark brown, the other veins colourless.

Fig. 43.



*Aphis* (sens. lat.) *gurnetensis*, sp. n.

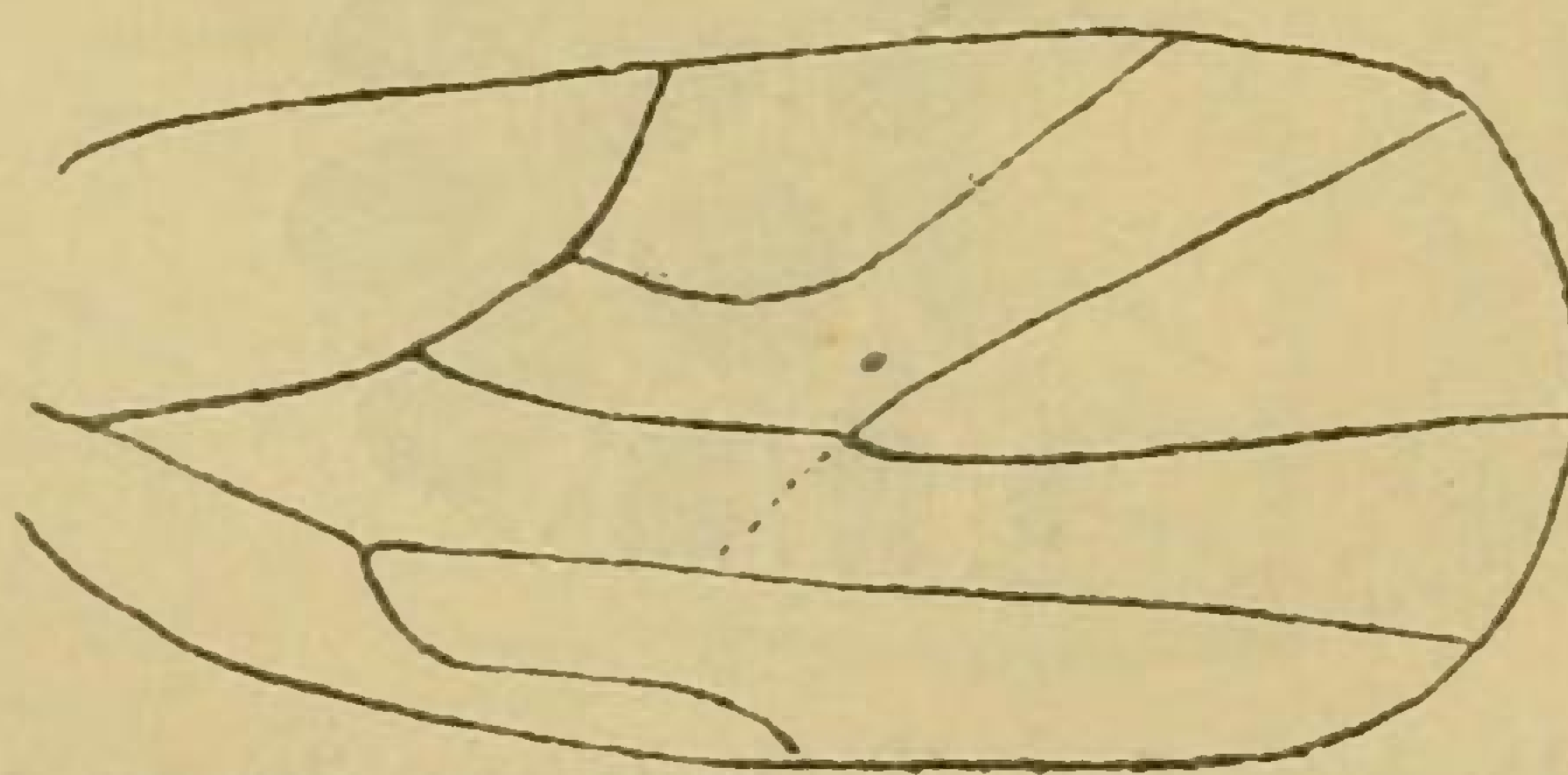
H. 1124, collected in 1891. A very ordinary Aphid, which cannot be placed in a modern genus from the wing alone.

**Psyllidæ.**

*Livilla* *hooleyi*, sp. n. (Fig. 44.)

Wing (elytron) 3 mm. long, with dark veins; venation nearly as in the living species, but the second cubital fork is more gibbous above.

Fig. 44.



*Livilla* *hooleyi*, sp. n.

Type, H. 430, with the reverse, H. 445. Another specimen (H. 449) has what seems to be an oblique vein



connecting the radial and cubital veins, but this is colourless in H. 430, though the veins are dark, and is evidently not a true vein. This is the third Psyllid from Gurnet Bay. The modern *Livilla ulicis*, Curtis, feeds on *Ulex*.

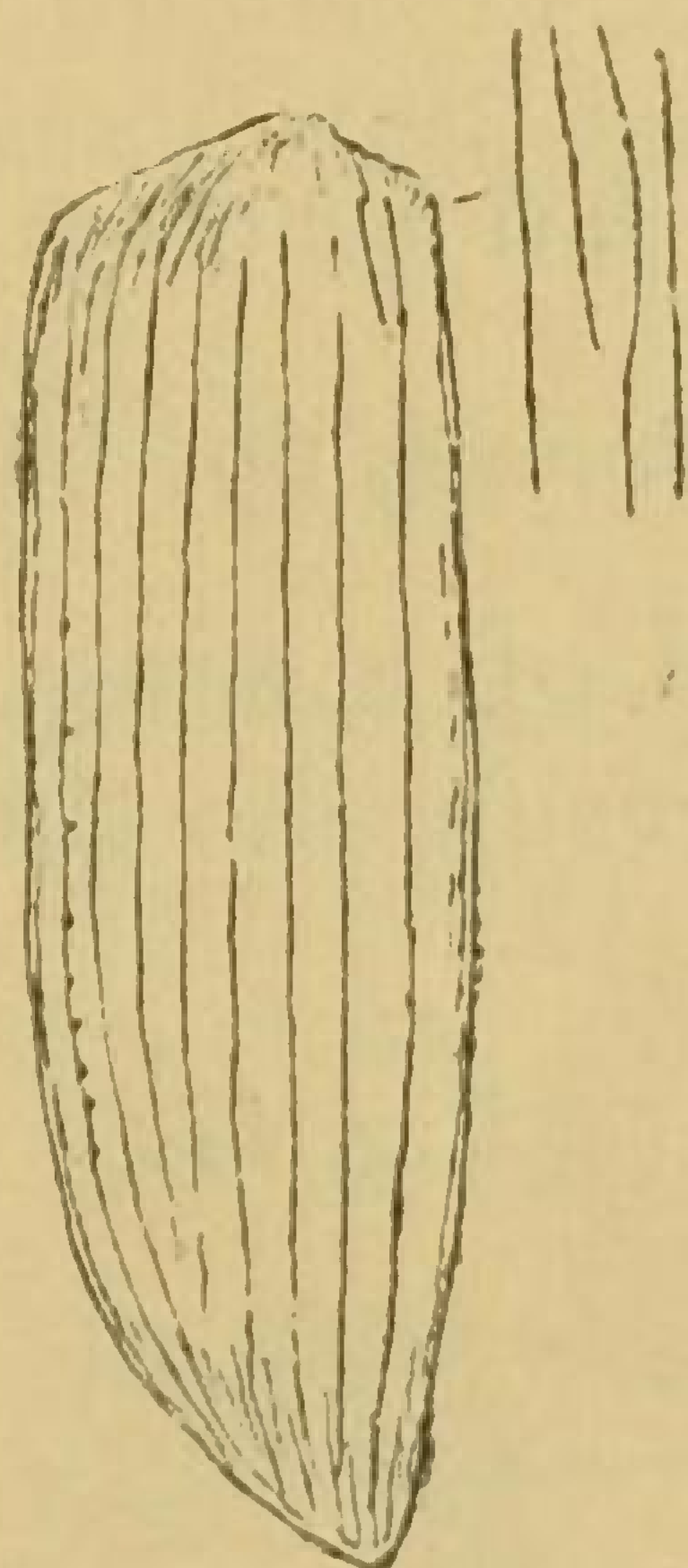
## COLEOPTERA.

## Carabidæ.

*Pterostichus gurnetensis*, sp. n. (Fig. 45.)

Elytra 12·5 mm. long, 4 mm. broad, with eight sharp striæ, and the usual additional short one between the first and second basally; outermost stria punctate. The short stria fails to join the first.

Fig. 45.

*Pterostichus gurnetensis*, sp. n.

H. 221. An ordinary species, structurally similar to the much smaller interglacial *P. dormitans*, Scudder, but with the short stria not joining the first, and the discal striæ not visibly punctulate. The discal striæ are ·5 mm. apart.

## NEUROPTERA.

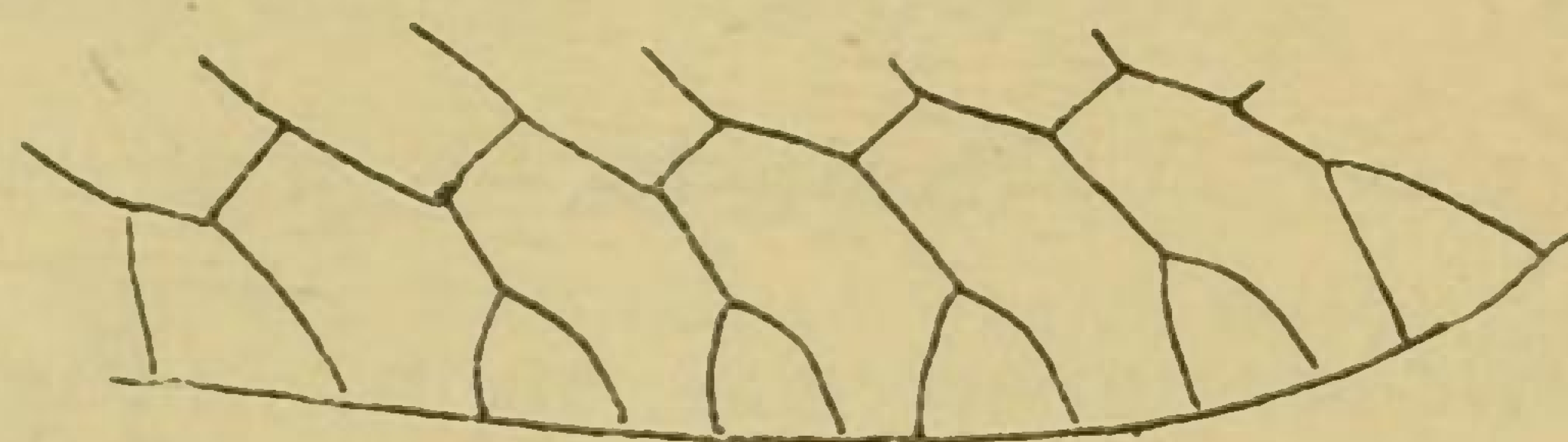
*Mantispa relictæ*, sp. n. (Fig. 46.)

Represented by a fragment, 7·5 mm. long, of a hyaline wing, with thick dark veins and margin. It is probably a hind wing. The terminal forks are shorter than in



*M. pusilla*, Pall., and more symmetrical than in *M. annulicornis*, Gerst.; in the latter feature they are more like the anterior wing of *M. fenestralis*, Navas. Compared with *M. crenata*, Navas, the peduncles of forks are much too long

Fig. 46.



*Mantispa relictata*, sp. n.

in *M. relictata* for the anterior wing, and the forks are too symmetrical for the posterior wing.

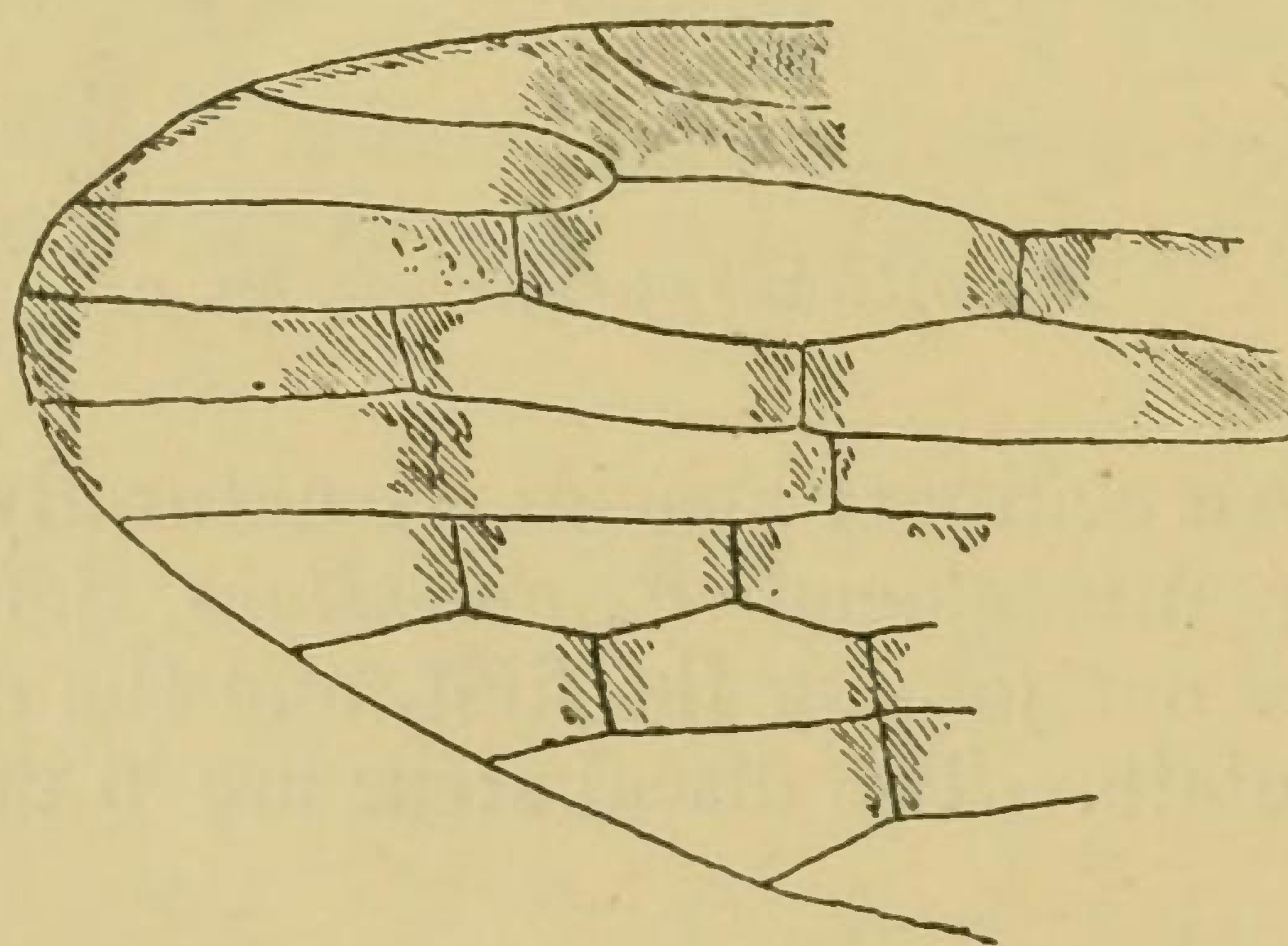
H. 15381.

#### PANORPOIDEA.

*Panorpa veterna*, sp. n. (Fig. 47.)

Fragment of the end of a wing, a little over 3 mm. long as far as preserved. It resembles the living *P. germanica*, L.,

Fig. 47.



*Panorpa veterna*, sp. n.

but differs by the distinct subapical band. The minute details of the venation are not of specific value.

H. 1394, collected in 1891.

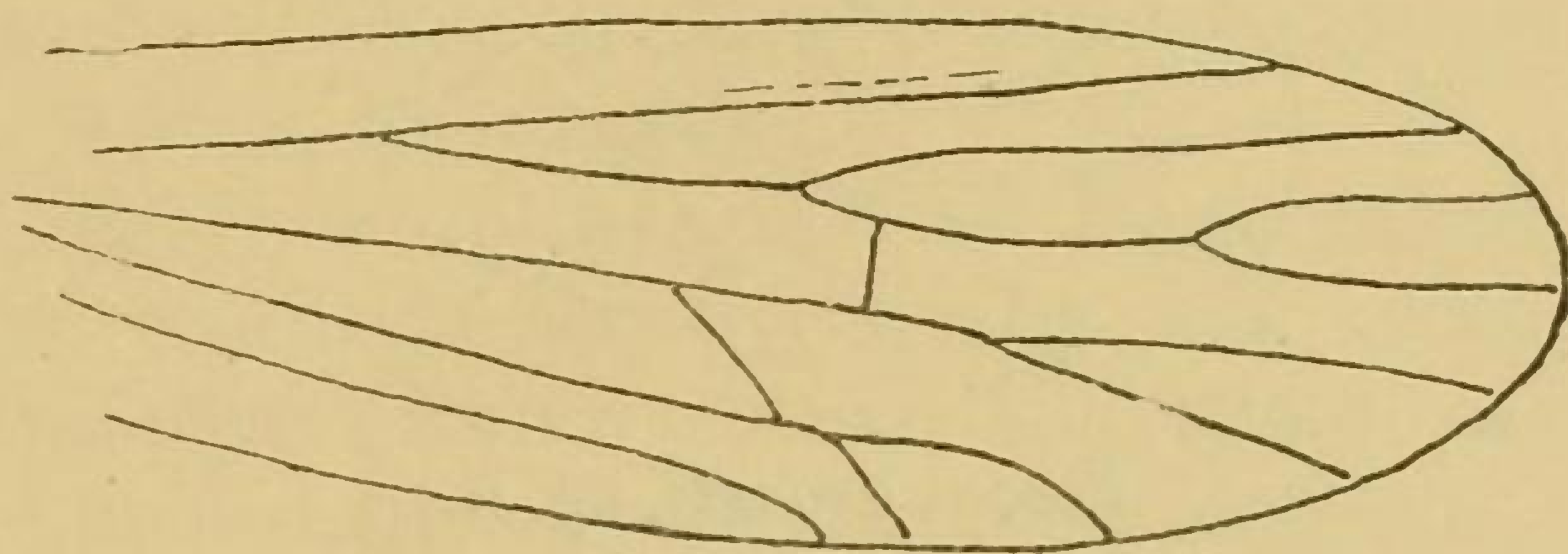


## TRICHOPTERA.

*Beræodes anglica*, sp. n. (Fig. 48.)

Anterior wing about 4·5 mm. long, colourless, with colourless veins. The venation nearly agrees with the female of *B. pectinata*, Ulmer, from Prussian amber, but the

Fig. 48.

*Beræodes anglica*, sp. n.

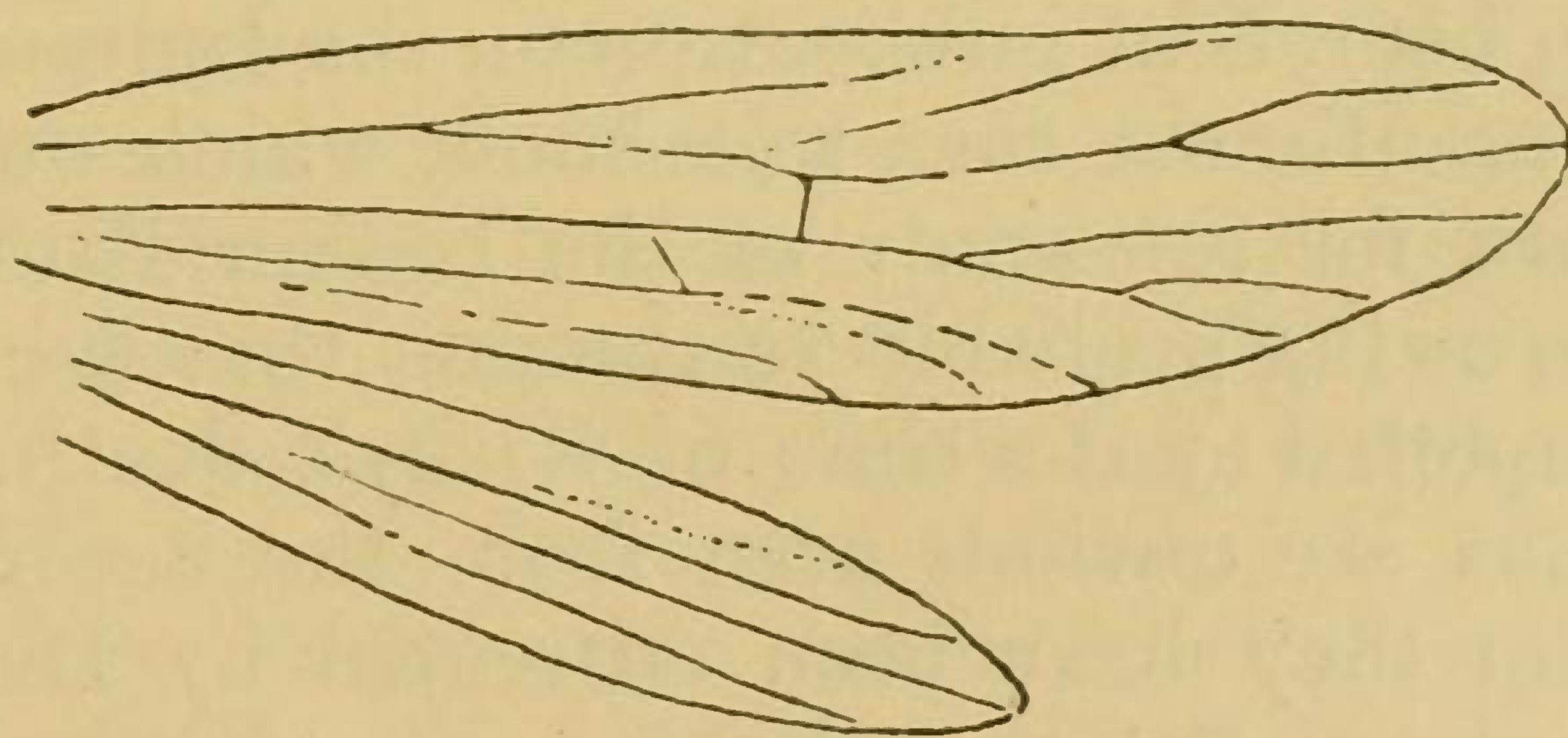
lower division of the media is not forked, and the radio-medial cross-vein is placed well beyond the adjacent radial fork.

I. 10240 (Brodie collection).

*Beræodes vectensis*, sp. n. (Fig. 49.)

Anterior wing 3·5 mm. long, dilute ferruginous; hind wing about 2·8 mm., colourless. Smaller and with narrower wings than *B. anglica*; the lower division of the media is

Fig. 49.

*Beræodes vectensis*, sp. n.

forked as in *B. pectinata*, but the radio-medial cross-vein is situated as in *B. anglica*. *B. pectinata* is a larger species, of the size of *B. anglica*.

I. 9134 (Brodie collection). The details of the venation of the hind wing are obscure.

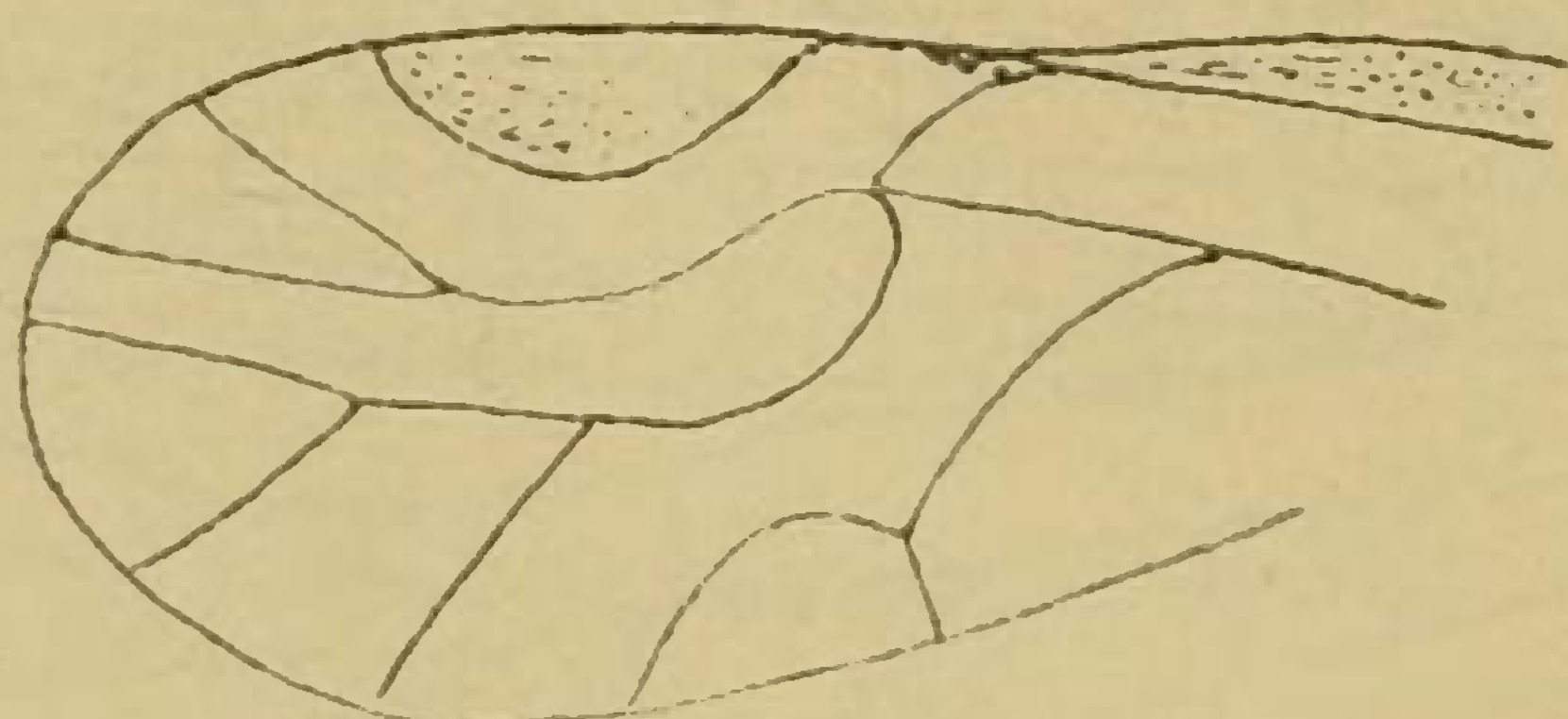


## CORRODENTIA.

*Psocus acourti*, sp. n. (Fig. 50.)

Wing about 3 mm. long, pale grey with fuscous veins; stigma pale luteous.

Fig. 50.

*Psocus acourti*, sp. n.

H. 836. Essentially similar to modern species.

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LVIII.—*Records and Descriptions of Indian Acrididæ (Orthoptera)*. By B. P. UVAROV, F.E.S., Assistant Entomologist, Imperial Bureau of Entomology.

THE present paper is based upon a part of the collection of Orthoptera sent long ago by the Agricultural Research Institute, Pusa, Bengal, to the late W. F. Kirby, and only partially worked out by that specialist while compiling the corresponding volume of the 'Fauna of British India.' I. Bolivar, in his recent publication on the Indian Acrididæ\*, has already mentioned that this book, which ought to be a standard work for the study of the Indian Fauna, contains many errors, owing probably to the fact that the manuscript was not completed at the time of Kirby's death. A few of these mistakes are obvious even from the descriptions and drawings, and they have been corrected by Bolivar in the paper referred to, but the clearing up of many questions of systematics and synonymy is quite impossible without studying the type-specimens. I should say, even, that the serious study of Indian Orthoptera is almost impossible anywhere else except in the British Museum, since the majority of known Indian species have been described by

\* "Contribucion al conocimiento de la fauna Indica. Orthoptera (Locustidæ vel Acrididæ)," Rev. R. Acad. Cien., Madrid, t. xvi. no. 6, 7, 8, & 9, pp. 278-412.



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