

REVISION OF THE ROBBERFLY GENUS TARACTICUS LOEW WITH DESCRIPTIONS OF THREE NEW SPECIES (DIPTERA; ASILIDÆ)

BY A. EARL PRITCHARD

UNIVERSITY OF MINNESOTA

The genus *Taracticus* was erected by Loew (1872) for *Dioctria octopunctata* Say, a common species in the eastern United States. Williston has described three species from southern Mexico and transferred *Ceraturgus vitripennis* Bellardi, also from Mexico, to this genus. Curran has described an additional species from Arizona. As a result of the author's collecting in Mexico in 1935 and in the West in 1936, two new species from Mexico and one new species from California were taken which are described in this paper.

I am indebted to Dr. C. H. Curran for the loan of cotypes of *similis* Will. and *nigripes* Will. for study and redescription.

Taracticus Loew

1872. *Taracticus* Loew, Berl. Ent. Zeitschr., xvi: 64.

1904. *Dioctrodes* Coquillett, Proc. Ent. Soc. Wash., vi: 181.

KEY TO SPECIES

1. Abdominal pollinose markings restricted to first four abdominal segments...2
Abdominal pollinose markings on at least five abdominal segments.....3
2. Femora reddish-yellow; female subgenital plate emarginate on distal third
(Guerrero, Mexico)*aciculatus* n. sp.
Femora nearly entirely black; over half of female subgenital plate divided
(Guerrero, Mexico)*vitripennis* (Bellardi)
3. Mystax in large part black (Guerrero, Mexico).....*nigrimystaceus* Williston
Mystax white4
4. Mesonotum wholly pollinose (Arizona).....*ruficaudus* Curran
Mesonotum with bare, black vittae5
5. Legs mostly black; median mesonotal vittae strongly widened near
anterior end; mesonotum clothed with small, spine-like bristles.....6
Legs mostly light yellowish-red; median mesonotal vittae without such
widening; mesonotum clothed with hairs.....7
6. Abdominal markings approximated or connected dorsally; dorsal spine of
third antennal segment occurring at two-thirds the length of that
segment (Guerrero, Mexico).....*guerrerensis* n. sp.

- Abdominal markings rather widely separated dorsally; dorsal spine of third antennal segment at three-fourths the length of that segment (Guerrero, Mexico) *nigripes* Williston
7. Disc of scutellum with a pollinose median stripe; with a pair of marginal scutellars 8
- Disc of scutellum bare; without marginal bristles (Guerrero, Mexico).
..... *similis* Williston
8. Third antennal segment over three times as long as first two combined, the dorsal spine just before the middle of that segment (California).
..... *paulus* n. sp.
- Third antennal segment two and one-half times as long as first two combined, the dorsal spine a little beyond the middle of the segment (Eastern U. S.) *octopunctatus* (Say)

***Taracticus aciculatus* new species**

Black; legs largely yellowish, the tarsi annulate; vestiture entirely pale, the mesonotal hairs prominent; caudo-lateral, rectangular pollinose spots on abdominal tergites one to four. Length, 7 to 10 mm.

MALE.—Cinereous pollen on front and thinly on rear of head except at orbits, the occiput bare, shining black; pale ochreous pollen on the face; mystax white, confined to a thin row of oral bristles and a few hairs above; occipito-orbital bristles small, white; ocellar tubercle with a pair of white bristles; antennæ black; first antennal segment two and one-half times as long as broad, above bare and coriaceous with several distal, pale microchætæ, below bearing white bristles that attain the length of the segment; second two-thirds as long as the first, brown pollinose, with a few pale microchaetæ at tip above, and a white bristle below nearly as long as the proximal two segments combined; third three times as long as proximal two segments combined with the dorsal spine placed just before the middle, and with the distal half densely black pubescent giving the segment an appearance of slight enlargement.

Pronotum cinereous pollinose, bare above; collar with a row of yellowish bristles; mesonotum mostly bare of pollen and strongly, transversely coriaceous, clothed except on the median geminate vitta with strong, bristle-like, pale yellow hairs and with white bristles laterad, posteriorly, and bordering and bisecting the median vitta; median vitta parallel sided, pollinose anteriorly and bearing bristles posteriorly; each lateral stripe wide, covering the mesonotum posteriorly and falling short of the anterior calli; the coarse, ochreous, mesonotal pollen present as an anterior square on each side of the median stripe connected across the anterior end of median stripe and extending down the middle and along each side of the stripe to a variable, small extent; scutellum transversely rugose, marginally gray pollinose and with a few small, white hairs on the disc; pleuræ and metanotum cinereous pollinose, the former yellowish above.

Legs nearly bare, the bristles and hairs all white; tarsi and tips of tibiæ with moderately dense, appressed, silvery hairs; coxæ pollinose similar to

thoracic pleura; trochanters black, shining; femora reddish-yellow proximad, black on distal two-thirds of anterior pair, on distal fifth of middle pair, and on distal one-third to one-half of hind pair; tarsi black with the proximal part of the segments narrowly yellow on the anterior four pairs, broadly on the posterior pair.

Wings dark gray with a luteous tinge on proximal half; anal cell narrowly open or closed in the margin; fourth posterior cell rather strongly narrowed distal.

Abdominal tergum shining black, coarsely punctate except on caudal margins of the segments; clothed with minute hairs, yellowish dorsad, white and longer on lateral margins; segment on cinereous pollinose laterad and with lateral white bristles; two, three, and four each with a caudo-lateral, gray pollinose rectangle about twice as wide as long; genitalia white haired.

FEMALE.—Similar.

Holotype.—Male, Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard), in collection of the University of Minnesota.

Allotype.—Female, Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard), in collection of the University of Minnesota.

Paratypes.—Eight males, one female, Chilpancingo, Guerrero, Mexico (A. E. Pritchard).

This species is related to *vitripennis* which it resembles very closely, differing only in having the legs reddish-yellow instead of black with a little yellow, and in having the female subgenital plate broadly notched mesad on the distal third in contrast to a division of over half the plate in the other species. *T. aciculatus* was taken with *vitripennis* and *guerrensis* on the leaves of the shrubbery over the mountains near Chilpancingo.

Taracticus vitripennis (Bellardi)

1861. *Ceraturgus vitripennis* Bellardi, Sagio di Ditterol. Messic., ii: 60.

1901. *Taracticus vitripennis* Williston, Biolog. Centrali-Americana, Dipt., i: 313.

Black; legs largely black, the posterior tarsi distinctly annulate; mesonotum with strong hairs; abdomen with caudo-lateral, pollinose rectangles on segments two to four. Length, 8 to 10 mm.

MALE.—Head cinereous pollinose, rear of head thinly so, the occiput bare and shining black; face, however, ochreous pollinose;

mystax a row of oral bristles with hairs above on either side; fine occipito-orbitals, two ocellars, mystax, palpal hairs, and thin beard all white; first segment of antenna two and one-half times as long as broad, shining black, above coriaceous, thinly brown pollinose with pale microchaetae on distal half, below with white bristles the length of the segment; second two-thirds as long as first, brown pollinose, with pale microchaetae above at tip, the ventral bristle white, a little longer than the first segment; third three times as long as first two combined, brown pollinose, densely black pubescent on distal half, the dorsal spine placed at the middle of the segment.

Pronotum shining black; propleurae pale ochreous pollinose and white haired; collar with a row of pale yellow bristles; mesonotum mostly shining black, transversely coriaceous; the coarse, ochreous pollen extending in a thin line between the median dorsal vittae, and as two rectangles between the anterior calli and middorsal vittae; the two rectangles connected across the anterior end of these vittae and briefly extending posteriorly as a line between the middorsal and lateral vittae; covered with strong yellowish hairs and, posteriorly, white bristles, leaving only the parallel sided median vittae bare; scutellum with a few white hairs, shining black, roughly, transversely rugose, the posterior margin and metanotum densely cinereous pollinose; pleurae and coxae cinereous pollinose.

Legs shining black except narrow proximal part of hind femora, tips of all femora, proximal fourth of anterior four tibiae, proximal third of posterior tibiae, and proximal parts of tarsal segments yellowish; bristles and hairs all white, the tarsi and ends of tibiae with appressed, silvery hairs.

Wings gray, tinged with flavescence on proximal half; fourth posterior cell rather strongly narrowed distad.

Abdomen shining black, coarsely punctate, golden setulose; sides of segment one thinly white pilose and cinereous pollinose, the pollen dense and white behind the short row of predistal, pale yellowish bristles; two, three, and four each with a caudo-lateral, rectangular, densely white pollinose spot about two and one-half times as wide as long; lateral margins with rather thick, short, white hairs; genitalia black, white haired.

FEMALE.—Similar, the tarsi less annulate; ovipositor reddish or reddish-brown.

Records.—Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard), four males and four females. Described from Mexico by Bellardi as a *Ceraturgus*. Williston, with specimens from Chilpancingo, has correctly transferred the species to this genus on a basis of the description. The incrassate appearance of the antennæ is not unique with this species.

In *guerrerensis* and *nigripes*, the thoracic vestiture consists of short spines; in *aciculatus* and *vitripennis*, of long bristles; in *octopunctatus*, *paulus*, *similis*, *nigrimystaceus*, and *ruficaudus*, of fine hairs. The dorsal spine of the third antennal segment is before the middle of that segment in *vitripennis*, *aciculatus*, and *paulus*, beyond the middle in the other species.

Taracticus nigrimystaceus Williston

1901. *Taracticus nigrimystaceus* Williston, Biolog. Centrali-Americana, Dipt. i: 313.

Black; mystax largely black; legs black except narrowly at knees; mesonotum with long, slender hairs; abdomen with caudolateral, rectangular pollinose spots on all the segments. Length, 10 to 13 mm.

“Black. Antennæ black; third joint nearly three times the length of the first two together, with a small bristle on the upper margin near the distal third. Face and front covered with yellowish-white tomentum or dust; face distinctly convex on the lower part, projecting in profile, and clothed with long black hairs to near the middle, somewhat intermixed with white ones on the sides. Occiput white-dusted on the sides and clothed with white hair. Mesonotum covered with light brownish-yellow dust, leaving two median, narrowly separated, stripes and two rounded subcontiguous spots on each side dark brown; there are two bristles near the outer end of the suture and one on each post-alar callus; otherwise, the mesonotum is clothed with very sparse, long, slender hairs. Abdomen elongate, with the sides nearly parallel, the median segments not twice as long as broad; shining metallic black, punctulate, covered with short, sparse, black hairs, except on the smooth, narrow, hind margin of the segments; all the seg-

ments with a small, transverse, yellowish-white, opaque spot on each lateral hind margin. Legs black, the knees very narrowly reddish; bristles and the short pile of the inner side of the tibiae and tarsi yellow; underside of the hind femora with the usual bristles. Wings tinged with yellowish, slightly infuscated distally."

Known only from type male and female, Xucucmanatlan, Guerrero, Mexico.

***Taracticus guerrerensis* new species**

Black; legs largely black; mesonotum with small spine-like bristles; caudo-lateral, pollinose stripes on segments two to six, approximated dorsally. Length, 9 to 11 mm.

MALE.—Head cinereous pollinose, on the face dense and shining, nearly white; ocellar tubercle and vertex on either side of it bare, shining black; mystax white, confined to oral bristles and a few hairs above them on each side; occipito-orbital bristles small, white; two ocellar bristles, thin beard, and palpal hairs all white; antennae black, brown pollinose; first segment two and one-fourth times as long as broad, with microchaetæ above on distal half, the longer bristles on the ventral side rarely over one-half as long as the segment; second three-fourths as long as first, with microchaetæ at tip above, the ventral bristle not over the length of the first segment; third three times as long as first two combined, densely pubescent beyond the dorsal spine placed at two-thirds the length of the segment, the distal third not tapering and a little wider than proximal portion.

Prothorax with notum shining black, the collar with nearly white bristles; pleuræ cinereous pollinose, the anterior lobe with long white hairs; mesonotum mostly barren of pollen, strongly transverse coriaceous, clothed, except on front half of median vittae, with small, strong, spine-like bristles, the posterior half of the lateral margin with the bristles long and strong; median stripe wide, bisected by a line of pollen, and with a strong projection on either side at the level of the anterior calli which is nearly as wide as the stripe itself, abrupt in front and tapering behind; lateral stripes wide, covering most of the remainder of the thorax, constricted behind the anterior calli, but continued laterad over most of each callus; the pale pollen of the right side thus appearing as a question mark curving around the lateral projection of the mesonotal stripe—that of the left side reversed; scutellum with caudal margin ochreous pollinose and with a pair of very short, yellowish bristles, the disc without pollen, transversely rugose and with several short, white hairs on either side; mesopleuræ cinereous pollinose, ochreous tinged above; metanotum cinereous pollinose.

Legs black with knees yellowish, femora below often reddish, tibiae sometimes reddish, and hind metatarsi reddish proximal; vestiture sparse; bristles white, appressed hairs white, below on hind tarsi yellowish.

Wings light gray, the proximal half luteous tinged anteriorly and hyaline posteriorly.

Abdomen black, nearly bare, punctate, each puncture with a yellowish setula: white hairs on lateral margin moderately thick, the predistal bristles on sides of first four segments extending to the caudal margin of the segments; two or six each with a cinereous to ochreous, caudo-lateral stripe on the sides of each segment separated dorsad by about the width of the stripe, or a little more so on anterior and sixth segments; genitalia white haired.

FEMALE.—Similar, the face and front ochreous pollinose; the abdominal markings more extensive, being usually connected on four and five to form a pollinose caudal margin for these segments.

Holotype.—Male, Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard), in the collection of the University of Minnesota.

Allotype.—Female, Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard), in the collection of the University of Minnesota.

Paratypes.—Ten males, four females, Chilpancingo, Guerrero, Mexico, June 28, 1935 (A. E. Pritchard).

T. guerrerensis is related to *nigripes*, readily separated by having the abdominal markings approximated or connected dorsally, and by having the dorsal spine of the third antennal segment before the middle of that segment.

Taracticus nigripes Williston

1901. *Taracticus nigripes* Williston, Biolog. Centrali-Americana, Dipt. i: 313.

Black; legs black except narrowly at knees; mesonotum with small, spine-like bristles; caudo-lateral, pollinose triangles on abdominal segments two to six. Length, 8 to 11 mm.

Face and front white to ochreous pollinose; rear of head cinereous pollinose, the upper orbits dark brown pollinose; ocellar tubercle bare, shining black; occipito-orbitals and ocellars brownish yellow; antennal bristles brown; mystax light yellowish with several mixed rows of bristles in the middle and white hairs and a bristle above on either side; first antennal segment a little less than twice as long as wide, bare, with brown microchaetae above and numerous bristles below about as long as first two segments combined; second three-fourths as long as first, the long bristles below about as long as proximal two segments together, tapering beyond the dorsal spine placed at three-fourths the length of the segment.

Prothorax ochreous pollinose, the posterior notal lobe bare in the middle; collar with rather long bristles; mesonotum ochreous pollinose, the bisected mid-dorsal and wide lateral stripes bare, transversely striate; covered with small spine-like bristles except on the vittæ, and with several lateral bristles; disc of scutellum bare, posterior margin and metanotum ochreous pollinose; pleuræ ochreous pollinose above, cinereous below.

Legs black, the knees narrowly yellowish; vestiture yellowish, the bristles paler.

Wings nearly hyaline, very lightly washed distad and with yellow proximad; fourth posterior cell very little narrowed.

Abdomen finely punctate with golden setæ; first segment cinereous pollinose laterally; second to sixth with caudo-lateral, cinereous triangles tapering inward with a base about twice as wide as the altitude; white hairs on lateral margin sparse; predistal bristles on sides of only first two segments reaching the posterior margin of the segment; genitalia white haired.

Known only from the type material, Xucumanatlan, Omiltene, and Chilpancingo, Guerrero, Mexico. The specimens Dr. Williston mention from Chilpancingo as having the wings quite dark anteriorly are probably the species described as *guerrerensis*.

Taracticus ruficaudus Curran

1930. *Taracticus ruficaudus* Curran, Amer. Mus. Nov., 425: 4.

Black; legs and caudal two abdominal segments reddish; caudo-lateral, pollinose triangles on abdominal segments two to six. Length, 11.5 mm.

"Female.—Face and lower half of occiput pale yellow, the front and upper half of the occiput brownish-yellow pollinose. Hairs and bristles pale yellowish or whitish. Antennæ black, the apical two segments reddish-brown pollinose; third segment very long, the spine situated a little beyond the apical third of the upper surface.

"Thorax brownish-ochreous pollinose, the pleura somewhat paler; pile and bristles yellowish. Mesonotum with a pair of narrow, very obscure darker vittæ and a spot on either side posteriorly. Scutellum shining brown, its border gray pollinose, its disc strongly roughened.

“Legs reddish; coxæ black, grayish-white pollinose and pilose; apices of tarsal segments brownish. Hair and bristles yellowish.

“Wings luteous on more than the basal half except posteriorly, grayish apically. Squamæ and halteres reddish yellow.

Abdomen shining black, with moderately fine punctures; hair very short and yellowish, on the sides and venter longer and whitish. Second to sixth segment with a transversely triangular yellowish-white, pollinose spot, the sides of the first segment broadly covered with similar pollen. Apical third of the sixth and the whole of the following segments reddish. Venter gray pollinose.

“Holotype.—Female, Mud Springs, Santa Catalina Mts., Arizona, July 17–20, 1916 (F. E. Lutz).”

Taracticus similis Williston

1901. *Taracticus similis* Williston, Biolog. Centrali-Americana, Dipt. i: 312.

Black; legs largely red; mesonotum with inconspicuous hairs; caudo-lateral, pollinose triangles on abdominal segments two to five. Length, 10 to 12 mm.

Face ochreous pollinose, the front grayish, yellow tinged; rear of head cinereous pollinose, the occiput bare, shining black; occipito-orbital bristles and two ocellars brownish-yellow; antennal bristles brown; mystax light yellowish, composed of oral bristles, thicker in the middle, and hairs on either side; first antennal segment twice as long as wide, with brown microchaetæ above and bristles below attaining the length of the segment; second three-fourths as long as first, the bristle below a little longer than the first segment; third three times as long as first two combined with the dorsal spine at two-thirds its length, the pubescence very short, leaving the distal portion as small as the proximal portion of the segment.

Prothorax ochreous pollinose, the notum brownish pollinose; collar with pale hairs and fine bristles; mesonotum ochreous pollinose, the geminate middorsal and wide lateral stripe on either side which falls short of the anterior callus, bare, black, finely transversely striated, broadly bordered with brown pollen; clothed with small, inconspicuous, yellowish hairs and a few yellowish

bristles laterally; scutellum with disc bare, with transverse impressions, posteriorly margined with ochreous pollen; pleuræ and metanotum ochreous pollinose; coxæ with cinereous pollen.

Legs light reddish, fuscous at the tips of tarsal segments and with a variable stripe above on femora and anterior tibiæ; vestiture entirely yellowish.

Wings lightly washed with brown, the proximal half tinged with yellow and more nearly hyaline.

Abdomen finely punctate, the punctæ with golden setæ; first segment ochreous pollinose laterad; second to fifth with caudo-lateral, ochreous pollinose triangles tapering inwardly, narrowly separated dorsad on two to four, widely separated on five.

Known only from type specimens from Omilteme and Sierra de las Aguas Escondidas, Guerrero, Mexico.

Taracticus octopunctatus (Say)

1823. *Dioctria octopunctata* Say, Jour. Acad. Nat. Sci. Philad., iii: 49.

1872. *Taracticus octopunctatus* Loew, Berl. Ent. Zeitschr., xvi: 64.

1904. *Dioctrodes flavipes* Coquillett, Proc. Ent. Soc. Wash., vi: 181.

1907. *Dioctria rufipes* Jones, Trans. Ent. Soc. Amer., xxxiii: 276.

Black; legs yellowish; mesonotum with small yellowish hairs; abdomen with pruinose, caudo-lateral rectangles on segments one to five. Length, 6 to 9 mm.

Pollen of face and frons ochreous; that of rear of head cinereous, occiput very broadly, ocellar tubercle, and most of frons bare, shining black; occipito-orbitals weak, white; mystax white, confined to a row of oral bristles, a few small hairs, and a bristle above on either side; first antennal segment two and one-half times as long as wide, with several yellowish bristles below not over half the length of the segment; second two-thirds as long as first, with a bristle below as long as the segment; third two and one-half times as long as first two combined, tapering distad, with the dorsal spine placed at three-fifths its length.

Prothorax ochreous pollinose with a large bare spot on the pleura; collar with a row of small bristles; mesonotum dark

ochreous pollinose with a geminate middorsal stripe, broadly pollinose at both ends, and two lateral stripes bare and shallowly cross striate; bearing small, yellow hairs, except on the lateral stripe behind the suture, and a few acrosticals; scutellum transversely rugose, with a median stripe and posterior margin cinereous pollinose, the disc with several small yellowish hairs, the posterior margin with a pair of small, distal bristles; pleuræ ochreous pollinose above, cinereous below.

Legs yellowish, distal fifth of hind tibiæ and tips of tarsal segments fuscous; vestiture yellowish.

Wings washed with light brown, tinged with luteous on costal side of proximal half.

Abdomen finely punctate and minutely golden setulose, black, shining, the caudal segment or two, especially in the male, often reddish; side of proximal half of first segment ochreous pollinose; caudo-lateral, cinereous pollinose rectangles on one to five about twice as wide as long.

Known from New Hampshire to Florida west to Texas, Nebraska, and Minnesota. This species is found commonly on the leaves of vegetation in wooded areas.

***Taracticus paulus* new species**

Black; legs yellowish; mesonotum with small, pale hairs; abdomen with caudo-lateral, pollinose rectangles on segments two to five. Length, 7 mm.

FEMALE.—Head pale ochreous pollinose, nearly cinereous behind, the ocellar tubercle for the most part, and a small spot on either side on vertex, bare; vestiture white; mystax a row of stout oral bristles with a smaller bristle and a few small hairs above on either side; first antennal segment two and one-half times as long as broad with the lower bristle below as long as the segment; second two-thirds as long as first with an equally long bristle below; third nearly three and one-half times as long as first two combined, with very fine pubescence, gradually tapering proximad, pointed distad, with the dorsal spine placed just before the middle of the segment.

Pronotum cinereous pollinose with only a small spot at the suture on either side bare; mesonotum pale ochreous pollinose, cinereous on the sides, with a geminate middorsal, a wider lateral stripe divided at the transverse suture, and a spot on the anterior callus bare, black, very minutely, transversely striate; clothed, except on lateral stripes, with small, nearly white hairs and several, especially small middorsals posteriorly, the lateral bristles white; scutellum with a pair of small marginal bristles, the disc bare, transversely rugose, the margin all the way around and a middorsal stripe pale ochreous pollinose; metanotum broadly bare and shining under scutellum.

Legs pale yellowish, the tips of tibiae and tarsal segments fuscous, especially broad on posterior pair; bristles and hairs pale yellowish.

Wings lightly washed with gray; fourth posterior cell narrowed distad; anal cell nearly closed.

Abdomen black, the sides and caudal two segments reddish, covered with small yellowish hairs set in fine punctæ; side of first segment and caudolateral rectangles on two to five cinereous pollinose, the rectangles three times as broad as long, pointed inwardly, extending well on to the dorsum.

Holotype.—Female, Sacramento, California, July 7, 1936 (A. E. Pritchard), in the collection of the University of Minnesota.

This species is related to *octopunctatus*, differing in having the third antennal segment over three times as long as first two together with the dorsal spine placed before the middle of the segment, in having the occiput and prothorax pollinose, and in having more extensive abdominal markings. The specimen was taken on bean leaves in a cultivated field on the Sacramento River.



Pritchard, A. Earl. 1938. "Revision of the Robberfly Genus *Taracticus* Loew with Descriptions of Three New Species (Diptera; Asilidæ)." *Journal of the New York Entomological Society* 46, 179–190.

View This Item Online: <https://www.biodiversitylibrary.org/item/206053>

Permalink: <https://www.biodiversitylibrary.org/partpdf/179266>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder

Rights Holder: New York Entomological Society

License: <http://creativecommons.org/licenses/by-nc/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.