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RECORDS AND DESCRIPTIONS OF POLYCTENIDAE (Hemiptera)[1]

By T. C. Maa[2]

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The following lines represent a report on a collection of Polyctenids very kindly loaned by Professor R. L. Usinger of the University of California. It contains 5 species belonging to 2 genera from the Oriental, Ethiopian and Neotropic regions. Besides distributional records and descriptive notes on the adult and nymphal stages, a key to species of of the genus *Eoctenes* Kirkaldy, adults (revised from Ferris and Usinger, 1939) and third instar nymphs are also given.

The terminology, literature cited, and methods employed in this report are the same as those in my previous paper on Malayan Polyctenids.[3]

I wish to acknowledge my indebtedness to Professor Usinger for the privilege of studying this very interesting material and of retaining a few duplicates, and to Mrs. S. Quate and Mr. K. S. Lin for the preparation of the accompanying figures.

Genus **Hesperoctenes** Kirkaldy, 1906

Hesperoctenes fumarius (Westwood), 1874.

Material Examined: VIRGIN IS.: 1 ♂, 1 ♀, St. Crois, *ex Molossus major* Kerr, H. A. Beatty leg. (#1366). BRITISH HONDURAS: 1 ♀, Belize, 10–IX–1939, *ex Mol. rufus sinaloae* J. A. Allen, I. T. Sanderson leg. GUATEMALA: 1 ♀, Finca San Victor, Escuintla, *ex* (?) *Mol. bondae* J. A. Allen, R. D. Mitchell leg. COLOMBIA: 1 ♀, "Colombia" (no further detail), von Sneidern leg. VENEZUELA: 2 ♀, Los Caobos, D. F., Caracas, host unknown, E. Correa leg.; 1 ♂, 1 ♀ Maracaibo, 29–III–1911, *ex Mol. obscurus* E. Geoffr.-St.-Hilaire, W. H. Osgood leg. PERU: 1 ♀, Dept. Cuzco, Huajyumbe, 16–IV–1950, *ex Mol. rufus*, C. Kalinowski leg.; 1 ♂, same locality and collector, but 13–IX–1950,

1. Partial results of the project "South Pacific insects of public health importance", supported at Bishop Museum by the National Institutes of Health, Bethesda, Md., U. S. A.
2. Maa Tsing-Chao.
3. "Pacific Insects" **1** (4): 415–422. 1959.

ex Phyllostomus hastatus Pallas. BRAZIL: 1 ♀, Rio Negros, host unknown, S. C. Harriot leg.

Remarks: While the length-breadth ratio of the head stands as a convenient character to distinguish this and other *Hesperoctenes* species, its accurate measurement is by no means always possible, since the labrum, and even the slightly convex posterior end of head, may be more or less distorted by the KOH treatment. As shown in the following table, a certain degree of variability of this character has to be allowed.

Table 1. Relative Measurements of *Hesperoctenes fumarius*.

	♂ Adult (3 ex.)		♀ Adult (9 ex.)	
	Range	Average	Range	Average
Head, length	60–77	65.7	71–93	75.9
do., breadth	76–84	78.7	73–92	84.8
do., breadth/length	1.09–1.27	1.21	1.00–1.20	1.12
Pronotum, length	56–66	60.7	58–68	62.1
do., breadth	90–100	95.0	90–106	100.2
Mesonotum, length	55–58	57.0	58–66	60.2
do., breadth	104–110	106.3	106–123	115.3

A comparative study on details of this widely distributed species based upon the material at hand failed to reveal any evidence of geographical variation. On the other hand, it indicated the possibility that both *H. impressus* Horváth 1910 and *H. tarsalis* Horváth 1911 are synonymous with *fumarius*.

The number of setae on metapleura beneath in the 12 specimens examined varies from 6 to 11, mostly from 6 to 8, and is 7.04 in average.

Hesperoctenes sp.

Adult ♀: Very closely related to *H. angustatus* Ferris & Usinger 1939. Head including labrum about 93 : 82 as long along median line as broad at posterior end. Labrum lunate, with anterior and posterior margins laterally strongly convergent to each other. Clypeus rather evenly covered with only about 19 setae, which do not form 2 setal groups as in typical *angustatus* and the minimum interspaces of which are practically all greater than the setal length. Denticles of mesal halves of genal ctenidia very long, apically reaching to the oblique setal row at a point of basal 4th of the sclerite. Relative lengths of antennal segments as 15 : 34 : 32 : 31. Pronotum about 71 : 108 as long as broad. Prosternum about 44 : 37 as long as broad, anteriorly with only 4 minor setae at the middle, posteriorly at each side with 8–9 such setae which are widely apart from the anterior setal group (*i. e.*, the transversely median area extensively naked). Body (in balsam) about 3.16 mm long.

Material Examined: COLOMBIA: 1 ♀, Santander, San Gil, 28-XII-1951, *ex* a Molossid bat, P. Hershkovitz leg.

Genus **Eoctenes** Kirkaldy, 1906

Key to the Species, Adults

1. Intercoxal process of prosternum obtuse, with apex slightly to distinctly emargi-

nate; rostrum consisting of 3 visible segments; hypostomal region with 2 longitudinal series of rather long and robust setae, lacking transverse series of setae on posterior margin; genal ctenidium far from reaching postero-lateral angle of head ..... **nycteridis**

Intercoxal process of prosternum subacute; rostrum with 4 visible segments; hypostomal region with, in addition to 2 longitudinal series of very short and fine setae, 1 or 2 rows of longer and robuster setae on posterior margin; genal ctenidium almost reaching postero-lateral angle of head 2

2. Posterior margins of abdominal tergites 7 and 8 each with only 1 or 2 long, sublateral setae which are about as long as the tergite; mesonotum nearly 1/2 as long as broad; denticles of anterior ctenidium on antennal segment 1 not regularly arranged, denticle 3 lying more posteriorly than 2 or 4 ..... **intermedius**

Posterior margins of abdominal tergites 6–8 or 7–8 each with a complete row of long setae; mesonotum nearly as long as broad; denticles of anterior ctenidium on antennal segment 1 rather regularly arranged, denticle 3 nearly in line with 2 and 4 3

3. Posterior margins of abdominal tergites 6–8 (♀) or 7–8 (♂) each with a row of very long, curved setae which are about as long as the tergite; pronotum with 3–4 very long setae near antero-lateral corner; anterior margin of labrum evenly rounded ..... **spasmae**

Posterior margins of abdominal tergites 7–8 (♀) each with a row of moderately long, straight setae which are about 1/2 as long as the tergite; pronotum with 3–4 moderately long setae near antero-lateral corner; anterior margin of labrum subangulate at side ..... **sinae**

Key to the Species, Third Instar Nymph

(Not including *Eo. sinae* n. sp.)

1. Head including labrum distinctly shorter along median line than broad at posterior end; gena very short, with a single minute seta anteriorly to the ctenidium; mesonotum posteriorly with a well developed ctenidium, laterally unevenly curved, forming a distinct "humeral" area before middle; tibiae 2 and 3 lacking distinct pseudo-segments; metanotum entirely concealed and lacking the 2 very long setae at each side; abdominal tergites each posteriorly with 2–3 rows of setae; antennal ctenidia and pronotal setae as in *spasmae* ..... **nycteridis**

Head distinctly longer than broad; gena long, with 2–5 very stiff setae anteriorly to the ctenidium; mesonotum posteriorly lacking ctenidium and laterally very evenly curved, never forming a distinct "humeral" area; tibiae 2 and 3 with well defined pseudo-segments; abdominal tergites except their extreme lateral areas each with only a single row of setae 2

2. Anterior ctenidium of antennal segment 1 evenly arranged in an arcuate line; apical ctenidium of the same being composed of 4 denticles; setae on lateral pronotal areas markedly finer than those along the posterior pronotal margin; lab-

rum ventrally on lateral margin with 4 setigerous tubercles; hypostomal region posteriorly with about 15 setae arranged in 2–3 rows; mesonotum slightly shorter than broad (61 : 67), the setae on the posterior margin sparse and irregularly arranged, not forming a setal row as on pronotum; metanotum well exposed, with 2 very long setae at each postero-lateral corner and with a row of moderately long setae along the posterior margin; tibia 3 with 8 pseudo-segments ..... **spasmae**

Anterior ctenidium of antennal segment 1 zigzagged (as in the adult), not arranged in an arcuate line; apical ctenidium of the same composed of 5 denticles; setae on lateral pronotal areas markedly stouter than those along posterior pro notal margin; labrum ventrally with 5 setigerous tubercles at each side; hypostomal region posteriorly with only about 6 setae which form a single row; mesonotum almost 2/3 as long as broad (44 : 62), and as pronotum, with a regular row of setae on the posterior margin; metanotum entirely concealed, except its very long setae at sides; tibia 3 with only 6 pseudo-segments..... **intermedius**

Eoctenes spasmae (Waterhouse), 1879

♂ Adult: Apical membranous lobe of tibia 1 conical, only about 1/3 as long as tarsus 1.

Third Instar Nymph: Genal ctenidia widely separated from each other at middle, and less extensive at their posterior ends than in *Eo. intermedius*. Genae, in addition to the short, very stout setae at antero-lateral corners, with 4–5 fine setae near the disc at each side, the hindmost of which being 4–5 times longer than the others. Tibia 2 bearing similar setae as in *Eo. intermedius*.

Material Examined: THAILAND: 1 ♂, 3 ♀, Nakon Ratchasima, Sikiu, Pak Chong, Bundaimar, 23–VIII–52, *ex Nycteris javanica* subsp., R. E. Elbel leg.; 2♀, same locality and collector, but 11–II–53, *ex* "bat"; 1 ♂, 3 ♀, Wang Pratart Farm, Me Ang River, nr. Kam Peng Pet, 7–VII–49, host unknown, C. C. Sanborn leg. MALAYA: 1 ♀, Pahang Rd., 25.8 km N. of Kuala Lumpur, Selangor, 3–IX–58, *ex* "bat", R. Traub & B. Insol leg. NORTH BORNEO: 1 ♂, 1 ♀, Kiau, 1200 m, Mt. Kinabalu, 28–VIII–53, *ex* "large-eared bat", R. Traub leg.; 2 ♀, 1 nymph (1st instar), Trus Madi, Pampang, Ulu Kaingaran, 28–VII–53, *ex* "bat", British Colonial Office Med. Res. Unit leg. PHILIPPINES: 1 ♀, Bucay, Abra Prov., 24–I, *ex Megaderma spasma*, S. Lawrence leg.

Remarks: This widely distributed species is heretofore unrecorded from Thailand and the Philippines. The easterly extension of its distribution beyond the Wallace Line may be accounted for by the coincidence with the range of its preferred host, *Megaderma spasma* Linn. 1758. It is expected to be found in Celebes, Togian Island and the Sula Islands since *M. spasma celebensis* Shamel 1940 occurs there. The so-called "large eared bat" of North Borneo most probably refers to the same host-species. The record of *Nycteris* as its host in Thailand is noteworthy, although *Eo. nycteridis* Horv. of Africa is known solely from this genus.

The abdominal sternite 1 of the family is stated by Ferris and Usinger (1912 : 5) as "seems definitely to be lacking". By comparing with the various developmental stages of this species, however, this very sternite is clearly recognizable. In the 1st instar, it is line-

ar, about 1/5 as long as broad, bearing 4 short, minute setae arranged in a single row and is much more strongly sclerotized than its surrounding membrane and even the other sternites. In the 2nd instar, the both ends are slightly curved caudad and the posterior margin is less well-defined than in the 1st instar. In the 3rd instar and the adult, it is entirely amalgamated with the sternite 2 but is still recognizable by its comparatively heavier sclerotization and by the presence of its setae which are markedly finer, shorter and closer to one another and are situated on the anterior median lobe of the amalgamated sternite.

As the relative lengths of the denticles of the occipital, pronotal and mesonotal ctenidia are concerned, *Eo. spasmae* is far more variable than its congeners. For the 10 ♀ measured, they range from 11–15, 11–13 and 12–17 units respectively, and their average ratio is 13.5 : 12.1 : 15.4 The pronotal denticles are always shorter than the mesonotal ones, but may be as long as (in 3 ♀) and occasionally longer than (in 1 ♀) the occipital. On the other hand, the mesonotal denticles are rarely (in 2 ♀) shorter than the occipital.

In *Eo. intermedius* (5 ♀ measured), the same range from 9–11 (average 10.0), 10–11 (10.8) and 11–12 (11.8) units respectively. The pronotal denticles are either as long as or slightly longer than the occipital, and always slightly shorter than the mesonotal.

In *Eo. nycteridis* (4 ♀ from Asmara measured), the pronotal denticles (all 10 units) are always shorter than the occipital (12–14 units, average 12.5) and always markedly shorter than the mesonotal (15–16 units, average 15.5). These are also true for the unique ♀ from Niambasha (*vide infra*).

Eoctenes sinae Maa, n. sp. Fig. 1.

♀ Adult: Very closely related to *Eo. spasmae* (Waterh.), from which it can be differentiated by the following characters:

Eo. sinae	*Eo. spasmae*
Size larger, 5.3 mm long (in balsam).	Size smaller, 3.65–4.25 mm long.
Labrum shorter, broader, anteriorly subangulate at side, length along median line distinctly greater than that at side, breadth at posterior end distinctly greater than length of antenna.	Labrum longer, narrower, anteriorly evenly rounded, length along median line subequal to that at side, breadth at posterior end less than length of antenna.
Antennal segment 3 distinctly longer than 4.	Antennal segments 3 and 4 subequal in length.
Postero-lateral angle of head scarcely produced.	Postero-lateral angle of head strongly produced latero-caudad.
Hypostomal region with numerous fine setae along submedian line.	Hypostomal region with a few fine setae along submedian line.
Fore coxa with only 1–2 stout and 2–4 fine setae on antero-interior margin in ventral view.	Fore coxa with about 4 stout and 2–3 fine setae on antero-interior margin.
Pronotum with 3–4 moderately long setae near antero-lateral corner.	Pronotum with 3–4 very long setae near antero-lateral corner.

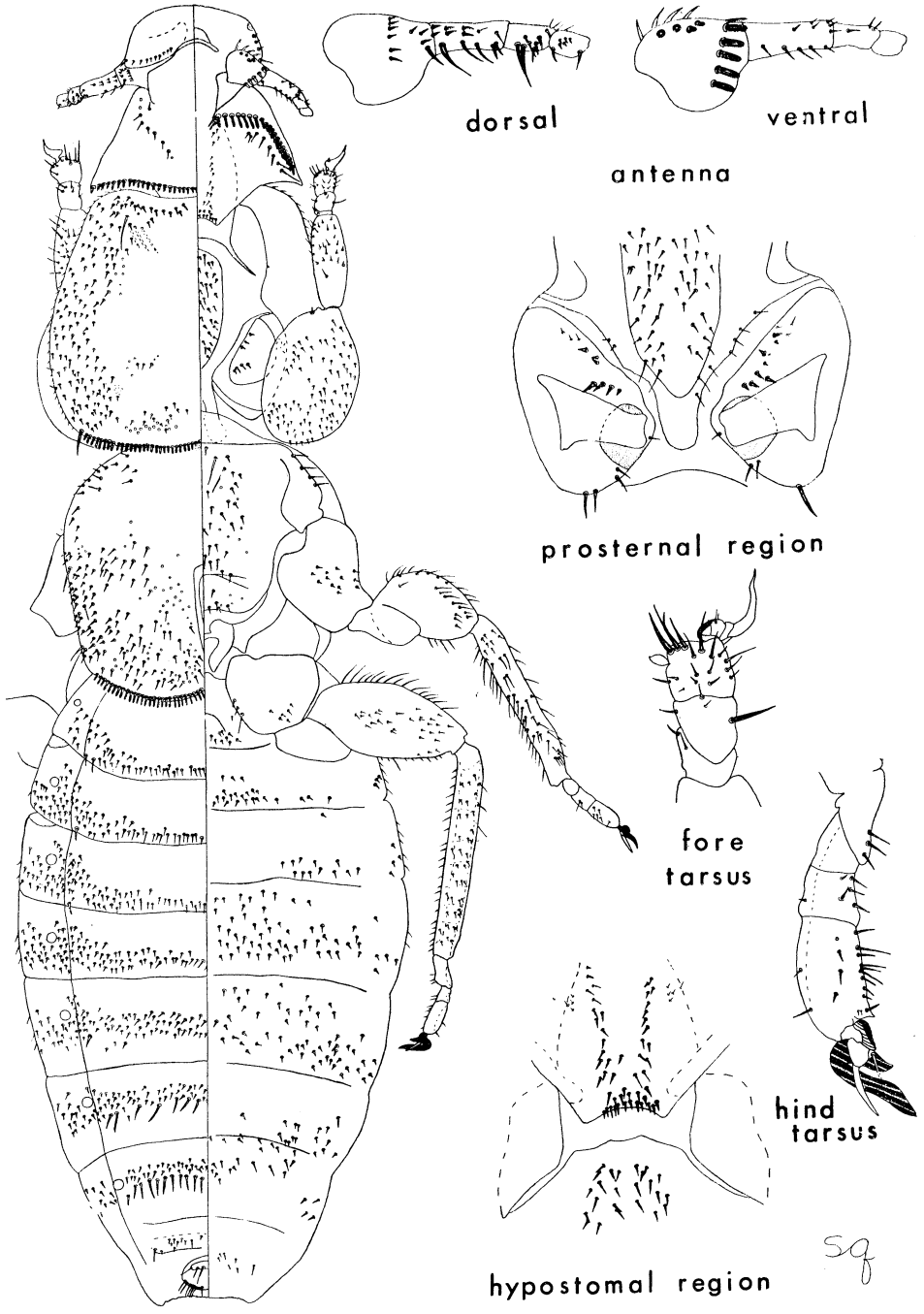

Fig. 1. *Eoctenes sinae* Maa, n. sp., female. (Whole insects: Left side, dorsal; right side, ventral.)

Eo. sinae	*Eo. spasmae*
Mesonotum shorter, broader.	Mesonotum longer, narrower.
Mid and hind legs shorter, robuster.	Mid and hind legs longer, slenderer.
Posterior margins of abdominal tergites 7 and 8 with a row of moderately long and straight setae which are about 1/2 as long as the tergite and only 2 × as long as ordinary short slender setae on same tergite.	Posterior margins of abdominal tergites 6, 7 and 8 with a row of very long and curved setae which are practically as long as the tergite and about 4–5 times as long as the ordinary short setae.
Abdominal sternites with fewer setae.	Abdominal sternites with more numerous setae.

Holotype, ♀ (California Academy of Sciences, San Francisco), Tai-Au-Shang (mislabeled as Tai Au Hong), SE Kiangsi Prov., S. China, 6-VII-'36, *ex* bat #995, J. L. Gressitt.

Eoctenes intermedius (Speiser), 1904 Fig. 2, A.

♂ Adult: Apical membranous lobe of tibia 1 subcylindrical, about 1/2 as long as tarsus 1.

Table 2. Relative Measurements of *Eoctenes intermedius* and *Eo. nycteridis.*

	Eo. intermedius ♂ (2 ex.)		*Eo. intermedius* ♀ (10 ex.)		*Eo. nycteridis* ♀ (5 ex.)	
	Range	Average	Range	Average	Range	Average
Head, length	40–51	45.5	47–60	53.1	61–70	64.0
Pronotum, length	70–72	71.0	69–75	72.6	82–89	83.4
Mesonotum, length	46–50	48.0	47–54	52.9	79–83	81.0
Tibia 2, length	42	42.0	53–56	54.6	67–71	69.2
Tibia 3, length	52–62	57.0	71–73	72.0	75–87	82.8
Head, breadth	43–44	43.5	48–62	53.3	78–86	82.0
Pronotum, breadth	73–74	73.5	76–83	79.9	110–121	112.8
Mesonotum, breadth	71–72	71.5	72–86	79.9	110–117	113.0
Abdomen, breadth	64–65	64.5	80–101	92.0	139–174	156.4

Third Instar Nymph: Head including labrum distinctly longer along median line than broad at posterior end (69 : 56). Labrum very long and narrow; of the 5 ventro-marginal setigerous tubercles, the 1st (foremost) one small and only partially visible in ventral aspect, the 3rd lying equidistant from the 2nd and 4th, and a little larger than the 5th; the postero-lateral angle ventrally with a long, stiff seta. Antennal ctenidia as described in the foregoing key; relative lengths of antennal segments 2 to 4 about 12½ : 5 : 4½; segment 3 distinctly longer than broad (5 : 3). Clypeus long. Gena with 4–5 short, very stout setae anteriorly to genal ctenidium and with 3 long, also very stout setae at area mesad to the same ctenidium. Genal ctenidia narrowly separated from each other at

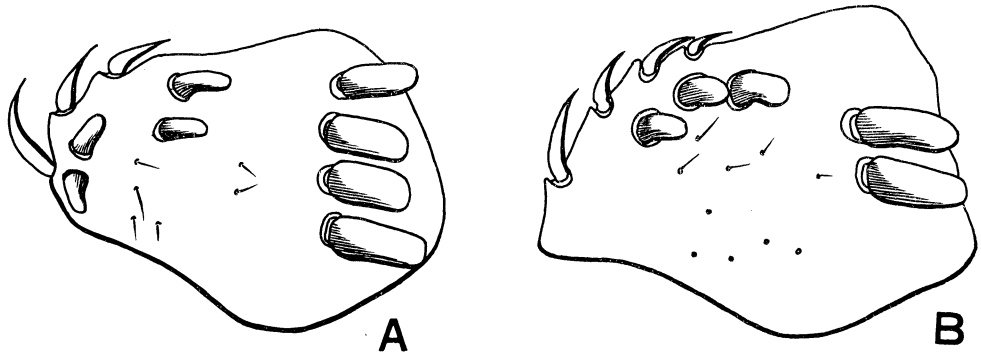

Fig. 2. Antennal segment 1, left-hand, ventral aspect, of: A, *Eoctenes intermedius*, 3rd instar nymph; B, *Eoctenes nycteridis*, 2nd instar nymph.

middle, extending posteriorly very closely to occipital corners, and each composed of 17–18 denticles. Hypostomal region with 2 columns of very short, minute setae and at posterior margin with a row of longer and stouter setae. Pronotum shorter than broad (65 : 70), broadest behind middle; the setae on lateral areas being as stout as those forming an oblique line on dorsum of head, distinctly stouter than those along posterior pronotal margin. Prosternum narrow, pointed posteriorly and with about 26 scattered setae of varied lengths. Coxa 1 as in *Eo. spasmae*, but with more short setae at basal area. Tibia 1 apically with a ventral (*i. e.*, in morphological sense) subcylindrical, membranous lobe (contractible ?) which is about 1/3 as long as the corresponding tarsus. Tarsus 1 composed of 2 very weakly defined segments, the segment 1 much shorter than broad; the outer claw similar in length and shape to the inner. Mesonotum about 44 : 62 as long as broad, broadest before middle, with rather stout setae on lateral areas, and with setae along posterior margin, as in pronotum, forming a rather regular row; the lateral pronotal margin very evenly curved, thus never forming a distinct "humeral" area as in *Eo. nycteridis*. Mesosternum sparsely but rather evenly setose. Tibia 2 about 43 : 52 as long as tibia 3, composed of 5 pseudo-segments, and with relatively sparse setae of 2 different lengths, the longer ones being slightly shorter than the tibial diameter. Metanotum entirely concealed, except its 2 very long setae at each side. Tibia 3 composed of 6 pseudo-segments. Tarsus 3, as in tarsus 2, weakly 3-segmented. Abdominal tergites each with a single row of setae; sternites also with a single row at middle. Body (in balsam) about 2.31 mm long.

Material Examined: THAILAND: 1 ♀, Nakhon Sawan, Takli Takli, Kak Sak Mts., 4–II–53, *ex* a mixture of *Rhinolophus* and *Taphozous* bats, R. E. Elbel leg. MALAYA: 2 ♀, Pulau Anasa, VI–50, *ex* "bat", British Scrub Typhus Res. Unit leg.; 1 ♀, Batu Caves, Selangor, 28–III–48, *ex* "bat", R. Traub & C. B. Philip leg.; 1, ♂ Pulau Tikus, nr. Penang, 8–IX–60, *ex T. melanopogon*, H. T. Pagden & B. L. Lim leg. EGYPT: 1 ♀, Cairo, 15–V–51, *ex Rousettus aegyptiacus*, H. Hoogstraal leg.; 2 ♀, nr. Luxor, XI–38–IV–39, *ex Taphozous perforatus*, H. Nelson leg.; 2 ♀ Abu Rawash, Giza Prov., 19–XII–52, *ex T. perforatus*, H. Hoogstraal leg.; 1 nymph (3rd instar), same host and collector but Imbana, Abu Rawash, 29–III–54; 2 ♂, 1 ♀, cave at N. base of Mt. Abu Rawash, Cairo Area, 27–XII–46, *ex T. perforatus*, P. Quentin leg.

Remarks: This species is heretofore unknown to Thailand, nor from bats of the genera *Rousettus* and *Rhinolophus*. Whether these 2 genera serve as its true hosts needs confirmation.

Eoctenes nycteridis (Horváth), 1910 Fig. 2, B.

♀ Adult: The following points may be supplementary to Jordan's (1912: 575–576, pl. 13, figs. 5–7) and Ferris and Usinger's (1939: 14, fig. 8) works.

Head including labrum much shorter along median line than broad at posterior end. Denticles of anterior ctenidium on antennal segment 1 each about 2 × as long as broad, and the distal one almost 3× so and only slightly shorter than the denticle of the apical ctenidium. Rostral segment 3 sometimes slightly shorter than 1 and 2 together. Pronotum with punctures slightly finer than those on mesonotum, and postero-laterally usually with only 1, not 2, very long seta which is usually distinctly longer than those on lateral mesonotal margins. Prosternum short, broad, rather blunt apically, with setae of similar length and stoutness; the area along median line relatively sparsely setose. Mesonotum broadest near middle; the posterior margin weakly curved. Metasternum about 2/3 as long as broad. Abdominal apex very broadly rounded. Body (in balsam) about 3.45–3.78 mm long, average 3.66 mm. ♂ adult unknown to me.

Second Instar Nymph: Head distinctly shorter than broad (65 : 75). Labrum very short and broad, the 1st ventro-marginal setigerous tubercle small, transverse, the 3 others all of similar size and shape, the 3rd being more distant from the hindmost than from the 2nd; the postero-lateral angle ventrally with a long, rather stout seta. Antennal segment 1 ventrally with 3 and 2 denticles for anterior and apical ctenidia respectively; the segment 3 scarcely longer than broad (6 : 5), apically broadened; relative lengths of segments 2 to 4 about 14 : 6 : 9. Clypeus short. Gena very short, with only 1 single minute seta anteriorly to the ctenidium, but none elsewhere. Genal ctenidia rather widely separated from each other at middle, and each composed of about 18 denticles, the hindmost of which lying slightly behind the midpoint between labrum and occiput. Rostral segment 3 longer than the first 2 together. Hypostomal region with a column of 4–5 setae at each side but lacking the posterior setal row. Pronotum shorter than broad (63 : 92), broadest near middle, with about 30 setae arranged along the posterior margin and with a very long seta at each posterior corner; the posterior margin very weakly sinuate at middle. Prosternum wedge-shaped, with about 12 scattered setae; the intercoxal process apically emarginated. Coxa 1 with about 4–5 stout and a few fine setae near disc and base respectively. Tibia 1 as in *Eo. spasmae*, apically normal, lacking the membranous lobe. Tarsus 1 virtually not segmented; the outer claw slightly longer than the inner. Mesonotum about 44 : 75 as long as broad, broadest before middle, with setae of varied lengths, the longer ones being mostly situated near lateral margins; the lateral margins much more strongly curved near anterior ends thus forming distinct "humeral" areas; the ctenidium slightly interrupted at middle, with about 15 denticles at each side. Mesosternum sparsely, longly, finely and rather evenly setose. Metanotum exposed at middle, with a single row of about 8 setae of similar length. Tibia 2 about 42 : 48 as long as tibia 3, heavily armed with long, stout setae which are mostly more or less longer than the tibial diameter; the pseudo-segments not definable. Tibia 3 with 4–5 very poorly defined pseudo-segments. Tarsi 2 and 3 and their claws similar to those of the preceeding species. Abdomen about 96 : 92 as broad as pronotum; tergites except their lateral areas each with a single row of

setae; sternites 7 and 8 also each with a single row, the other sternites with some very scattered setae. Body (in balsam) about 2.60 mm long.

Material Examined: ERITREA: 2 ♀, Sembel, 2500 m, Asmara, 29–VI–51, host unknown, H. Hoogstraal leg.; 2 ♀, 9.7 km W. of Asmara, 23–II–51, *ex* "bat", Hoogstraal leg.; 1 ♀, 1 nymph (2nd instar), Niambasha, L 4631, LR 4364, 30–I–59.

Remarks: The unique ♀ from Niambasha differs from the 4 ♀ from Asmara in the following points: (a) The genal ctenidia are very widely separated from each other at middle. (b) The prosternum is rather evenly setose and is lacking a median non-setose area. (c) The intercoxal process of prosternum is very distinctly emarginated at apex. (d) The mesonotum is broadest before middle, similar to that in the illustration by Ferris and Usinger (*loc. cit.*) which is based upon material from Liberia. (e) The metasternum is about as long as broad. (f) The denticles of the occipital, pronotal and mesonotal ctenidia are only 10, 7 and 11 units long respectively. Additional material will be needed before we can decide whether such differences are constant and whether they represent a distinct geographical race.

The anterior antennal ctenidia of the 3 out of 5 ♀ examined are asymmetric, and bear 3 denticles at the left and 4 at the right side. As compared with *Eo. spasmae*, the 1st instar nymph of this species seems to be in a more advanced stage, particularly regarding the antennal ctenidia; on the other hand, there is less developmental change in the number of labral setigerous tubercles with its nymphal instars.

Table 3. Development Changes of *Eoctenes nycteridis*.

	Embryo[1]	1st Instar[2]	2nd Instar	3rd Instar[3]	♀ Adult
Labrum, ventro-marginal tubercles	(?)	3	3(1)	3(1)	4
do., postero-lateral angle, setae	(?)	2	2	2	2
Antennal segment 1, apical ctenidium, denticles	1	2	2	4	6
do., anterior ctenidium, denticles	(?)	3	3	4	4
Hypostomal region, stiff setae	(?)	14	9	15	25–30
Gena, small denticles	(?)	(1)	(1)	(1)	(1–4)
Coxa 1, small denticles	(?)	(?)	4–5	(?)	5–8

1. *Vide* Jordan (1912: 565).
2. *Vide* Ferris & Usinger (1939: fig. 9).
3. *Vide* Jordan (1912: 565, text-fig. 1, pl. 13, fig. 8).