pronounced tubercle C_1, no other tubercle can be differentiated on the labial cingulum. Lingual cingulum is not developed. Posterior as well as anterior mures are not discernible.

Comparison:

The M_1 under description differs from *Progonomys* by its large size, greater crown height, and the reduction of labial cingulum. It can be differentiated from *Karnimata* by the absence of an anterior mure, the presence of less rounded cusps and the absence of a medial anteroconid. Besides its relatively large size, it also differs from *Karnimata* by the absence of labial tubercles other than C_1. In *Karnimata* C_3 and C_4 usually occur. The present M_1 can be distinguished from *Parapodemus* by the absence of a medial mure and labial tubercles other than C_1, such as C_3 and C_4. Moreover in the present case the lingual tubercle, which is sometimes found in *Parapodemus*, is also absent.

The large size, and the absence of a highly asymmetrical 'X' pattern and a medial anteroconid differentiate the present M_1 from that of *Mus*. Metrically the molar under discussion is in the range of *Apodemus primaevus* of Michaux[8]. However, it differs from *A. primaevus* in the absence of a medial anteroconid and the presence of less number of labial tubercles, such as C_3 and C_4. It can easily be distinguished from *Golunda* by its relatively small size, the absence of arcuate cusps and the presence of C_1. It can further be distinguished from *Golunda* by the absence of a medial anteroconid. In *Golunda* the cusps are arcuate and independent, and a small anteroconid is present. The present M_1 differs from *Parapelomys* by the presence of the 'X' pattern and the absence of anteromedial cingulum. In *Parapelomys* the 'X' pattern is absent and the labial and lingual cusps join very late in wear. One out of every six first lower molars of *Parapelomys* shows C_4[6]. This feature is absent in the present specimen.

The present molar is comparable with *Rattus*, with which it shares a common "Rattus" pattern, in some morphological features, such as the absence of a medial anteroconid, the presence of anteriorly slanting cones and a relatively high crown. However, the crown in the present molar is higher than the general case in *Rattus*. Since the present M_1 is morphologically much closer to *Rattus* than to other murid genera, it is assigned here to the genus *Rattus*. However, detailed comparisons with the extant species of *Rattus* are necessary to identify it to the species level. Moreover, more material, particularly the maxillary teeth, is required to make definitive comments about the specific affinities of the present find. Pending further investigations, the present M_1 (PUA-80/11) is referred to as *Rattus* sp.

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A NEW SPECIES OF THE INTERESTING GENUS *RHYNCHOCHALCIS* CAMERON [HYMENOPTERA: CHALCIDIDAE] FROM INDIA

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THE interesting genus *Rhynchochalcis* consists of species of Chalcid wasps possessing characteristic long genal regions. Cameron[1] erected the genus based on the type-species *Rhynchochalcis niger* obtained from Cape Colony (South Africa). Later the same author[2] described *Rhynchochalcis pruinosa* Cameron (Comb. nov.) erroneously under the genus *Megacolus* from Quetta (Pakistan). During the present author's study

stay at the British Museum (Natural History) London, the type of *R. pruinosa* (Type No. 5-123, ♀) was examined and a distinct identity was found. The present new species collected from the Malabar region of Kerala State, shows unique features and hence is described as new. This is named in honour of Dr M. G. Ramdas Menon (Former Principal Systematic Entomologist of Indian Agricultural Research Institute, New Delhi) for his significant contributions to the study of Indian insects.

Rhynchochalcis menoni sp. nov. (figure 1)

Female: Length: 4.26 mm. Colour: black, scape and pedicel of antennae, fore and mid tarsi pale yellowish brown; all coxae, femora, tibiae and gaster liver brownish black; bases and apices of fore and mid tibiae pale yellowish brown; hind tarsi dark brown. Forewing with moderate infuscation. Pubescence sparse and silvery.

Head: Vertex extremely narrow; temples extremely narrow; punctures of frons, especially near ocelli not dense but very shallow; pubescence sparse and short all over face; scrobe shallow, not smooth but with striations, reaches front ocellus; gena extremely long (figure 1) and concave; malar sulcus clearly marked, clypeus narrow facing obliquely downwards; toruli separated from clypeus by less than torular diameter; interantennal lobe rather thin and low. Relative measurements: head width subequal to its length when measured from front; OOL 1.5; POL 9; Lateral ocellus 3.5; Median ocellus 4; minimum interocular distance (when measured at vertex) 19; distance between lateral and median ocelli 5. Antennae as in figure 1; scape reaches front ocellus; club with a characteristic plate of sensillae on the ental side.

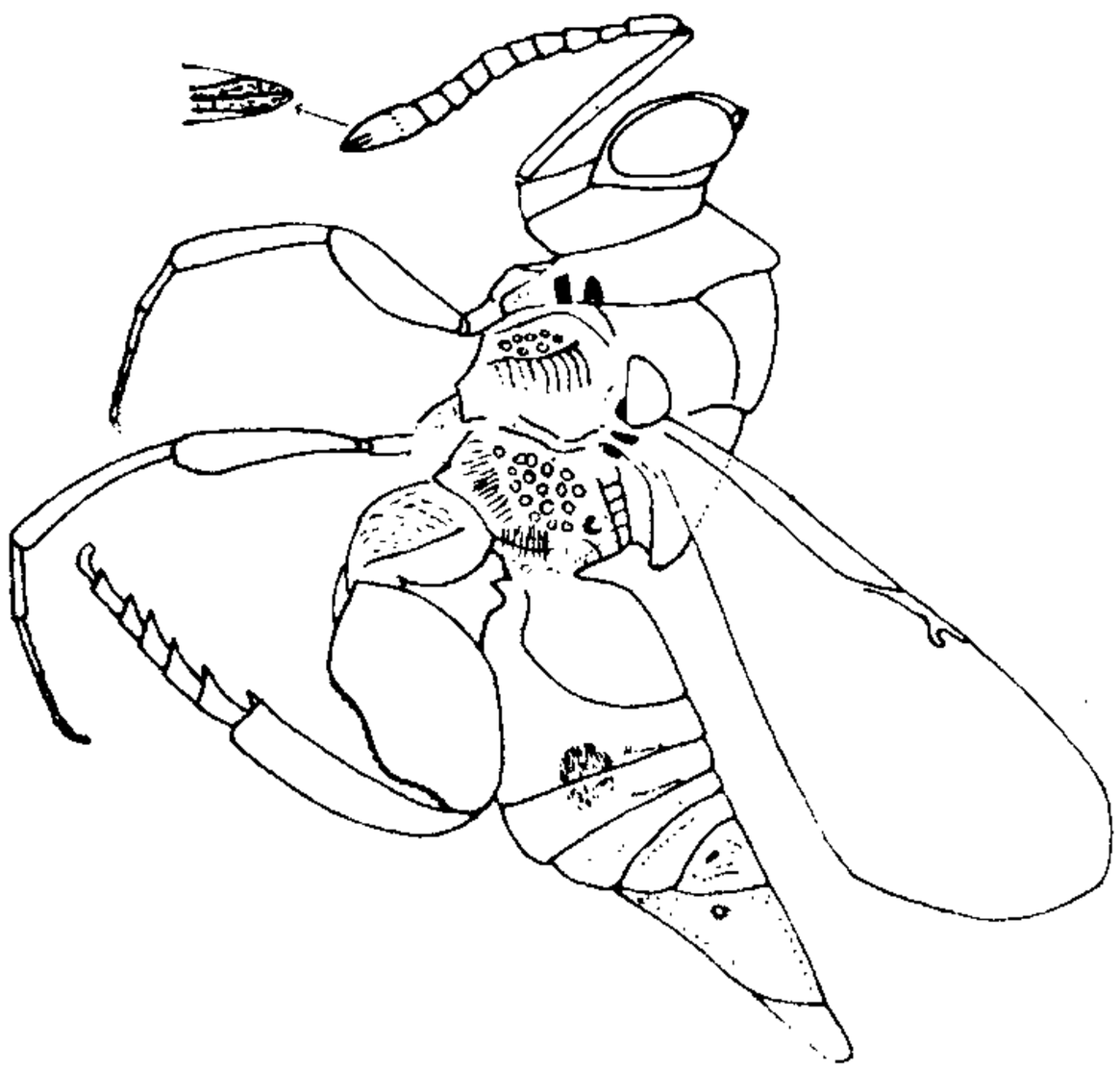

Figure 1. *Rhynchochalcis menoni* sp. nov. ♀ in lateral view.

Thorax: maximum length 57; broadest width 37 at pronotum; closely punctuate on dorsal side with interstices narrow and ecarinate but rugulose; scutellum length subequal to its width, apex deeply emarginate; notaular grooves shallowly indicated; propodeum with distinct septa of areolation with interspaces between the carinae granular; lateral tooth behind the spiracle distinct. Hind coxa without a distinct tooth on dorsal or ventral side, hind femur without an inner basal tooth; hind tibia without any extra carina on outer side: hind femur with a row of regular comb of teeth on ventral side. Forewing venation as in figure 1: PM subequal to Stigmal; less than half M.

Gaster: long and pointed. First tergite smooth and polished; second tergite medially smooth, sublaterally with microsculptures and distinct pubescence as in figure, rest of the tergites distinctly microsculptured and moderately pubescent; hind margin of tergites not emarginate; sixth tergites with shallow pits on dorsal side.

Male: Length 3.41 – 3.69 mm. Similar to female in general features except in the following: More blackish; antenna stouter with sensilae at apex not distinct; wings without infumation.

Holotype ♀, India: Kerala: Calicut University Campus, 15.ii.1985, coll. T. C. Narendran & Party (No. PL-3560). *Paratypes* 3♂♂, data same for holotype except collection dates (15.iii.'85, 29.v.'85 and 15.ii.'85). All types are in the collections of the Department of Zoology, University of Calicut.

Remarks: This new species differs from *R. pruinosa* in having much shorter epipygium and terebra; shorter post marginal vein; and in different colouration. *R. niger* differs from this new species in having the lateral tooth behind the spiracle at propodeum much larger and stronger; in having a median shallow fovea on scutellum; in having thick silvery pubescence on genotemporal region and in having longer epipygium

and terebra. The species *Rhynchochalcis senegalensis* Steffan[3] differs from this new species in having very long terebra and in having the preorbital carinae joining the aurecular carena clearly.

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ON THE PRESENCE OF CALMODULIN IN THE BRAIN OF CONTROL AND METHYL PARATHION-EXPOSED DEVELOPING TADPOLES OF FROG, *RANA CYANOPHLICTIS*

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CALMODULIN, a calcium-binding protein is known to regulate a number of fundamental cellular activities[1]. The presence of calmodulin as a component of postsynaptic densities isolated from the rat brain has been reported[2]. It has been suggested that calmodulin may be important in mediating fast axonal transport[3]. Grab *et al*[2] and Wood *et al*[4] found calmodulin to be present on the inner surface of postsynaptic membrane in a variety of nervous system structures. The involvement of calmodulin in the neurotransmitter release has also been demonstrated[5]. However, information is lacking on the presence of brain calmodulin in developing vertebrates during the critical stage of brain development. Hence the present study was undertaken.

Since the critical development period of central nervous system in amphibians occurs during metamorphosis, amphibian tadpoles have been used for this study and the alterations occurring in the regulatory protein, calmodulin, have been analyzed in the brain of control and methyl parathion-exposed animals. Influence of calmodulin extracted from the brain of methyl parathion exposed animals on the acetylcholinesterase activity and acetylcholine content of control animals has been studied to elucidate the influence of calmodulin from methyl parathion-exposed animals on the neuronal activity of control tadpoles.

Tadpoles of the frog, *Rana cyanophlictis* (20-day-old) in the weight range of 1.5–2 g were obtained from local ponds and acclimated to laboratory conditions for a week, prior to experimentation. The methyl parathion solution (2.5 ppm) in tapwater was prepared and the animals were exposed to this sublethal concentration for 24 hr, after standardization by Probit analysis[6].

After exposure, the control and the methyl parathion exposed tadpoles were sacrificed and the brain tissue was excised at 0°C. Modulator protein calmodulin was extracted following the procedure of Watterson *et al*[7] and estimated by the colorimetric method[8]. The total AChE activity and ACh content were estimated by the method of Hestrin[9].

One ml of 10% homogenate of the brain of the control tadpoles (in phosphate buffer, pH 7) was incubated with 0.1 ml of calmodulin extracted from the brains of control and methyl parathion-exposed animals, respectively for 30 min at 28°C (± 2°C). After the incubation period, the samples were analyzed for AChE activity by Hestrin's method[9]. ACh content in the samples was also estimated by Hestrin's method[9].

The data after statistical analysis are presented in tables 1 and 2. Table 1 shows that calmodulin is present in considerable amounts in the brain of developing tadpoles of the frog, *Rana cyanophlictis*. On exposure to methyl parathion, the brain calmodulin showed a

Table 1 *Changes in the level of calmodulin, acetylcholine (ACh) content and activity level of acetylcholinesterase (AChE) in the developing brain of control and methyl parathion-exposed (MPE) tadpoles of frog, Rana cyanophlictis.*

	C	MPE		
Calmodulin (μ mol/kg)	14.7 ± 1.0	10.0 ± 0.7	−33.40	$P > 0.05$
Acetylcholine (μ mol/g)	0.42 ± 0.07	0.97 ± 0.07	+131.90	$P > 0.01$
Acetylcholinesterase (μ mol ACh hydro/mg protein/min)	1844 ± 67	941 ± 1	−48.95	$P > 0.01$

The values are mean ± S.D. of 5 observations, + and − sign indicate increase and decrease over controls respectively.