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characteristic elevated isolated rows of scales with naked areas intermediate.

The author wishes to express his gratitude to the South African Council for Scientific and Industrial Research for generous financial assistance, without which it would have been impossible to cover so wide a field of operations.

Department of Ichthyology,
Rhodes University College,
Grahamstown.

December 1948.

VIII.—*A New Genus of Fulgoroidea (Homoptera) from South Africa.* By R. G. FENNAH.

A SERIES of fulgoroid specimens from South Africa, recently examined by the writer, proved to belong to a new species requiring a new genus for its reception. The placing of this genus in its correct taxonomic position in the superfamily has involved a study of relationships between members of the ricaniid group of families, as a result of which the family concepts of Ricaniidæ, Lophopidæ and Eurybrachyidæ are redefined below, and a new family is erected. The writer is greatly indebted to the authorities of the British Museum (Natural History) for the privilege of studying the collection of Hemiptera, and in particular to Dr. W. E. China and Mr. R. C. Izzard for their constant assistance in facilitating his work.

GENGIS, gen. nov.

Vertex sub-triangular, produced before eyes for more than length of an eye, lateral margins carinate, straight or slightly convex, apex deeply rounded, posterior margin biconcavely excavate, disc ecarinate, depressed; occipital portion of head visible; frons slightly longer than broad, basal margin convex, lateral margins carinate, sinuately diverging to below level of antennæ, then incurved to frontotypeal suture, disc concave in basal half, convex in distal half, ecarinate; clypeus about three-quarters as long as frons, ecarinate; ocelli represented only by dermal swelling, antennæ short, first segment ringlike, second

segment slightly longer than broad, subglobose, evenly rounded distally with a ring of about nine sensoria apically, eyes in lateral view evenly rounded above, obliquely convex-truncate posteroventrally. Rostrum attaining post-trochanters, subapical joint much longer than apical. Pronotum in middle slightly shorter than length of an eye, not much narrowed laterally, disc broad, depressed in middle, anterior margin transverse-convex, median carina obsolete, lateral carinae diverging caudad, not attaining hind margin, a carina on each side between eye and lower portion of tegula, lateral pronotal fields short, ventral margin obliquely truncate; mesonotum more than twice as broad as long, strongly transversely depressed in middle, lateral carinae strongly diverging caudad; mesepisternum not at all tumid, more or less flat; legs scarcely if at all compressed, not expanded, profemora slightly surpassing lateral margin of body, mesofemora distinctly longer than profemora, postfemora longer than mesofemora by an equal amount; post-trochanters rocking cephalad and caudad, post-tibiae with three spines on lateral margin and five at apex, basal metatarsal joint rather long, sub-cylindrical, with five spines at apex, second metatarsal joint elongate-ovoid, without spines. Tegulae small, partly overlapped by pronotum. Tegmina coriaceous, scarcely exceeding abdomen and closely investing it when closed, slightly more than twice as long as broad, anterior margin shallowly convex, in basal half narrowly reflected ventrad and mesad, apical margin deeply and evenly rounded to apex of clavus, costal vein present at margin, basal cell minute or absent. *Sc+R* forking about one-third from base, *M+Cu1* forking at about same level, a single subapical line of transverse veins close to margin, apical cells few, irregular, broader than long, length of claval suture four times greatest width of clavus, claval veins united slightly distad of middle of clavus, common vein passing to claval suture distally. Wings almost as long as tegmina, margin entire, anal area reduced. *Sc+R* simple, *M* and *Cu* united in a common stem basally. Abdomen broad, much depressed, with two sclerotized plates on each side laterally between each tergite and ventrite, the upper plate bearing anteriorly a very distinct spiracle, seventh tergite overlapping eighth and ninth tergites.

Pygofer bilaterally symmetrical; ædeagus curved, comprising a tubular phallobase containing a short phallus with paired symmetrical appendages; genital styles separate. Ovipositor with first valvulæ elongate-triangular, serrate, third valvulæ elongate-triangular, with margins smooth.

Type species: *Gengis panoplites*, sp. n.

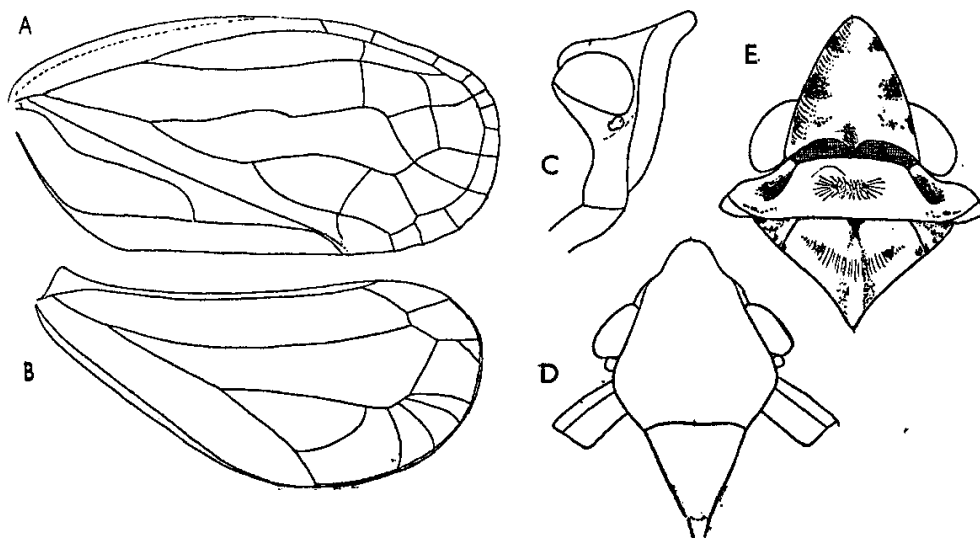
Gengis panoplites, sp. n. (Figs. 1 & 2.)

Male.—Length, 6.9 mm.; tegmen, 5.0 mm. *Female*.—Length, 8.2 mm.; tegmen, 6.0 mm.

Vertex in middle about as long as broad at base, grooved in middle line posteriorly.

Dorsally pale pink or pinkish fawn suffused with green or brown; basal portion of clypeus, a spot at inner margin of lateral pronotal fields, pro- and mesopleurites,

Fig. 1.



Gengis panoplites, sp. n.

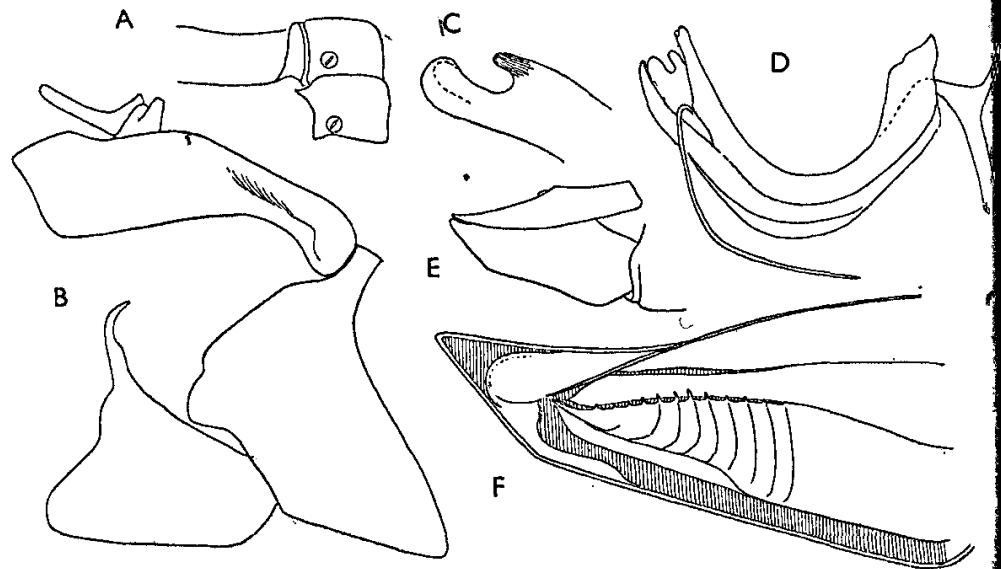
a, tegmen; b, wing; c, head in profile; d, frons and clypeus;
e, vertex, pronotum and mesonotum.

apical tarsal joints, sometimes profemora except for a median transverse band, mesofemora and postfemora apically, and third valvulæ of ovipositor, fuscous or castaneous-piceous; legs testaceous to reddish-brown speckled piceous; apical portion of clypeus, frons and lower surface of abdomen dull yellow, the last two more

or less speckled piceous. Tegmina with veins green, speckled piceous in irregular fasciæ; wings brown.

Anal segment of male moderately long, anal foramen in distal half. Pygofer with lateral margins sub-triangularly produced caudad at middle. Ædeagus curved dorsad, phallobase tubular, deeply cleft laterally at apex, phallus narrowly tubular basally, produced in a pair of long symmetrical appendages distally, each appendage narrow terminating in a small dorsoapical lobe separated by a deep excavation from two ventroapical lobes, a long spinose process arising subapically and directed ventrad and

Fig. 2.



Genqis panoplites, sp. n.

a, fifth and sixth abdominal ventrites, left side (inverted); *b*, anal segment of male, pygofer and right genital style; *c*, apex of one of phallic appendages; *d*, ædeagus; *e*, anal segment of female and right third valvula of ovipositor; *f*, sectional view of ovipositor.

cephalad, as figured. Genital styles in profile large, sub-triangular, ventral margin almost straight, dorsal margin slightly concave, apical margin sinuate, apical process in form of a slightly curved spine directed dorsad. Anal segment of female elongate, with sides gradually converging distally, apical margin rounded.

Described from one male and five females, and one mutilated specimen, Durban, one mutilated specimen, Natal (Bell Marley, 1911, B.M., 383); two males and two

females, Port St. John, Pondoland (R. E. Turner, Sept. 1923, B.M. 510). Type in British Museum (Nat. Hist.).

This genus, to which at present no other species can be referred, is allied to the monobasic *Microeurybrachys* Muir (fig. 3), from which it is separated as follows:—

Pronotum distinctly wider than head, eyes in lateral view approximately hemispherical in outline, frons longer than broad; tegmina with costa at margin, a narrow non-setose costal area present reflected ventrally beneath margin, *M* and *Cu* basally united in a common stem, no basal cell developed, apical cells of tegmen broader than long. Form sub-ovoid, facies issine, (e.g. like *Mycterodus*).

Gengis Fenn.

Pronotum not wider than head, eyes in lateral view elongate-ovate, frons broader than long; tegmina with costa sub-marginal, a broad costal area present correct laterad, setose; *M* and *Cu* arising separately from base, basal cell present, apical cells of tegmen longer than broad. Form horizontally flattened, facies flatoidesine

Microeurybrachys Muir.

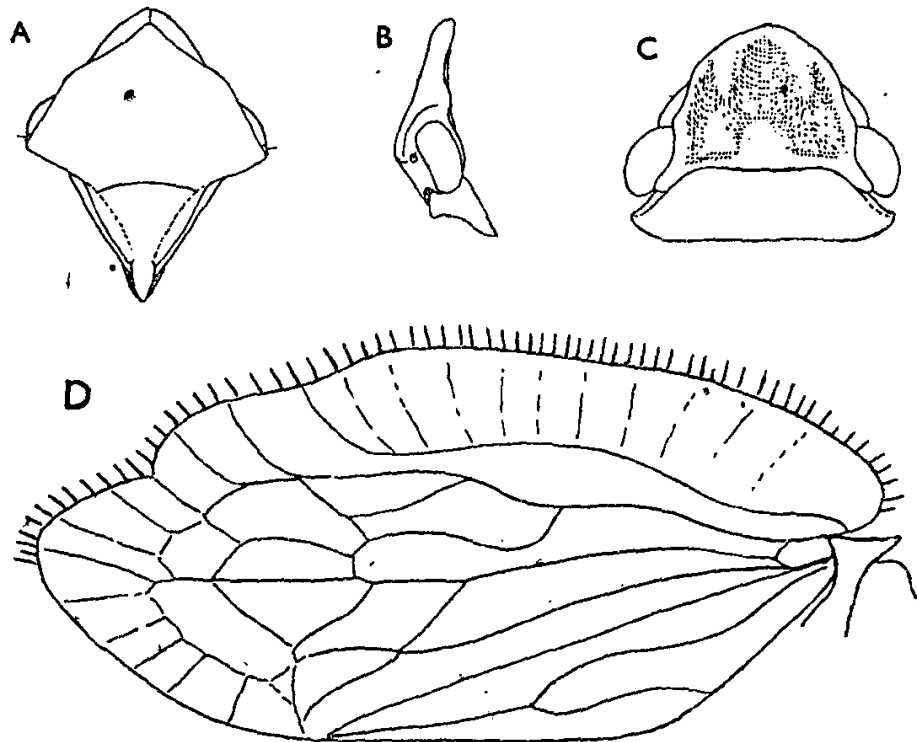
These two genera, while belonging to the Ricaniid group of families characterized by the absence of spines from the second post-tarsal joint, cannot be referred to any of them. Muir placed his *Microeurybrachys vitrifrons* in the Eurybrachyidæ on account of "the shape of the frons, and the absence of carinæ on frons and clypeus." These characters of a laterally angulate frons and an ecarinate frons and clypeus, however, are not exclusively eurybrachyine, while the development of an elongate vertex is unknown elsewhere in the family: indeed, the head-form of *Silvanana* Metc. (Ricaniidæ) is closer to that of *Microeurybrachys* than is that of any eurybrachyid. Moreover, according to the characterization given by Muir, *Gengis* would fall into the Lophopidæ. A revised characterization of the families Ricaniidæ, Lophopidæ and Eurybrachyidæ is called for, and a new family must be erected to contain *Gengis* and *Microeurybrachys*. The new family Gengidæ is accordingly here proposed.

Gengidæ, fam. nov.

Vertex usually triangular, slightly depressed, rostrum usually with subapical joint much longer than apical, pronotum laterally not fitting closely behind eyes,

mesonotum short, disc usually depressed, tegulæ present, small. Protibiæ shorter than profemora, mesofemora longer than profemora and postfemora longer than mesofemora. Post-trochanters rotating laterad in a horizontal plane, post-tibiæ trispinose laterally, with five spines at apical margin, basal metatarsal joint not inflated, as long as second and third joints combined, with five spines at apex, second metatarsal joint devoid of spines. Abdomen dorsoventrally depressed, tergites separated from ventrites by a pair of sclerotized plates at each side

Fig. 3.

*Microeurybrachys vitrifrons*, Muir.

a, frons and clypeus; *b*, head and pronotum in profile; *c*, vertex and pronotum; *d*, tegmen (after Muir).

of each segment, the larger plate bearing anteriorly a large exposed spiracle. Seventh tergite produced caudad to cover eighth and ninth. Ædeagus comprising a tubular phallobase and a short tubular phallus with paired distal appendages. Ovipositor relatively elongate, first valvulæ serrate, third valvulæ forming a sheath,

devoid of ceriferous areas. Tegmina broadest near middle, narrowed distally, venation reduced and specialized.

Type genus : *Gengis* Fennah.

The strongly carinate condition of the principal veins of the tegmina and the reduced wings found in both included genera may possibly prove to be family characteristics. The family is distinguished from others of the Ricaniid group as follows :—

(1) (2) Tegulae small, adpressed, partly overlapped by pronotum ; post-tibiae with five spines at apex, basal metatarsal joint not inflated, with five teeth in a transverse row apically ; abdominal spiracles large and exposed ; eighth and ninth abdominal tergites concealed below seventh ; tegmina narrowing from level of claval apex, basal cell small or well developed and ovate . . .

GENGIDÆ.

(2) (1) Tegulae moderately large to large, scarcely, if at all, overlapped by pronotum ; post-tibiae almost invariably with 8-10 spines at apex, basal metatarsal joint inflated or with more than five teeth distally (if with only five on both tibiae and basal metatarsus, then vertex short, tegminal venation not reduced and wings ample) ; abdominal spiracles small and more or less obscure ; eighth and ninth abdominal tergites exposed (3)

(3) (4) Mesonotum normally relatively long, convex, with lateral discal carinae curved mesad anteriorly, a pair of incomplete carinae often present anteriorly laterad of lateral discal carinae ; post-trochanters normally rocking in an oblique (mesoventrad-latero-dorsad) plane, rarely transversely ; basal metatarsal joint normally shorter than second plus third, rarely equal ; anal segment of female and valvulae of ovipositor not ceriferous, third valvulae apically dentate ; tegmina steeply tectiform ; costal and commissural margins normally strongly diverging distally (rarely parallel), apical margin long, oblique (rarely short and convex), basal cell normally large, broad and polygonal, giving off three or four sectors, commissural margin usually not extending distad of apex of clavus, costal area normally containing only a few large quadrate cells, rarely very many

RICANIIDÆ.

(4) (3) Mesonotum short, broadly triangular, flat or weakly convex ; post-trochanters rocking in a horizontal (mesad-laterad) plane ; basal metatarsal joint normally longer than second plus third ; anal segment of

female and/or third valvulæ of ovipositor normally ceriferous, or if not, then tegmina more than twice as long as broad, and third valvulæ not dentate; head with eyes narrower than pronotum, or if as broad or broader, frons with lateral margins angulate near middle; tegmina often not tectiform, and never very steeply so; costal and commissural margins, if at all divergent distally, only weakly so, apical margin never much elongate, and if distinctly oblique, then sutural angle more prominent than apical; basal cell normally not large, if distinct then at least twice as long as broad, oval-subrectangular, giving off three sectors; costal area, when present, with oblique and often narrow cells, or without cross veins (5)

(5) (6) Vertex not three times as broad as long in middle line; head with eyes normally narrower than pronotum; frons rarely as wide as long, and if wider than long then discal area between sublateral carinæ distinctly longer than broad; clypeus usually carinate medially or laterally near base; rostrum with apical joint extremely short, rarely even twice as long as broad, not expanded distally, bluntly rounded or transversely truncate at apex; abdomen cylindrical, rarely broad and depressed

LOPHOPIDÆ.

(6) (5) Vertex fully three times as broad as long in middle; head with eyes as wide as pronotum; front wider than long with lateral margins normally angulate near middle and with discal area between sublateral carinæ broader than long; clypeus normally ecarinate; rostrum with apical joint more than twice as long as broad, often dilated and obliquely truncate distally, or if not, then longitudinally impressed on anterior surface and conical at apex; abdomen broad, dorsoventrally depressed

EURYBRACHYIDÆ.

The affinities between the Gengidæ and any of the other three families are not close. In several families of Fulgoroidea, if not most, groups of genera have arisen which exhibit specialization in the direction of short tegmina with reduced venation and coriaceous texture, and reduced wings. Such development has occurred in Lophopidæ (*Buxtoniella*) and in Eurybrachyidæ (*Dardus*, *Gedrosia*) but in neither have the specialized genera assumed any of the characters of Gengidæ or lost any of their family characters. The structure of the

hind tarsus is of great phylogenetic importance in Fulgoroidea; the basal joint is always specialized in Lophopidæ and Eurybrachyidæ, and relatively primitive (if the Cixiid condition be taken as primitive) in Ricaniidæ, though even here, specialization has occurred in the reduction in length of the basal joint of the post-tarsus and increase in the number of spines at the apical margin of both this joint and the post-tibiæ (usually 8 and 8 or 9 respectively). Only one species known to the writer (*Cotrades intricata* Wlk.) has a post-tibia with only five spines at the apex and a basal metatarsal joint which is as long as the second and third together and five-spined at the apical margin*.

This condition is similar to that found in Gengidæ. *C. intricata* is also of interest in having the abdomen broadly triangular in section, not laterally compressed, and in having the third valvulæ of the ovipositor stout, strongly convex, devoid of teeth but with a short length of thin membranous tissue at the middle of the curved apical margin. This indicates that in Ricaniidæ, at least one species exists which has evolved in some degree parallel with Issidæ, for both abdomen-shape and ovipositor-structure are of issine facies. The point is of importance in its bearing on the evolution of the Gengidæ, both genera of which show parallel development with the Issidæ. *Gengis* bears a superficial resemblance to species of *Mycterodus* Spin. and to *Obedas* Jac., while *Microeurybrachys*, which Muir likened to the flatid *Flatoides*, can equally appropriately be matched with the issid *Pterilia* Stål.

The features of *Pterilia* which are paralleled in *Microeurybrachys* are as follows: ocelli absent, apical joint of rostrum short, clypeus relatively broadly convex, ecarinate, tegulæ small and overlapped by pronotum, tegmina with a broad undulate costal area traversed by cross veins, venation of corium reduced and irregular. In bodily proportions the two genera are similar, but *Pterilia* has the corium thick and the costal area papery, whereas the tegmina are of uniform consistency in *Microeurybrachys*. In fundamental characters the genera are, of course, widely different. In *Pterilia*, for instance, the basal metatarsal joint has a tooth at each apical angle

* The closely allied *Semestra* Jac. has six basitarsal teeth.

and a row of six short teeth between them, distad of which is a pad of setæ, the second metatarsal joint has a tooth on each side distally, the post-trochanters rock in a vertical antero-posterior plane, the abdomen is not so relatively broad and the size and position of the spiracles are very different, as is also the form of the genitalia; moreover, the ninth abdominal tergite is exposed. The points of resemblance and difference between *Gengis* and *Mycterodus* or *Obedas* are to be found in the same series of structures, as well as in the relative lengths of the rostral and metatarsal joints. It is reasonable to regard the Gengidæ as having descended from ancestors which diverged from the ricaniid line very soon after the latter left the lophopid stem (which subsequently branched to give off the Eurybrachyidæ), and later became modified as a result of gene rearrangements of the same kind as have occurred in Issidæ.

IX.—*Dinocheirus stercoreus*, a new *Pseudoscorpion*
from the Bracken Cave, Texas, U.S.A. By F. A. TURK,
Ph.D., F.R.E.S., F.Z.S.

AMONGST a considerable number of Arachnids sent to me in the early part of 1947 by Lt. Hugh L. Keegan, of the United States Army Medical Services, were two specimens, one male and one female, of a species of *Pseudoscorpion* taken on bat guano from the Bracken Cave, Texas, U.S.A., by Lt. Keegan on the 10th December, 1942. When received by me the specimens were mounted whole, in Canada balsam, one specimen on each of two slides. The slide containing the male was broken in transit and the opportunity was taken of re-dissolving the balsam, dissecting the specimen and remounting in polyvinyl alcohol. The preparation of the female was left as received and the description of that sex was made from the mounted and unprepared specimen.

My best thanks are due to Lt. Keegan for the gift of these specimens and much other valuable arachnid material and to Mr. Clayton Hoff, of Quincy College, Illinois, and Dr. Max Beier of Vienna, who have both