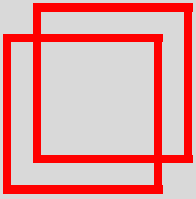

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BULLETIN DE L'ACADÉMIE DES SCIENCES DE L'URSS

Classe des sciences mathématiques et naturelles

Отделение математических и естественных наук

ON THE PERMIAN FAMILY *ARCHESCYTINIDAE (HOMOPTERA)* AND ITS RELATIONSHIPS

By A. MARTYNOV

(*Présenté par* A. Borisjak, *membre de l'Académie*)

The study of the family *Archescytinidae* is of great interest, since this family reveals obvious relations to the recent group of *Sternorrhyncha*, to the superfamily *Aphidodea*, especially. Till now this family was known only from the Lower Permian of Kansas, USA, and only in 1929 and 1930 it was discovered in this country, in the Permian deposits on the shores of Sojana-river (Iva-Gora and Sheimo-Gora), Arkhangelsk district. American *Archescytinidae* were examined by Tillyard[1] and by Carpenter.[2] Tillyard has described in this family two genera, *Archescytina* Till. and *Permoscytina* Till. Carpenter has shown, that Tillyard's gen. *Permopsylla* (fam. *Permopsyllidae* Till.) is also belonging to the fam. *Archescytinidae*. Carpenter has added one more genus, *Paleoscytina* Carp. In 1930 I described from Tikhiie Gory[3] the fore-wing of a peculiar new genus *Cicadopsylla*, which I have attributed, as a distinct subfamily *Cicadopsyllinae*, to the fam. *Permopsyllidae*. Now I think, however, that this genus cannot be included into the fam. *Archescytinidae*.

In this paper new forms of *Archescytinidae* are described, discovered in the deposits at Sojana-river, then the relationships of this family are briefly discussed.

1 R. J. Tillyard. Kansas Permian Insects. Part 9. The order *Hemiptera*. Amer. Journ. Sci., vol. II, May 1926, pp. 381—395.

2 F. M. Carpenter. The Lower Permian Insects of Kansas. Part. 4. The order *Hemiptera* and Addit. to the *Palaeodictyoptera*. Ibid., vol. 22, 1931, pp. 113—130. Part. 5. *Psocoptera* and Additions to the *Homoptera*. Ibid, vol. 24, July 1932, pp.1—22.

3 A. Martynov. New Permian Insects from Tikhiie Gory. II. *Neoptera* (excl. *Miomoptera*). Trav. Mus. Géol. Acad. Sci. URSS, t. VIII, 1930, pp. 149—212 (russian with english résumé).

Gen. **Permoscytina** Till.

1. **Permoscytina sojanensis** n. sp. (Fig. 1)

Specimens № 139/2334 and 123/2334 (reverse). Sheimo-Gora, 1929. M. Edemskij.

The specimen represents distinct impression of a tegmen, but without clavus. Length of the tegmen 11, 3 mm, breadth 3.7 mm.

Tegmen smooth, elongated, in its shape and venation much resembling that in *Permoscytina muiri* Till., from Kansas. R strong and markedly bent above the point of origin of M; basal portion of R long, arcuate. Sc running close to R, but rather indistinct, concave. The area between R_1 and R_2 (pterostigma) elongated, similar to that in *P. muiri;* Rs a little curved

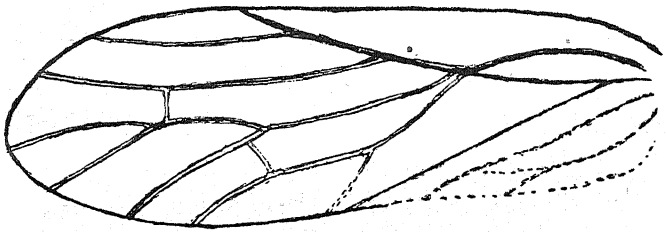

Fig. 1. *Permoscytina sojanensis,* n. sp. Fore wing.

concavely forwards and connected by an indistinct cross-vein with the end of M_{1+2}. M parallel to RS, approximated, but not united with CuA at its base; M_{1+2} flatly arcuate, its fork being not very broad; M_3 connected at its base with CuA_1; fork of CuA broad and elongated, nearly as long, as the vein CuA. Basal horizontal portion of CuA_1 long, therefrom CuP is very oblique and the basal portion of the area between CuA and CuP very broad. Anal portion not preserved.

This species is near to *P. muiri,* and differs from it, chiefly, by weakened SC and very oblique CuP.

2. **Permoscytina tetraclada** n. sp. (Fig. 2)

Specimen № 45/2455. Iva-Gora, 1930. Gundersen.

The specimen represents a nearly complete reverse of a tegmen, with but a small basal portion of clavus missing.

Length of the tegmen 12 mm, breadth 4 mm. Tegmen smooth, elongated, in its shape and venation similar to those in *P. sojanensis* and

P. muiri. R + Sc also bent markedly at the point of origin of M; pterostigma a little shorter; RS connected with M_1 by a cross-vein, reaching M_1 near its base; M_{1+2} much shorter, than its fork; M_{3+4} very short and soon forming an elongated fork; basal portion of M_4 angulated and connected with CuA_1 by the cross-vein m-cu. Fork of CuA rather short, not very broad; basal portion of CuA long, straight, but a little shorter, than in the foregoing species. A_1 a little curved, tending to converge slightly towards CuP, distally; A_2 not preserved.

Although M is here four-branched, the whole structure of the venation of the tegmen in *P. tetraclada* is very similar to that in the genus *Permoscytina*, therefore I believe, that our species belongs here.

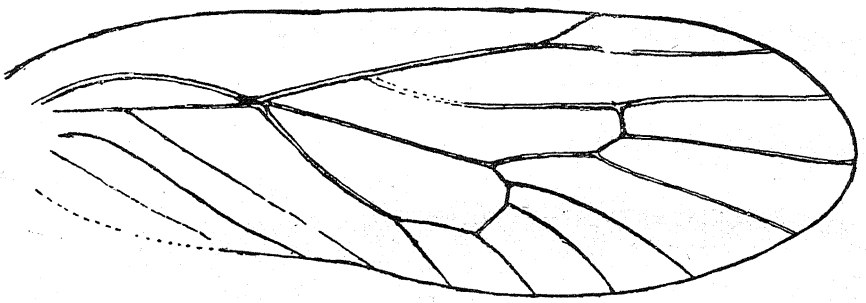

Fig. 2. *Permoscytina tetraclada*, n. sp. Fore wing.

Gen. **Sojanoscytina**, n. gen.

Tegmina resembling those in the gen. *Permoscytina*, but differing as follows. RS originating nearer to the base of M; pterostigma rather long; M with more, than four branches, cubital fork rather short; A_2 connected with A_1.

Hind wings somewhat shortened, but dilated in their distal half; anal region (clavus) slightly compressed, but both A_1 and A_2 preserved, as in the tegmina, A_2 united at its end with A_1. R nearly straight, long, SC obliterated, costal area narrow. RS appears to be forked, but its hind branch represents, probably, the fore branch of M_{1+2}. M forming three independent branches, the stem of M itself being markedly shorter than M_{3+4}. CuA united with the base of M and running almost rightly backwards; basal portion of CuA long. CuP tending to converge to the end of CuA_2; area between CuA and CuP nearly triangular.

Sojanoscytina grandis, n. sp. (Fig. 3)

Specimen № 92/2334. Sheimo-Gora, 1929. M. Edemskij.

Specimen represents an almost complete obverse of the tegmen.

Length of the tegmen 18 mm, breadth 5.2 mm.

C nearly straight, but very slightly convex forwards. R markedly bent above the point of origin of M; SC weak, approximated to R. Pterostigma elongated and rather narrow, somewhat brownish. Subcosta represents, indeed, the hind branch of subcosta (SCp), fore branch (SCp) is lacking in *Archescytinidae*. RS arising nearer to the origin of M, than to the base

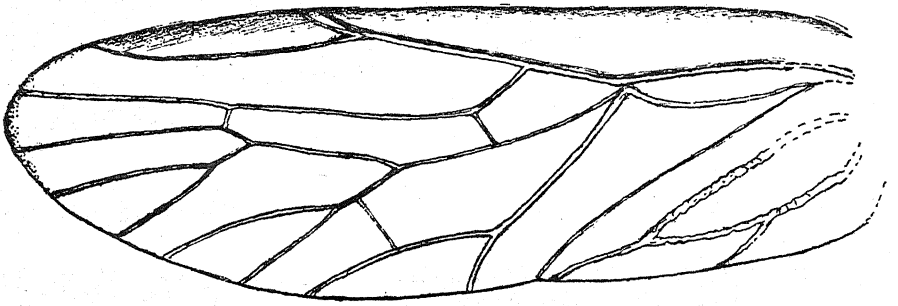

Fig. 3. *Sojanoscytina grandis*, n. sp. Fore wing.

of R_2, curved backwards and near to its base connected by the cross vein rs-m with M; distal portion connected by an analogous cross-vein with the base of M_1. M slender, united at its base with CuA and forking into five branches, M_2 early forking again; M_{3+4} connected by the cross-vein m-cu with CuA_1, then forming a fork. CuA distinct, strong, its fork short, broad; basal portion of CuA very long and somewhat curved concavely to R+M; CuP oblique, slender. A_1 distinct, thick, A_2 also thick, near its end connected by a horizontal cross-vein with A_1. Membrane smooth; anal veins somewhat tuberculated, and the presence of such tubercles allows to consider that from them arised, perhaps, some hairs.

Sojanoscytina minor, n. sp. (Fig. 4)

Specimen № 119/2334. Iva-Gora, 1929. M. Edemskij.

The specimen represents complete reverse of a tegmen, up to CuP, but the whole anal region (clavus) is lacking.

Length of the tegmen 12.5 mm.

Costal margin convex in its basal half. R also bent above the point of origin of M; SC quite indistinct; R_2 very long, forming a long pterostigma; RS long, connected by an indistinct cross vein with M_{1+2}, this vein forming two branches, M_{3+4} — three branches; M_4 forking near its base; basal cross-vein between RS and M lacking. CuA forming a short broad fork; CuP not as oblique, as in the foregoing species. Membrane smooth.

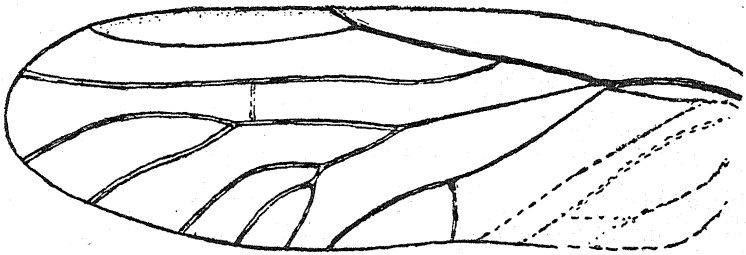

Fig. 4. *Sojanoscytina minor*, n. sp. Fore wing.

Sojanoscytina (?) latipennis, n. sp. (Fig. 5)

Specimen № 129/2334. Iva-Gora. 1929. M. Edemskij.

The specimen represents positive impression of a whole posterior wing.

Length of the wing 6 mm, maximal width — 2.9 mm.

Although this specimen of hind wing is separated, I believe it belongs to *Archescytinidae* and, probably to *Sojanoscytina* n. gen.

Fig. 5. *Sojanoscytina (?) latipennis*, n. sp. Hind wing.

Wing much dilated in its distal half, membranous, with rounded apical and hind margins; clavus present, but small; costal margin nearly straight, costal area narrow. R long and nearly straight, only slightly bent concavely forwards above the point of origin of M; SC lacking (reduced); R_1 lacking; RS bent in its basal portion and connected here with M, as in *Sojanoscytina grandis*; in its distal part it divides and forms two branches, anterior of which being not complete. M forming three branches, M_{3+4} simple; CuA

straight, running obliquely backwards and forming a broad fork; basal (horizontal) part of CuA long and somewhat curved, as in *S. grandis;* CuP slender, very oblique; A_1 and A_2 distinct and united in the distal portion of the clavus into one vein, running to the end of CuP, as in the fore-wings of *S. grandis;* forks of RS, of M and of CuA broad.

Configuration of CuA and CuP, arrangement of anal veins in the clavus and the presence of cross vein rs-m between M and the basal portion of RS demonstrate, that this hind wing belongs, probably, to the gen. *Sojanoscytina* n. gen. Since the forking of RS is unusual in *Archescytinidae*, I believe, that only the forebranch is a true continuation of RS, its hind branch representing the foremost branch of M, that is, M_1, which is detached from M_{1+2} and adjointed to RS. In such case the fork of M_{1+2} represents, indeed, the fork of M_2, like *Archescytina grandis.* It is very interesting, that the form of triangular space between CuA and CuP and the structure of the clavus in the hind wings of *Sojanoscytina* remain, indeed, identical with those in the fore wings of the same genus, except the clavus in the hind wings became comparatively smaller. Thus, the wings in *Sojanoscytina* and *Archescytinidae*, in general, were primarily homonomous, that is, their hind wings were not dilated in their ano-jugal portion, like all *Sternorrhyncha.* Such an opinion I have expressed yet in 1925.[1] In their wingvenation the most of *Archescytinidae*, specially the genera *Permoscytina*, *Archescytina* and *Sojanoscytina*, obviously resemble the recent *Aphidodea* and differ from them, mainly, in the anal portions of both pairs of their wings being yet well developed. Triangular space between CuA and CuP in the wings of *Aphidodea* is very broad and distinct, broader than in *Archescytinidae.* Such a condition is comprehensible because the anal portion in both pairs of wings in *Aphidodea* in the evolution of this group was much compressed and, finally disappeared. At the end of this article I will return to the problem of the relations of *Aphidodea* to *Archescytinidae;* at present I will describe an another genus, standing more apart from the above mentioned three genera.

Gen. **Ivascytina**, n. gen.

Fore wings. C evenly arcuate forwards; R almost straight, not bent at the origin of M; R_1 short, but longer, than in *Permoscytina,* R_2 long; SC in-

[1] A. Martynov. Über zwei Grundtypen der Flügel bei den Insekten und ihre Evolution. Zeitschr. Ökol. Morph. d. Tiere, Bd. IV, 1925, s. 488.

distinct, represented, perhaps, with some feeble trace in the basal part of wing; RS at first arcuately curved backwards, then connected by a cross vein with the end of M_{1+2}. M arising from R separately from Cu, but at its base it is connected by a short longitudinal vein with the basal portion of CuA; forking of M similar to that in *Permoscytina*, but forming four branches. CuA connected with CuP by its very short basal portion, which in its turn is connected with R by a very short cross-vein; cubital fork short, but CuA may form a small supplementary fork. CuP slender, running almost parallel and near to CuA (clavus unknown). One species —

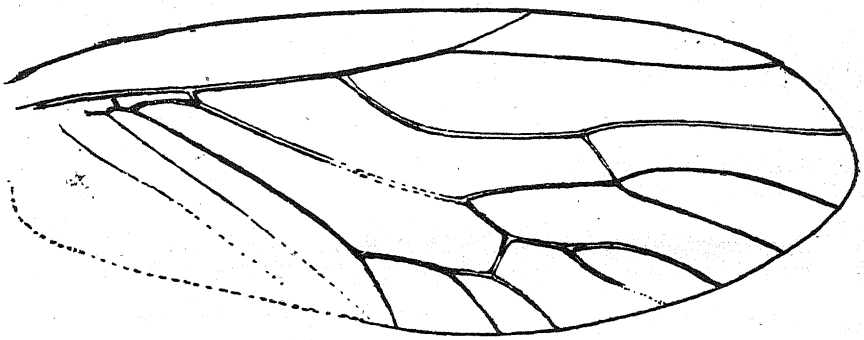

Fig. 6. *Ivascytina difficilis*, n. sp. Fore wing.

Ivascytina difficilis, n. sp. (Fig. 6)

One specimen. № 44/2455. Iva-Gora, 1930. Gundersen.

The specimen (negative reprint) represents a fore-wing and is well preserved, but anal portion (clavus) is lacking.

Length of the wing 13.5 mm, maximal breadth 5.6 mm.

Fore wing somewhat elliptic, elongate; R almost straight, only slightly concave forwards; pterostigmal area long. RS curved in its basal, but straight in its distal portion, connected by a somewhat oblique cross-vein with the end of M_{1+2}; anterior fork of M longer, than the posterior, M_{3+4} connected by a cross-vein with CuA_{1a}; base of M connected by a slender longitudinal vein with CuA; this vein is strong, forming a short fork, CuA_1 forking again. Cup slender, running near to CuA.

This genus is very distinct. In the mode of departing of M from R and in the narrow area between CuA and CuP it somewhat reminds of *Protopsyllidium australe* Till., but in other features it is very different from this genus as well as from the remaining *Protopsyllidiidae* and *Archescytinidae*.

ON THE SYSTEMATICAL POSITION OF *ARCHESCYTINIDAE*

Basing on the presence in *Archescytinidae* of a well formed clavus, with two anal veins, Tillyard placed[1] this family within the division *Auchenorrhyncha*, whereas the family *Permopsyllidae*, containing some small Australian and Kansan forms, he considered to belong to *Sternorrhyncha*. In *Permopsyllidae*, according to Tillyard, clavus was already much reduced, and anal veins were lacking (except, perhaps, A_1, which was confluent with Cu_2).

Carpenter was fortunate enough to study an almost entire specimen of *Archescytina permiana* Till. and several well preserved fore wings of *Permopsylla* Till. On the base of such material he could elucidate,[2] that the anal region in the fore wings of *Permopsylla* was not reduced; on the contrary, it was well formed and had two usual anal veins as in *Archescytina*. Therefore, the genus *Permopsylla* should be attributed to *Archescytinidae*. On the other hand, antennae in *Archescytina permiana* proved to be multiarticulate, consisting of at least twenty five segments, and tarsi proved to be three-jointed. In the multiarticulate condition of antennae *Archescytinidae* resemble *Sternorrhyncha*, but in the presence of clavus and in the three-jointed tarsi they are more similar, Carpenter says, to *Auchenorrhyncha*. On these grounds Carpenter erected the family *Arhescytinidae* into a separate suborder *Paleorrhyncha*, combining primitive features of both *Sternorrhyncha* and *Auchenorrhyncha*. This new suborder might be considered as ancestral of both last suborders.

What a conclusion may we deduce from the study of just described new forms?

The discovery of a hind wing is of especial interest. This wing, belonging to the gen. *Sojanoscytina*, is already somewhat reduced in size and venation. Its anal region is somewhat diminished, but preserved the same structure, as in anterior wings, with the same two anal veins. This signifies, that the posterior wings in *Sojanoscytina* and, certainly, in the whole family *Archescytinidae* were not dilated in the ano-jugal portion. But this feature,— primary absence of any dilatation of the ano-jugal potion, then the adoption by fore wings of chief work in flying and, as result of this, the reduction of hind wings, are main characters of wings of all recent *Sternorrhyncha*, which discern them strictly from the remaining *Homoptera*, as well as from

[1] Tillyard. Amer. Journ. Sci., XI, May, 1926, p. 385.
[2] Carpenter. Ibid., XXII, August, 1931, p. 114—115.

all *Heteroptera*.[1] Thus, in the primary homonomy of wings the fam. *Archescytinidae* resembles closely the recent *Sternorrhyncha*. Multiarticulate antennae are also the feature of *Sternorrhyncha*. As to the clavus, this portion of wings in the phylogeny was subject to an almost complete reduction only in *Aphidodea*, but in other *Sternorrhyncha* it was more or less compressed, but not disappeared. It is yet distinct in *Psyllodea*, narrow, but clearly recognizable in *Aleurododea* and *Coccodea*. In the clavus of *Psyllodea* there is one distinct anal vein, which is recognized by authors, usually, as A_1, but the comparison with *Sojanoscytina* demonstrates, that it represents rather A_2 + the distal part of A_1, the greatest part of the latter being obliterated.

Thus, the presence of the clavus in *Archescytinidae* does not discern them from *Sternorrhyncha*, but in the first family it is in a more archaic condition.

Membranous character of fore wings in *Archescytinidae* is also the character of *Sternorrhyncha*, the membrane of the fore wings in *Archescytinidae* being smooth, without any dots or points, like *Sternorrhyncha*.

It remains one feature, which at once discriminates *Archescytinidae* from the recent *Sternorrhyncha*, that is, three-jointed tarsi. However, I believe, that this is not more, than an archaic feature and that the recent *Sternorryncha* also possessed earlier three-jointed tarsi. Taking all these facts into consideration, we come to the conclusion, that the «suborder» *Paleorrhyncha* is not more, than a group of archaic *Sternorrhyncha* and not an ancestral group of both *Sternorrhyncha* and *Auchenorrhyncha*. It was already clearly separated from the other contemporaneous *Homoptera*, — *Prosbolidae* and *Scytinopteridae*, — in which the hind wings were always more or less strongly dilated in their ano-jugal portion. Notwithstanding such a distinction I presume, that the permian *Prosbolidae* were nearer to *Archescytinidae*, than the recent *Auchenorrhyncha*, and that they possessed, probably, not two, but more joints in antennae, and nevertheless, judging by their wings, they were already some archaic *Auchenorrhyncha* and possessed hind wings dilated. This group might be also separated into a suborder, but I do not think this is at present necessary. Handlirsch already separated it into a distinct order *Palaeohemiptera*, as to his opinion ancestral of all groups of *Hemiptera*, but such an opinion hardly may be maintained.

[1] Martynov. Ztschr. Ökol. Morph. d. Thiere, Bd. IV, 1925, p. 488.

ON THE COMPOSITION OF THE GROUP OF PERMIAN *STERNORRHYNCHA* (*PALAEORRHYNCHA* Carp.)

The fam. *Archescytinidae* contains now the genera *Archescytina* Till. *Permoscytina* Till., *Paleoscytina* Carp. and *Permopsylla* Till. from Kansas; *Sojanoscytina* Mart., *Ivascytina* Mart. and *Permoscytina* from N. Russia.

To the fam. *Archescytinidae,* specially to the gen. *Permopsylla*, are allied also minute australian «*Permopsyllidae*», to which Carpenter has proposed the name — *Protopsyllidiidae*. To the Permian *Sternorrhyncha* belong also the fam. *Pincombeidae* Till., *Lophioneuridae* Till. and *Cyphoneuridae* Carp. N.-russian *Cicadopsyllinae* Mart., hardly may be included in the fam. *Archescytinidae*; they represent, apparently, a distinct family.

RELATIONS OF THE GENERA *ARCHESCYTINIDAE*

As we have mentioned above, some genera of *Archescytinidae*, — *Permoscytina*, *Archescytina* and, especially, *Sojanoscytina,* reveal obvious resemblance in the structure of their wing venation to the recent *Aphidodea.* This resemblance is evident especially in the structure of the cubital region; in both *Aphidodea* and just named genera of *Archescytinidae* basal, horizontal part of CuA is very long, therefore the space between CuA and CuP is very broad, narrowing backwards. CuP in the wings of *Aphidodea*, in the connexion with the compression and reduction of their anal region, has retreated backwards, to the hind border of wings, and even disappeared, but my friend Dr. Mordvilko has kindly told me, that in several few specimens he sought a stripe near the hind margin of wings, which one may consider as representing CuP (my terminology).[1]

Resemblance of the wing-venation in *Archescytinidae* to that in *Aphidodea* allows now to resolve the question of the homology of the vein A_1 (of Comstock) in *Aphidodea.* This vein is not A_1 or CuP; it is, evidently, CuA_2, that is, the hind branch of the fork of CuA.

As to the phylogeny of *Aphidodea*, I do not think, basing on the wings only, that the fam. *Archescytinidae*, precisely, the genera *Permoscytina, Archescytina* and *Sojanoscytina*, might be considered as ancestral of the superfamily *Aphidodea.* In *Aphidodea* RS arises from R very late, usually from pterostigma. In the wings of *Archescytinidae*, on the contrary, RS arises from R very early, and in *Sojanoscytina* it is, even, connected by a cross-vein with M in its basal part. The fork of CuA in all *Aphidodea*

[1] Unfortunately, Mordvilko's paper on the evolution of *Aphidodea* not yet issued (February 1933).

is very long, and its branches derive usually even just from R + M; in all *Archescytinidae*, on the contrary, the fork of CuA is short, and there is no tendency to its lengthening. Size of *Archescynidae,* at least of the genera, resembling more to *Aphidodea*, is not small, and the length of their fore wings reaches 8—18 mm. On these grounds I cannot concur Mordvilko's opinion (in litt.,) that the fam. *Archescytinidae* is ancestral of the superf. *Aphidodea;* it represents an allied side branch of the stem of *Aphidodea*, died out in the Upper Permian or somewhat later.

The genera *Paleoscytina*, *Ivascytina* and *Permopsylla* stand more far from *Aphidodea*, and it is difficult, at present, to indicate their allies among *Sternorrhyncha*. Relationships of *Protopsyllidiidae*, *Cyphoneuridae*, *Lophioneuridae* and *Pincombeidae* also remain at present somewhat indistinct. Because of the great reduction of the wing-venation in *Aleurododea* and in *Coccodea,* the elucidation of the origin and evolution of these groups is very difficult.

А. В. МАРТЫНОВ. О ПЕРМСКОМ СЕМЕЙСТВЕ *ARCHESCYTINIDAE (HOMOPTERA)* И ЕГО РОДСТВЕННЫХ ОТНОШЕНИЯХ

РЕЗЮМЕ

В настоящей работе описываются шесть новых форм пермского семейства *Archescytinidae*, до сего времени остававшегося неизвестным из пределов СССР.

Род Permoscytina Till.

Этот северо-американский род оказался представленным у нас двумя видами: 1) *Permoscytina sojanensis*, n. sp. и 2) *Permoscytina tetraclada*, n. sp. Своими передними крыльями первый вид (фиг. 1) очень похож и близок к канзасским видам, особенно, к *P. muiri* Till.; длина крыла 11.3 мм. Второй вид по форме крыла и строению жилкования (фиг. 2) также напоминает другие виды рода, но сразу отличается тем, что задняя ветвь здесь не простая, а образует развилок; длина переднего крыла 12 мм.

Род Sojanoscytina, n. gen.

Этот новый род отличается длинной птеростигмой, присутствием более, чем четырех ветвей на M, коротким развилком CuA и соединением A_2 с A_1 в передних крыльях. У *S. grandis*, n. sp. (фиг. 4) переднее крыло крупное (длина 18 мм), M_{1+2} с тремя, M_{3+4} с двумя ветвями; поле между CuA и CuP велико и расширяется к основанию; RS соединен близ основания с M. У *S. minor*, n. sp. (фиг. 5) длина крыла 12.5 мм, M_{1+2} с двумя, а M_{3+4} с тремя ветвями. *Sojanoscytina* (?) *latipennis*, n. sp. описывается по задним крыльям, которые еще не были известны в сем. *Archescytinidae*. Крыло расширено и закруглено

по наружному краю, передний край прямой, медиана трехветвиста и связана с RS поперечной жилкой. Поле между CuA и CuP широко и расширяется к основанию; две анальных жилки; анальная область не расширена.

Род Ivascytina, n. gen.

R прямой; M начинается не вместе с Cu, а соединяется с R отдельно; поле между CuA и CuP очень узкое. Один вид — *I. difficilis*, n. sp. (фиг. 6); M с 4 ветвями, CuA_1 с небольшим развилком; длина переднего крыла 13.5 мм. Резко обособленный от предыдущих род.

Находка заднего крыла (*S. latipennis*) показывает, что задние крылья у *Archescytinidae* не были расширены в анально-югальной области, точно так, как они не расширены у современных *Sternorrhyncha* (растительные вши), и этим они резко отличаются от *Auchenorrhyncha* и *Heteroptera*, у которых задние крылья всегда расширены в анально-югальной области. В этом отношении *Archescytinidae*, следовательно, попадают в подотряд *Sternorrhyncha*. Обнаруженная Карпентером многочлениковость усиков ставит их туда же, за то же говорит и перепончатость передних крыльев. Особенностью *Archescytinidae* является трехчлениковость их лапок; однако я думаю, что это лишь признак примитивности. Я не думаю, поэтому, что Карпентер был прав, выделяя это семейство в особый подотряд (*Paleorrhyncha*), из которого будто бы развились как *Sterno*,- так и *Auchenorrhyncha*. *Archescytinidae* были уже *Sternorrhyncha*, только стояли на более архаической стадии эволюции.

Из всех *Sternorrhyncha* тли наиболее близко напоминают большинство родов *Archescytinidae;* широкое поле CuA—CuP подчеркивает сходство их крыльев особенно ясно. У *S. latipennis* анальная область задних крыльев уже испытала некоторое сжатие, а поле CuA—CuP даже относительное расширение в основании; у тлей анальная область совершенно редуцировалась, а CuP сдвинулась почти к самому краю.

Несмотря на эти сходства *Archescytinidae* вряд ли могли дать начало группе тлей; против этого говорит целый ряд признаков в жилковании крыльев, а также и крупные размеры, достигнутые этой ископаемой группой в Перми. По развиваемым здесь соображениям *Archescytinidae* родственны тлям, но стоят в стороне от линии эволюции их; они составляют, как я думаю, боковой ствол их, рано развившийся, достигший крупных размеров (в части форм) уже в Перми, но затем подвергшийся решительному вымиранию. С подобным явлением раннего, «преждевременного» расцвета боковых стволов мы встречаемся в истории животных организмов, вообще говоря, довольно часто, и каждый раз такие рано расцветшие группы подвергаются быстрому вымиранию. Что касается не типичных родов *Archescytinidae*, как-то *Paleoscytina* Carp. и *Ivascytina* Mart., затем семейств *Protopsyllydiidae*, *Pincombeidae*, *Lophioneuridae* и *Cyphoneuridae*, то их отношения к современным группам *Sternorrhyncha* остаются пока неясными, так как трудно провести сравнение их крыльев с крыльями *Coccidae* или *Aleurodidae*, у которых жилкование почти исчезло.