

Martini: Palaearctic Culicidae (1930), pp. 146-151

hyreanus Pallas (1771, Journey through various provinces of Russia 1, p. 475). (figs. 172-178)

Syn. *A. sinensis* Wied. 1828, *A. pseudopictus* Grassi 1899, *pictus*?
Loew 1845.

Head: Rear of the head covered in the center with white forked scales which become white sickle-shaped scales in the front; grayish black scales on the side, sparse grayish brown scales on the gena; a tuft of white slender scales projecting between the eyes and bristles on the crown. Rim of the eye not particularly differentiated. The eyes are black. Proboscis dark brown, labella somewhat lighter. Scales lying rather flat. Tori dark brown with a number of small white scales on the inside, larger white scales are found on the 1st to 6th segments of the cilium, cilium otherwise dark brown with black hairs. Clypeus brownish black with a tuft of brown scales on each side. Palpus (fig. 172) almost as long as the proboscis with labella, 5th segment more than half as long as the 4th, scales grayish black with lighter reflection and (in isolated cases) scattered lighter scales, with white scales at the tip, the joints, and in the middle of the long segment. Lobes of the prothorax well separated, mesonotum ringed dark gray with hair scales reflecting silver to pale gold, with somewhat broader, white scales at the forward edge and over the wings. Scutellum uniformly rounded with closed row of bristles, mesophragma light brown, pleura dark brown. Abdomen blackish with lighter sides and rear edges, a tuft of dark gray below the end of

the 7th segment; several white scales on the 8th.

Wings: stem of the fork r_{2+3} approximately $2/3$ as large as the fork. Stem of the fork m_{1+2} almost as long as the fork. Radiomedian cross vein lies along its entire length distal from the mediocubital and slightly proximal from the origin of r_{4+5} .

Scales of the wings: Completely black except for white spots at the inosculation of the sc and before the inosculation of the r_1 . r white at bottom, then mixed, then black up to the end of the 1st third (fig. 173), followed by a black and then a white spot, and the rest is mixed up to the end of the 2nd third. At the white costal spot the r_1 is white, then black up to the other costal spot with only proximal scattering of several light scales, white below the 2nd costal spot. Extreme tip black. The sc black. Origin of the s.r. black corresponding to the 2nd black spot, then predominantly white up to the base of the fork; the fork black in the lower part and black for a long distance in the forward branch which does not become white until below the 2nd costal spot. Below this, scales of the rear branch gray,

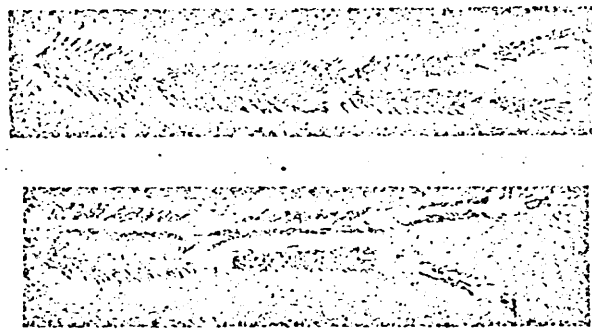


Figure 172. Palpus of various specimens of *A. hyreanus* seen from the inside and the outside.

inosculation of both branches into the costa black. r_{4+5} dark on the bottom, then lighter then darker speckled to the end. Media black on the bottom to below the black part of r, then mottled. Beginning below the white spot of r predominantly white to the base of the fork which is black. Then each branch white and mixed with a short white spot before the inosculation into the costa. Curitus: base white, black spot below than of the media, lower branch white from there to the tip which is mixed. Upper branch mixed with black spot near the cross vein, end black, white spot before the end. an white with a spot of dark scale in the middle and at the end.

Peduncle pale, darkened on the rear and at the tip. Popliteal spot

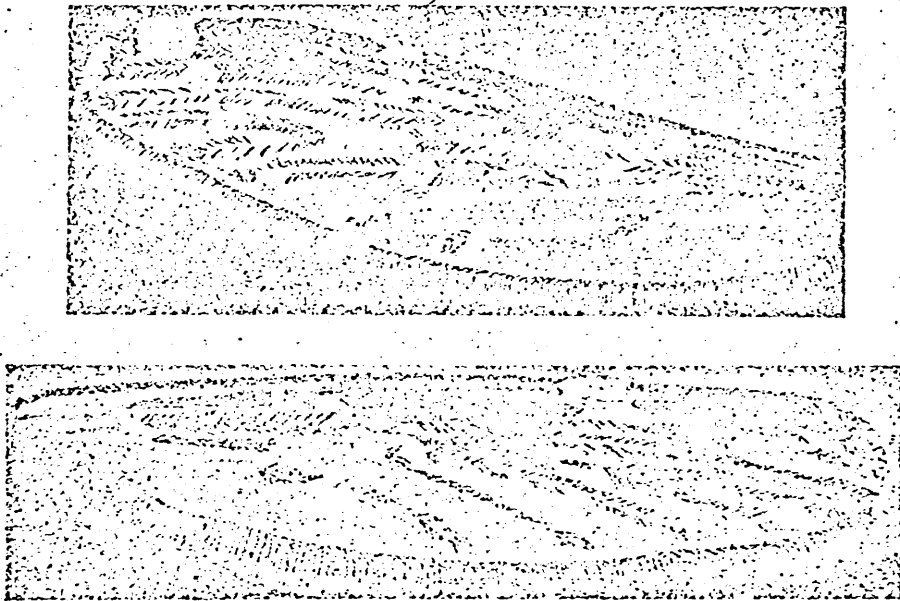


Figure 173. Wing of *A. hyreanus typicus* (above) and *A. hyreanus Mahmuti* (below).

absent. f_1 distinctly thicker at the base (fig. 174). t dark brown on the upper side and pale on the underside. Tarsal segments 1 to 3 of the p_1 with white tip spot, otherwise dark brown; p_2 the same, p_3 with white tip spot on tarsal segments 1-4.

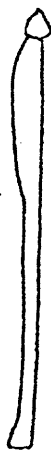


Figure 174. Front peduncle of *A. hyreanus*.

Tori dark brown, antenna cilium yellow and dark brown rings. Hair: proximal outside more gray, distal and inside more grayish yellow to bright yellow. On the palpi the end of the 3rd segment is greatly widened and, with the 4th and 5th, forms a long, flattened lobe. Folded, the palpi would project somewhat beyond the proboscis. They are covered with brown scales, and have somewhat roughened scales at the base. The second segments have a milky white line on the back; the third segment has the line on the inside. A fine white ring at the limit of the 3rd and 4th segments. Suggestion of a white, interior longitudinal line also on the 4th and 5th segments. White iridescent scales at the tip of the 4th segment and at the tip of the 5th. The bristles,

which are greatly developed particularly toward the outside, are gray and foxy yellow at the base. The hypopygium has a long appendix, widened at the tip of the otherwise narrow 9th tergite. At the valva is a spine just behind the middle of the inner edge, and 2 basal spines of which the outer is the longer. Farther outward is a particularly thick hair. The basal lobe has a simple spine on the dorsal protuberance. On the middle protuberance is an appendage of two fused spines, and on the apical are two spines of almost equal length. The penis has barbed hooks (fig. 175a).

This species forms many varieties and the question arises if it is also later resolved into a majority of species. One of the best known is the *pseudopictus* Grassi variety occurring in southern Europe, particularly in Italy, which is recognized by the very light 4th segment of the rear foot. This bright color, however, is usually only iridescent color, as shown by the two illustrations of fig. 175. Another variety is the var. *sinensis* which occurs in the orient; see the table below. Several less known varieties will be discussed.

Length 5-6 mm, wing length 5-6 mm.

Europe, Asia

On the whole, the specimens of the subspecies *sinensis*, see below, are smaller, 5 mm, the western: *pseudopictus*, etc., are larger. From material from the same region it can be seen that the blurred specimens are usually larger, those with more contrast are usually smaller.

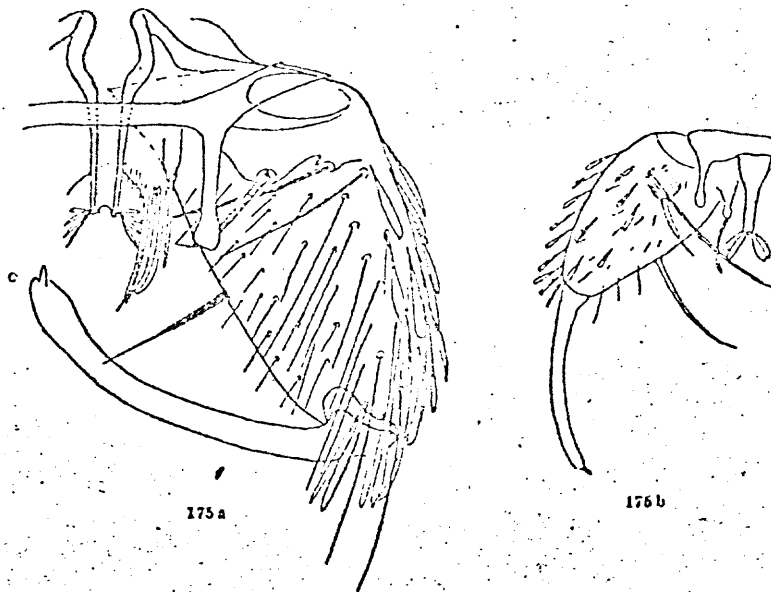


Figure 175. Hypopygium of *A. hyreanus*, left half. a) typical, b) *Popovi*. According to Schingarew.

hyreanus var. *mesopotamiae* Christophers. (1915, Christophers & Khazan Chand, Ind. Journ. Med. Res., vol. III, p. 196)

Wings. Scales of the C vein mixed with predominantly dark scales, white at the inosculation of the sc, black just before, black after this point until near the tip of the wing. White spot here. sc mixed, white at the inosculation, black just before. r_1 white at the base, then mixed, almost black at the point of origin of s.r. and before the white c-spot. White below this, then predominantly black, also white below the distal c-spot, extreme tip black.

r_{2+3} origin black, then white to the fork, fork mixed at the base,

then black, then white. r_2 with almost black ending (only a few scattered white scales).

r_3 mixed up to the tip. r_{4+5} very briefly black at the base, also very briefly white, then mixed up to the tip, m mixed at the base, stem of the fork white, region of the cross vein only weakly darkened, fork mixed. cu white at the base, black in the middle and again white up to the fork, cu mixed with small black spot in the region of the cross vein, lower branch mixed, a white with broad dark tip and black middle spot before the broad mixed points. Peduncle, tibia, tarsus like the primary form. Mesopotamia.

hyreanus var. Mahmuti Martini (fig. 173, bottom)

Head: white forked scales in the center of the rear of the head; scales become sickle-shaped scales toward the front and bronze-reflecting forked scales on the sides, gena bare at the front and with gray reflecting formed scales to the rear. Similar scales on the gula, on the crown is a tuft of long white scales and hair which protrudes between the eyes, black bristles around the eyes, eyes black, proboscis black, the labella somewhat lighter, tori dark brown with several milky white spots on the inside. 1st cilium segment with numerous white scales, similar scales on the 2-4 segments, cilium black with white iridescent fuzz and black hair, Clypeus dark gray, palpus grayish black, as long as the proboscis, 5 segments, 5th segment more than half as long as the 4th. Scale covering with grayish black scales which, particularly in a line on the back of the palpi, reflect white and simulate a white longitudinal line which is actually present only on the basal part

of the long segment, with white rings at the middle of the long segment and the two distal joints, and bright tip; black bristles.

Mesonotum: base dull black with gray rings, with curly hair-shaped, golden reflecting scales; wider scales at the forward edge and over the wing root very sparse; scutellum paler, blackish in the middle, mesophragma black with gray ring; pleura blackish. Abdomen blackish with blackish, pale golden reflecting hairs and a tuft of dark and whitish scales below the 7th and 8th abdominal segments. Wing, stem of the fork r_{2+3} approximately as large as the fork, stem of the fork m_{1+2} approximately as long as the fork.

Scale covering of the wing: c dark except for white spots at the inosculation of sc and shortly before the inosculation of r; sc black except for the extreme tip. r base briefly white, then black with a small white spot at the end of the 1st third and a larger one below the 1st, a smaller one below the 2nd white costal spot. s.r. dark below the 1st costal spot followed by short white spot, fork branches r_2 and r_3 dark with a white spot below and diagonally below the outer c-spot. r_{4+5} black at the base, then mixed, usually darker, except for the extreme tip which is black. m white at the very base, then black until below the white radial spot, mixed from there on, broadly black in the region of the cross vein, at the base of forks only m_1 with pure white spot, extreme tip of m_1 and m_2 black. cu white at the base, then broadly black, then white until shortly before the end of the rear branch, front branch speckled, broadly black near the cross vein, then mixed, tip black. an white with somewhat larger black spots in the middle and at the end. Peduncle, tibia, tarsal segments as in the

primary form, except that the tip spots do not appear white, but pale yellowish white.

The striking feature of these specimens is the extended dark spot which is formed by the union of the s.r. spot with the cross vein spot and the dark costal edge, and which is reminiscent of the americal *A. punctipennis*.

Asia Minor

hyreanus Marzinowkii Schingarew. (1926, Russ. Jl. Tropenmed. p. 48) (From the Russian text)

Differs from *A. hyreanus* by the absence of the white rings on the palpus.¹ Tuft of hair and scales on the forehead not white as with *A. hyreanus*, but dark brown. White rings on the tarsi very weak. A specimen was brought to Professor Marzinowski from Karajaiskaja in the Caucasus.

Caucasus

hyreanus var. *popovi* (An. Popovi Schingarew 1928, Russ. Hourn. d. Tropenmed., vol. 6, p. 50). (fig. 175b).

Translation of Schingarew's description:²

Dark mosquitos of medium size, in their appearance resembling the

¹ N.B. The French text here reads: feet not ringed; at another place: the white rings on the legs are slightly marked.

² I give the full description, because it is still not available in any of the generally understood languages.

group *Anopheles hyreanus*. Differ from *A. hyreanus* by the marking of the rear tarsus, by the form of the 9th tergite and form and size of the leaf-shaped appendages of the aedeagus.

Proboscis brown covered with brown scales with small admixture of white scales. Palpi brown, covered with brown scales with mixture of white, with four white rings in the female. The last ring is at the tip of the palpus. On the male at the base of the first palpus segment is a tuft of napped white and brown scales. Palpi of the male have long, light brown hair. On the entire outer edge including the middle they are lightly covered with white, broad scales. Antennas of the female dark brown with rosettes of golden brown short hairs and covered with white fuzz. Antennas of the male light brown covered with light brown hairs including the last two segments which are covered with small light brown and white scales. Head dark brown. Light brown, erect scales on the sides.

Cybeal bush white. Mesothorax gray. A dark brown stripe extends from the head to the scutellum over the center of the back. In the front parts of the mesothorax, at the side of this dark band, are tufts of whitish yellow narrow scales. Hairs which cover the mesothorax yellowish white. Sides of the thorax brown with whitish bands. Scutellum gray with dark spots in the middle and covered with long, golden brown hairs. Halteres light with dark tips. Wings transparent. The veins of the wings are covered with dark brown and completely white scales. The white scales dominate on all veins except the c and sc. Arranged at the costal veins, which are covered with dark brown scales, are two spots of white scales. One of these spots is

narrow and lies in the distal third of the wing. The second, which begins very close to the tip of the wing extends further onto the fimbriae of the tip. This spot is wide. Fimbriae of the wing light brown with broad white spot at the tip and with narrow white spot at the mouth of the rear cu vein into c.

Abdomen grayish brown with long golden brown hair. The p is dark brown. f and t as well as 1st tarsal segment covered on the inside with whitish yellow scales, from the outside with brown scales. The joint of the f with the t and of the t with the tarsus in all three pairs of p with broad white spot. Tarsus dark brown with white rings. The white rings on the tarsus of the p_1 stand at the tip of the 2nd, 3rd and 4th segment of this tarsus. The white rings of the second pair of legs are at the first, second and third segments. They are somewhat narrower than those of the p_1 . Rings on the tarsus of the p_3 at the tip of the 1st, 2nd and 3rd segments. 4th segment completely white, 5th white except for the base on which is seen a small field of dark scales.

The hypopygium is similar to that of *A. hyreanus*, differs in the form of the 9th tergite, which is much wider and whose inversions are shorter than for *A. hyreanus*. In addition, the aedeagus is equipped with large, wide, leaf-shaped appendages. One of the basal stings of the 1st segment of the valva sits on a massive protuberance; it is thick and short. The other sting is directly next to the first without a basal protuberance. It is twice as thin and longer than the first (On *Anopheles mauritanus* Gop. the basal stings are both of the same length and both are directly next to the 1st valva segment).

Larva unknown. Turkestan, collected by Dr. N. J. Chodukin. Turkestan.

The variability of this anopheles is very great. The causes of this are still extensively unknown. Edwards points out that the white color of the 4th tarsalia of the p_3 of many specimens disappears under certain illumination. It frequently appears like diluted milk on a dark base. In the case of one specimen from Italy not only is the tip of the third tarsus white, the part farther proximal from it also has a narrow white stripe in certain light. If this white (fig. 176) is also a white reflection, it cannot be evoked in my anatolian specimens, and is thus based on a peculiarity of the scale structure or position (napping which leaves many specimens from other

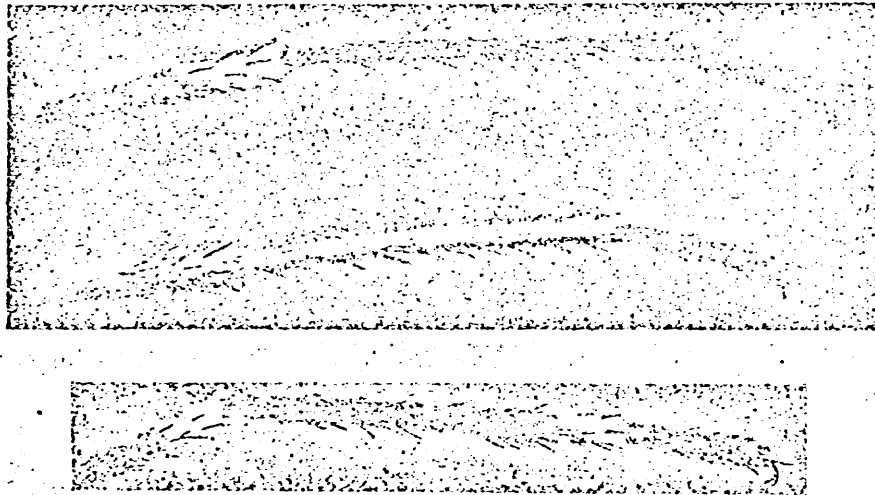


Figure 176. a) End of the p_3 of an *A. Hyreanus pseudopictus*. Light falling from the front (proximal); b) the same, light falling from the side; c) *hyreanus typicus*. The same, light falling from the side.

regions. This can be more or less widespread, distinct or weak. I must also agree with Edwards that the processes of the 9th tergite are very variable, at least the picture which they present under the microscope. See also that stated for *A. maculipennis*. The color of the luminous scales, whether more white or more yellowish, also appears variable. The circumstances here are apparently as difficult as with *maculipennis*, and only breeding will be able to clarify these questions. For the present I should like to treat them all as one species.

Survey of Palaerctic Varieties

- 1. Palpus without bright rings var. *Marzinowskii*
Schingarew
- Palpus with bright rings 2
- 2. 4th segment of rear foot completely white 3
- Rear foot segments predominantly dark except for
small white rings at the tip 4
- 3. The 3rd rear foot segment also distinctly white
at the tip, bright wing design white *Flerowi* Portschini
- Only the 4th rear foot segment white, bright
wing design yellowish *pseudopictus* Grassi
- The 5th rear foot segment also for the most
part white (*A. argyropus*), Popowi
Schingarew
- 4. Costa in the basal part completely black scales . 5

- Costa in the basal part with several bright scales, In the wings, the mixed scaled sections suppress those of pure scales, the entire animal therefore appears to have a blurred design mesopotamiae Christophers
- 5. The black markings very widespread, the crescent spot on the cross veins fuses with the adjacent spot on the costa up to r to a large spot Mahmuti Martini
- The black marking is less developed. 1st white spot (approximately at the end of the 1st third of the r) large. Crescent spot of the cross vein region appears independent compared to the edge spot, coloration of the bright scales is yellow hyreanus Pallas
- Black markings on the forward veins deep, the bright markings predominate on the rear veins, crescent spot on the cross veins distinct. Bright scales more white sinensis Wied.