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ON THREE APHIDS OF *ROSA RUGOSA* OCCURRING IN JAPAN WITH DESCRIPTION OF A NEW SPECIES (Homoptera: Aphididae)

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In this paper will be given three aphids infesting *Rosa rugosa* in Japan, of which one is new to science. The type specimens of the new species are deposited in the Entomological Institute, Hokkaido University.

I wish to express my gratitude to Prof. C. Watanabe of the Entomological Institute, Hokkaido University, for his continuous kind direction. Sincere thanks are also due to Dr. D. Hille Ris Lambers of Bennekom, Netherlands, Dr. V. F. Eastop of the British Museum (N. H.), London, Dr. Woon Hah Paik of the Seoul National University, Suwon, Korea, and Dr. M. D. Leonard of Washington, D. C., U. S. A., for their kindness in offering valuable specimens for comparison, or in giving helpful suggestions.

Myzus japonensis, n. sp.

Apterous viviparous female. Body in life pale yellow or pale yellowish green to green. Antennae pale, darkened towards apex. Legs pale with black tarsi; femora and tibiae fuscous at apex in some specimens. Cauda pale. Siphunculi fuscous. Eyes dark red to nearly black. Body 1.4-1.9 mm. long excluding cauda.

Head strongly scabrous except on central area of dorsum; dorsal setae of head blunt, the posterior ones arranged in a line between eyes being minute, about 10 μ in length, while the anterior and ventral ones longer, up to 33 μ. Antennal tubercles developed, scabrous, with 3-7 setae ventrally; projection of frontal tubercles converging, about as long as broad, and with 2 or 3 setae. Antennae imbricated, about as long as body, without secondary rhinaria; 3rd segment with 11-20 short blunt setae; 6th segment with processus terminalis 4-5 times as long as base; length of 3rd-6th segments in proportion 38 : 28 : 26 : 12+52. Mandibular laminae with 2 or 3 setae; clypeus with 2 pairs of anterior setae. Rostrum passing middle coxae or reaching hind coxae; ultimate segment 1.3-1.4 times as long as 2nd segment of hind tarsus, about as long as basal part of 6th antennal segment, with 5-8 (rarely 4) secondary setae. Mesosternal furca sessile. Legs almost smooth; femora with some weak imbrications apically; first tarsal chaetotaxy 3 : 3 : 3; 2nd segment of hind tarsus with a pair of ventral setae in addition to 3 pairs of apical ones; longest seta of femora 15-20 μ, at most 1/3 of middle breadth of hind femur; tibial setae at most 30 μ, shorter than middle breadth of hind tibia. Larvae without spinules on hind tibiae. Abdominal tergum membraneous, without ornamentation, smooth, sometimes weakly wrinkled,

spinulously imbricated behind siphunculi, around 7th abdominal spiracles and on 8th abdominal segment; postsiphuncular area and 7th and 8th abdominal terga pale but sclerotic. Second to 4th abdominal segments with 8–10 minute setae including marginal ones, the setae being 6–10 μ in length; 5th and 6th segments usually with 4 setae between siphunculi; 7th segment with 2 setae between spiracles; 8th segment with 2 (sometimes 3) setae which are about 10–20 μ long. Genital plate nearly round, with 7–10 setae along hind margin and a pair of anterior setae. Siphunculi cylindrical, dilated at base, constricted just below well developed flange, strongly imbricated, 10–13 times as long as broad at middle, 2.5–2.8 times as long as cauda, and about 1/4–1/3 as long as body. Cauda 1.8–2.1 times as long as broad, constricted just basally, blunt at apex, gradually tapering or with weak attenuations at apical 1/3 and 2/3, with 4–6 setae.

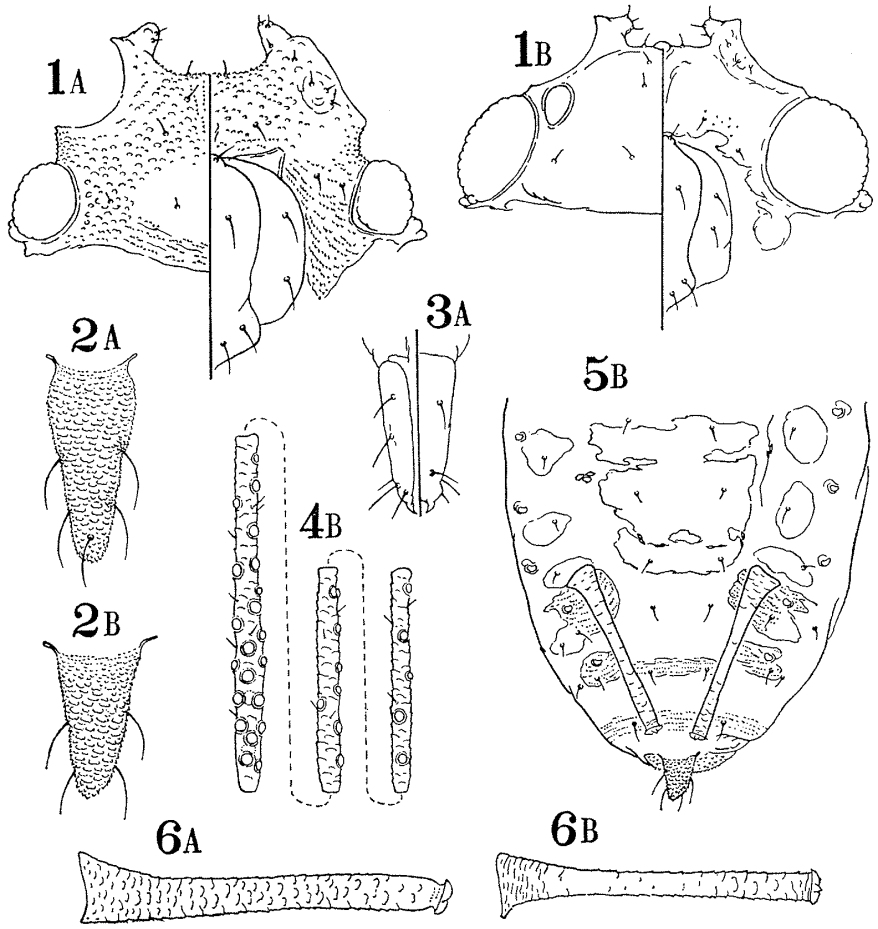

Fig. 1. *Myzus japonensis*, n. sp. A, apterous viviparous female; B, alate viviparous female. 1, head; 2, cauda; 3, ultimate rostral segment; 4, antennal segments (3rd–5th); 5, dorsal view of abdomen; 6, siphunculus.

Measurements (in mm.). Body 1.85; head across eyes 0.38; antennal segments (1st-6th): 0.11, 0.07, 0.35, 0.27, 0.22, 0.11+0.45; ultimate rostral segment 0.11; hind femur 0.55; hind tibia 0.95; siphunculus 0.49; cauda 0.18; longest seta on head 0.020, that on 3rd antennal segment 0.008, that on 8th abdominal segment 0.013.

Alate viviparous female. Differs from the apterous female as follows:

Abdomen pale yellow in life. Head, thorax and antennae black. Legs pale; femora and tibiae at apex and tarsi black. Body 1.4-1.7 mm. long excluding cauda.

Head quite smooth dorsally, with some spinules ventrally. Antennae a little longer than body; 3rd segment with 17-24 large secondary rhinaria along whole length, and with 8-11 minute setae; 4th segment with 7-12 secondary rhinaria; 5th segment with 3-7 secondary rhinaria in addition to apical primary one; length of 3rd-6th segments in proportion 38 : 28 : 25 : 12+60. Wing venation normal. Abdomen with a median sclerotic patch which is nearly rectangular, incised and/or perforated intersegmentally; 2nd-4th segments with marginal sclerites which bear a seta respectively, and with 4 minute setae between these sclerites; 5th and 6th segments with 2 setae between siphunculi, ante- and postsiphuncular sclerites developed; 7th segment with 2 setae between spiracles; 8th segment with 2 or 3 pointed setae which are about 25 μ long, 3/4 as long as middle breadth of 3rd antennal segment. Siphunculi weakly imbricated, slightly swollen apically, about 10 times as long as its middle breadth, 3.5 times as long as cauda.

Measurements (in mm.). Body 1.39; head across eyes 0.37; antennal segments (1st-6th): 0.08, 0.06, 0.38, 0.27, 0.24, 0.11+0.55; ultimate rostral segment 0.10; hind femur 0.47; hind tibia 1.05; 10; longest seta on head 0.018, that on 3rd antennal segment 0.009, that on anterior segments of abdomen 0.010, that on 8th abdominal segment 0.023.

Oviparous female. Differs from the apterous viviparous female as follows:

Body pale yellowish green with head and prothorax black. Antennae black with 3rd segment pale at base. Legs pale; femora and tibiae at apex, tarsi wholly and sensoriated area of hind tibiae black. Siphunculi and cauda fuscous. Body much smaller, 1.1-1.2 mm. long excluding cauda.

Siphunculi 2.2-2.6 times as long as cauda, 8-10 times as long as broad at middle, as long as head across eyes. Abdomen with 2nd-4th segments bearing 5 or 6 (rarely 4) minute setae including marginal ones, and with 5th and 6th segments bearing 2 setae between siphunculi. Ultimate rostral segment 1.4 times as long as 2nd segment of hind tarsus, with 4 secondary setae. Hind tibiae swollen, with many pseudosensoria. Antennae with 3rd-6th segments in proportion 19 : 15 : 15 : 9+38. Genital plate with 15-17 setae on hind margin, a pair of anterior setae and 6 or 7 additional ones on central area.

Measurements (in mm.). Body 1.17; head across eyes 0.30; antennal segments (1st-6th): 0.08, 0.06, 0.19, 0.15, 0.14, 0.09+0.39; ultimate rostral segment 0.10; hind femur 0.30; hind tibia 0.54; siphunculus 0.29; cauda 0.12; longest seta on head 0.015, that on 3rd antennal segment 0.005, that on 8th abdominal segment 0.020.

Alate male. Slightly differs from the alate viviparous female as follows:

Antennae with 3rd segment bearing 38-50 secondary rhinaria on whole surface and 13-18 short setae; 4th segment with 20-31 secondary rhinaria; 5th with 15-22 secondary rhinaria in addition to apical primary one; length of 3rd-6th segments in proportion 35:24:23: 10+54. Genitalia normal. Body 1.3-1.6 mm. long excluding cauda.

Measurements (in mm.). Body 1.42; head across eyes 0.36; antennal segments (lst-6th): 0.08, 0.06, 0.35, 0.23, 0.23, 0.10+0.53; ultimate rostral segment 0.10; hind femur 0.40; hind tibia 0.81; siphunculus 0.27; cauda 0.07; longest seta on head 0.018, that on 3rd antennal segment 0.013, that on anterior abdominal segments 0.013, that on 8th abdominal segment 0.025.

Specimens examined (syntypes): 16 apterous viviparous females, Sapporo, Hokkaido, 8-vi-65, 8-vi-67 & 22-vi-67, and Akkeshi, Hokkaido, 19-vii-66; 3 alate viviparous females, Sapporo, 26-x-67, and Akkeshi, 19-vii-66; 15 oviparous females, Sapporo, 20-x-67 & 26-x-67; 3 alate males, Sapporo, 20-x-67 & 26-x-67. All the specimens were collected from *Rosa rugosa* by M. Miyazaki.

Host plant: *Rosa rugosa.*

Distribution: Japan (Hokkaido).

The life cycle of this aphid has not yet been known exactly, but material from *Rosa rugosa* at the end of July may suggest that the aphid completes its life cycle on the host plant. It infests the underside of the leaves, frequently inhabiting between the young unfolded leaves in the earlier season. Neither deformation nor discolouration is caused on the infested leaves. Association with ants is not known.

The present species is characteristic in the membraneous abdominal tergum of the apterous viviparous female and in the occurrence of many secondary rhinaria on the 3rd, 4th and 5th antennal segments of the alate viviparous female. On account of these aspects the present species is closely related to *Myzus (Prunomyzus) padellus* Hille Ris Lambers & Rogerson, 1946, and yet it is immediately distinguished from the latter in the following points in the apterous viviparous female: Antennae longer, about as long as body; frontal tubercles with a projection protruding inwards; cauda much longer than wide; ultimate rostral segment longer, 1.3-1.4 times as long as 2nd segment of hind tarsus; and dorsal setae short and blunt. In the key to the Japanese species of the genus *Myzus* given by Takahashi (1965), the present species comes near *M. asamensis* Takahashi, 1965, having the pale abdomen and the curious constriction at the base of the cauda and at the apex of the siphunculi in the apterous viviparous female, but is distinguishable therefrom in having no pigmentation behind the siphunculi.

Macrosiphum mordvilkoi, nom. nov.

Macrosiphum rosae orientale Mordvilko, Faune d. l. Russ. Ins. Hemipt. 1 (2): 451, 1919 (nec *Macrosiphum orientale* van der Goot, Tijdschr. Ent. 55: 322, 1912).

This species is new to Japan. On the basis of the present specimens from Japan a redescription will be given below:

Apterous viviparous female: Body in life green or yellowish green with head

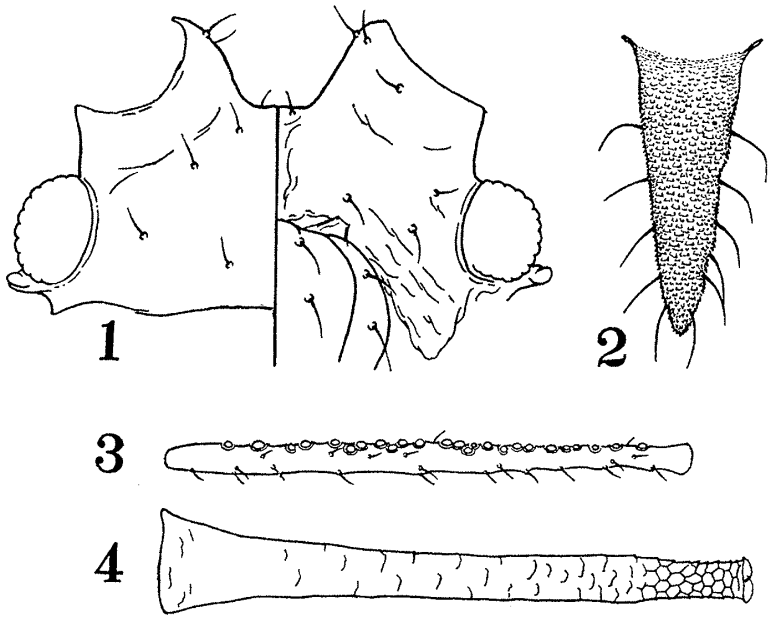

Fig. 2. *Macrosiphum mordvilkoi*, n. n., apterous viviparous female. 1, head; 2, cauda; 3, 3rd antennal segment; 4, siphunculus.

and prothorax black, shiny or slightly waxy. Antennae entirely black or with 3rd and 4th segments pale basally. Eyes dark brown. Legs pale yellowish; femora at apex, tibiae at base and at apex and tarsi black. Siphunculi black. Cauda pale yellowish. Body 2.5-3.8 mm. long excluding cauda. Larvae light green, pulverulent with wax powder.

Head with dorsal setae blunt and 0.8-1.1 times as long as middle breadth of 3rd antennal segment. Antennal tubercles well developed, strongly diverging, with 2 apical and 1 mid-ventral setae. Antennae a little longer than body; lst segment smooth, with 6-9 setae; 2nd imbricated, with 4 or 5 setae; 3rd smooth, with 23-36 rhinaria on basal 4/5 or up to whole length, and with 20-28 setae which are at most as long as middle breadth of the segment; processus terminalis 4.5-6.0 times as long as basal part of 6th segment; length of 3rd-6th segments in proportion 74:50:42:13+65. Mandibular laminae with 1 or 2 setae; clypeus with 3 or 4 anterior setae. Rostrum reaching or passing middle coxae; ultimate segment 0.9-1.1 times as long as 2nd segment of hind tarsus, with 6-8 setae. Femora smooth or weakly imbricated apically, with setae at most 1/2 as long as middle breadth of hind femur. Tibiae smooth, with setae about as long as middle breadth of hind tibia. First tarsal chaetotaxy 3:3:3; 2nd segment of hind tarsus usually with 2 secondary setae dorsally, 6 ventrally, and 4 laterally in addition to 3 pairs of apical primary ones. Second to 4th abdominal segments with 5-8 setae between small and pale marginal sclerites, each of the sclerites bearing 1-3 setae; 5th with antesiphuncular sclerites well developed; 6th with 3 or 4 setae between well developed postsiphuncular sclerites; 7th with large marginal sclerites sometimes forming a narrow sclerotic band, and with 7-9 setae

including marginal ones; 8th sclerotic, with 6-8 setae, of which the longer ones are 0.7-1.3 times as long as middle breadth of 3rd antennal segment. Genital plate with 14-17 setae along hind margin, a pair of anterior setae and sometimes a few additional short setae on central area. Siphunculi cylindrical, dilated at base, attenuated at reticulated area which covers apical 1/8-1/5 of siphunculi, lightly imbricated, 15-17 times as long as broad at middle, 2.0-2.5 times as long as cauda, 1/3-2/5 as long as body, and with flange moderately developed. Cauda 2.0-3.0 times as long as broad at base, conical, without distinct constriction, with 10-13 setae.

Measurements (in mm.). Body 3.30; head across eyes 0.58; antennal segments (lst-6th): 0.18, 0.10, 1.08, 0.73, 0.53, 0.17+0.83; ultimate rostral segment 0.16; hind femur 1.43; hind tibia 2.65; siphunculus 1.24, reticulated area 0.19; cauda 0.60; longest seta on head 0.04, that on 8th abdominal segment 0.05.

Alate viviparous female. Differs from the apterous viviparous female mainly as follows:

Abdomen in life green with black marginal patches. Head and thorax black. Legs black; femora on basal half and tibiae on middle part yellowish brown. Body 2.7-3.6 mm. long excluding cauda.

Antennae 1.2-1.3 times as long as body, with 30-40 rhinaria distributed on whole length of 3rd segment; length of 3rd-6th segments in proportion 75:48:43:13+71. Ultimate rostral segment 1.0-1.2 times as long as 2nd segment of hind tarsus, with 4-8 secondary setae. Second to 4th abdominal segments with well developed marginal sclerites which bear 3 or 4 setae and sometimes a small tubercle. Siphunculi 14-19 times as long as wide at middle, 2.2-3.0 times as long as cauda. Cauda with a weak constriction at basal 1/3, with 10-13 setae.

Measurements (in mm.). Body 2.93; head across eyes 0.56; antennal segments (1st-6th): 0.15, 0.11, 1.01, 0.65, 0.58, 0.18+0.92; ultimate rostral segment 0.15; hind femur 1.33; hind tibia 2.58; siphunculus 1.24, reticulated area 0.20; cauda 0.46; longest seta on head 0.04, that on 8th abdominal segment 0.05.

Oviparous female. Differs from the apterous viviparous female mainly as follows:

Body orange-red with pale area surrounding siphunculi. Antennae black; 3rd segment pale except at apex and at rhinariated part, 4th and 5th segments pale basally. Hind tibiae wholly black.

Antennae with 3rd segment bearing 10-18 rhinaria on its basal 1/2-7/10, 3rd-6th segments in proportion 72:47:40:14+73. Hind tibiae swollen, with numerous pseudosensoria. Second to 4th abdominal segments with small marginal sclerites bearing a tubercle, and with 6 setae besides marginal ones; antesiphuncular sclerites crescent, with a tubercle; postsiphuncular sclerites rather small; 6th-8th segments with a pair of spinal tubercles; 8th segment with 6 setae, which are up to about 1.7 times as long as middle breadth of 3rd antennal segment. Genital plate with 20-27 setae along hind margin, a pair of longer anterior setae and 6-14 additional ones on middle area. Siphunculi 12 times as long as wide at middle, 2.2-2.7 times as long as cauda which bears 11-14 setae.

Measurements (in mm.). Body 2.34; head across eyes 0.48; antennal segments (1st-6th): 0.13, 0.08, 0.74, 0.45, 0.39, 0.14+0.73; ultimate rostral segment 0.13; hind femur 0.87; hind tibia 1.64; siphunculus 0.73, reticulated area 0.12; cauda 0.33; longest seta on head 0.03, that on 8th abdominal segment 0.05.

Specimens examined: Many apterous and alate viviparous females taken at following localities: Hokkaido- Sapporo, 13-vi-66, 20-vii-64, 8-vii-65, 7-vii-66 & 6-vii-67, Obihiro, 15-vii-66, Kunneppu, 25-vii-66, Mombetsu, 27-vii-66, and Kitamoshiri, 2-viii-66, ex *Rosa rugosa*, M. Miyazaki leg.; Honshu-Utsunomiya, Tochigi Pref., 21-v-66, ex *Rosa rugosa*, M. Miyazaki leg. Three oviparous females, Sapporo, 21-x-66 & 20-x-67, ex *Rosa rugosa*, M. Miyazaki leg. Two apterous viviparous females, Seoul, Korea, 1-ix-63, 1 alate viviparous female, Songhwan, Korea, 19-v-67, and 3 alate viviparous females, Seosan, Korea, 22-v-67, ex *Rosa rugosa*, W. H. Paik leg.

Host plant: *Rosa rugosa.*

Distribution: Japan (Hokkaido, Honshu), Korea, Primorskaya.

This aphid lives on *Rosa rugosa* throughout the year. It is quite abundant in spring and early summer attacking the lower surface of the younger leaves, though the population is reduced during summer.

The present material agrees well with the original description of *Macrosiphum rosae orientale* Mordvilko, 1919. As the name *M. rosae orientale* Mordvilko, 1919, was already preoccupied by *M. orientale* van der Goot, 1912, I will give the new replacement name *mordvilkoi* for this species. This species is very closely related to *M. rosae* (L., 1758) but slightly differs from the latter in the 3rd antennal segment bearing rhinaria on its basal 4/5 or up to the whole length in the apterous viviparous female. As far as the present investigation goes, this species has been known only from *Rosa rugosa* and never informed to infest any garden roses in Japan. Through the kindness of Dr. W. H. Paik, I have had the opportunity to examine Korean material, which agrees quite well with Japanese material. According to Dr. Paik, in Korea it has been collected only from *Rosa rugosa*, too.

Chaetosiphon coreanus (Paik)

Pentatrichopus coreanus Paik, Aphids of Korea: 126, 1965.

Having compared the specimens examined with the authentic Korean material determined by Dr. Paik as *coreanus*, I have come to the conclusion that the present specimens should be identified with *coreanus*. The original description of the species is apparently based only on the summer form of the apterous viviparous female. On the basis of the present specimens from Japan a redescription including the other forms except for the male will be given below:

Apterous viviparous female (spring form). Body nearly white to pale yellow in life. Antennae, legs (except for dark tarsi), siphunculi and cauda pale; in some specimens apical part of antennae, femora, tibiae and siphunculi somewhat fuscous. Eyes dark red to black. Body elongate oval, 1.7-1.9 mm. long excluding cauda.

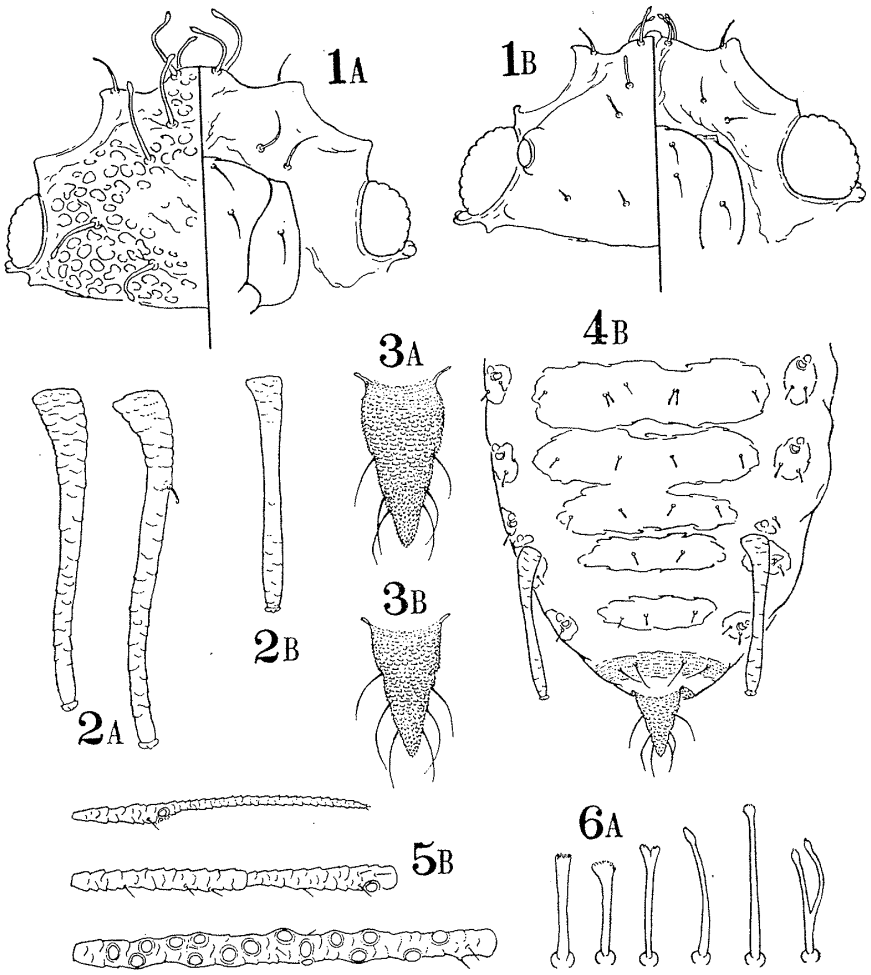

Fig. 3. *Chaetosiphon coreanus* (Paik). A, apterous viviparous female (spring form); B, alate viviparous female. 1, head; 2, siphunculus; 3, cauda; 4, dorsal view of abdomen; 5, antennal segments (3rd-6th); 6, dorsal setae of abdomen.

Dorsal surface of body pale, uniformly sclerotic and papillated ; head rather smooth centrally in some specimens, head, pro- and mesothorax and 8th abdominal segment free, the mesonotum being membraneous on anterior 1/3. Dorsal seta long, stout and capitate. Head with 4 pairs of dorsal setae which are up to 3 times as long as basal breadth of 3rd antennal segment, and with 2 pairs of pointed or blunt ventral setae. Antennal tubercles not developed, with a seta apically; median tubercle well developed, rectangular, higher than antennal tubercles, with 2 pairs of setae. Antennae short, 2/5-1/2 as long as body, mostly 6-segmented (3rd and 4th segments fused together in some specimens), without secondary rhinaria; 1st segment smooth, angulated at inner apex, with 3-5 long capitate setae; 2nd segment smooth, with, 4-5 setae; 3rd segment strongly imbri-

cated on inner side, with 4-7 blunt setae which are shorter than basal breadth of the segment; processus terminalis 1.4-1.8 times as long as basal part of 6th segment; length of 3rd-6th segments in proportion 20 : 11 : 9 : 9+15. Clypeus with 2 pairs of long pointed setae anteriorly; mandibular laminae with 1 similar seta. Rostrum reaching middle coxae; ultimate segment 1.0-1.1 times as long as 2nd segment of hind tarsus, with 4 (rarely 6) secondary setae. Femora nearly smooth, with short blunt setae; tibiae with outer setae capitate and inner setae pointed, the setae being not longer than middle breadth of hind tibia; first tarsal chaetotaxy 5 : 5 : 5. Mesosternal furca divided. Abdomen typically with spinal setae in double pairs on 1st and 2nd segments, in single pairs on 3rd-6th segments, with pleural setae in single pairs on 1st-7th segments, usually wanting on 6th segment, with marginal setae in single pairs on 1st-7th segments, sometimes accompanied with a short additional seta, and with 4 setae on 8th segment, the setae being mostly of the same length, the longer ones 2.2-3.0 times as long as basal breadth of 3rd antennal segment ; 2nd-5th segments with a marginal tubercle posterior to marginal setae. Ventral surface of abdomen membraneous, with some short pointed or blunt setae. Genital plate with 5-7 setae along hind margin and a pair of anterior setae. Siphunculi cylindrical, broadened and bent inwards basally, slightly curved outwards apically, slightly imbricated or wrinkled, 13-19 times as long as broad at middle, 2.5-2.8 times as long as cauda, 1/4-1/3 as long as body, without setae (rarely with a capitate seta) and with well developed flange. Cauda constricted at extreme base, 1.5-2.1 times as long as broad, with 6 setae.

Measurements (in mm.). Body 1.88; head across eyes 0.36; antennal segments (1st-6th): 0.08, 0.06, 0.21, 0.11, 0.10, 0.10+0.14; ultimate rostral segment 0.11; hind femur 0.41; hind tibia 0.74; siphunculus 0.46; cauda 0.17; longest seta on head 0.077, that on 3rd antennal segment 0.014, that on abdomen 0.058.

Apterous viviparous female (summer form). Differs from the spring form of the apterous viviparous female as follows:

Body smaller, 0.9-1.3 mm. long excluding cauda. Dorsal setae longer, 4-5 times as long as basal diameter of 3rd antennal segment. Antennae 5-segmented, processus terminalis 1.7-2.2 times as long as basal part of 5th segment, the 3rd-5th segments being in proportion 15 : 5 : 6+11. Ultimate rostral segment 1.2-1.4 times as long as 2nd segment of hind tarsus, with 2-6 secondary setae.

Measurements (in mm.). Body 0.90; head across eyes 0.23; antennal segments (1st-5th): 0.06, 0.04, 0.13, 0.05, 0.06+0.11; ultimate rostral segment 0.09; hind femur 0.19; hind tibia 0.37; siphunculus 0.25; cauda 0.08; longest seta on head 0.066. that on 3rd antennal segment 0.013, that on abdomen 0.070.

Alate viviparous female. Differs from the apterous viviparous female as follows:

Abdomen pale yellow in life. Head and thorax brownish black. Antennae black. Body 1.4-1.6 mm. long excluding cauda.

Head smooth dorsally and ventrally; postero-dorsal setae 1/2-2/3 as long as basal breadth of 3rd antennal segment, while anterior setae 1.2-1.4 times so.

Antennae 6-segmented, 3/5-4/5 as long as body; 3rd segment with 14-19 large flat secondary rhinaria scattering on outer surface of the segment; 4th with or without 1 secondary rhinarium; processus terminalis 1.6-2.1 times as long as basal part of 6th segment; length of 3rd-6th segments in proportion 36 : 13 : 11 : 10+17. Wing venation normal. Legs with pointed setae; tibiae with setae 1.1-1.4 times as long as middle breadth of hind tibia. Abdomen with sclerotic cross bars on 2nd-8th segments or with the bands on 2nd-6th segments fused together, forming a large sclerotic patch; marginal sclerites on 2nd-4th segments well developed, usually with a tubercle; antesiphuncular sclerites small, with a tubercle, postsiphuncular sclerites rather small. Abdominal chaetotaxy as in apterous viviparous female; setae on anterior abdominal segments about as long as or a little shorter than basal breadth of 3rd antennal segment, those on 8th segment 2.2-2.4 times so. Siphunculi rather straight, slightly bent inwards basally, somewhat swollen on apical half, 2.1-2.6 times as long as cauda, shorter than head across eyes.

Measurements (in mm.). Body 1.52; head across eyes 0.33; antennal segments (1st-6th): 0.06, 0.05, 0.35, 0.10, 0.13, 0.10+0.17; ultimate rostral segment 0.10; hind femur 0.43; hind tibia 0.82; siphunculus 0.28; cauda 0.13; longest seta on head 0.030, that on 3rd antennal segment 0.010, that on anterior abdominal segment 0.023, that on 8th abdominal segment 0.058.

Fundatrix. Differs from the apterous viviparous female as follows:

Body larger, 1.8-2.1 mm. long excluding cauda. Setae very much shorter; setae on dorsal surface of head and on anterior abdominal segments mostly 1/2-4/5 as long as basal breadth of 3rd antennal segment, those on median tubercle of head 2.0-2.8 times so, and those on 8th abdominal segment 1.5-2.4 times so. Antennae mostly 5-segmented, rarely 4-segmented (3rd and 4th segments fused) or 6-segmented; processus terminalis 1.1-1.3 times as long as basal part of 5th segment; length of 3rd-5th segments in proportion 26 : 9 : 9+11. Rostrum not or just attaining middle coxae; ultimate segment 1.0-1.2 times as long as 2nd segment of hind tarsus, with 4-6 secondary setae. Siphunculi more conspicuously straight than in apterous viviparous female, 12-16 times as long as broad at middle, 2.2-2.5 times as long as cauda.

Measurements (in mm.). Body 1.92; head across eyes 0.36; antennal segments (1st-5th): 0.06, 0.05, 0.25, 0.08, 0.09+0.10; ultimate rostral segment 0.11; hind femur 0.38; hind tibia 0.70; siphunculus 0.47; cauda 0.20; longest seta on dorsal surface of head 0.016, that on median tubercle 0.053, that on anterior abdominal segments 0.015, that on 8th abdominal segment 0.061.

Oviparous female. Differs from the apterous viviparous female as follows:

Tergum membraneous with head and prothorax sclerotic and papillated or collugated. Antennae usually 5-segmented; 3rd-5th segments in proportion 18 : 7 : 7+12. Head with dorsal setae 1/2-3/4 as long as basal breadth of 3rd antennal segment by 2 pairs of posterior setae, 2.9-3.2 times so by 2 pairs of anterior setae. Abdominal setae on anterior segments stout and capitate, variable in length, the longer ones being 2.0-3.4 times as long as basal breadth of antennal segment, and those on 8th segment rather thin and pointed, 2.3-2.9 times as long as basal breadth of 3rd antennal segment. Hind tibiae swollen, with many protu-

berant pseudosensoria, the sensoriated part being fuscous in life. Siphunculi straight, slightly bent inwards at base, 11-14 times as long as broad at middle, 1.9-2.2 times as long as cauda, shorter than head across eyes. Cauda 1.6-1.8 times as long as broad.

Measurements (in mm.). Body 1.18; head across eyes 0.27; antennal segments (1st-5th): 0.05, 0.04, 0.15, 0.06, 0.06+0.10; ultimate rostral segment 0.09; hind femur 0.22; hind tibia 0.38; setae on head 0.010-0.063, those on anterior part of abdomen 0.017-0.050, those on 8th abdominal segment about 0.038.

Specimens examined: Many fundatrices and apterous viviparous females, 4 alate viviparous females and 23 oviparous females collected from *Rosa rugosa* at the following localities in Hokkaido. Fundatrix:- Sapporo, 22-v-67 & 8-vi-67, M. Miyazaki leg. Apterous viviparous female:- Sapporo, 8-vi-65, 22-vi-67, 6-vii-67, 20-vii-67 & 20-ix-67, Obihiro, 15-vii-66, and Kunneppu, 25-vii-66, M. Miyazaki leg. Alate viviparous female:- Sapporo, 8-vi-67, M. Miyazaki leg. Oviparous female:- Sapporo, 3-x-67, K. Kusigemati leg., and Sapporo, 26-x-67, M. Miyazaki leg. Some apterous viviparous females collected from *Rosa rugosa* at the following localities in Korea:- Juchon, 10-x-62, Yongam, 10-viii-63, Kwangju, 28-viii-63, Pochon, 2-ix-63, and Yongwol, 9-x-63, W. H. Paik leg.

Host plant: *Rosa rugosa*. Paik (1965) recorded *Rosa polyantha* var. *genuina* as another host plant of the aphid in Korea.

Distribution: Japan (Hokkaido), Korea.

This aphid completes its life cycle on *Rosa rugosa*. In Sapporo the fundatrix is commonly found at the end of May on the youngest unfolded leaves. The apterous viviparous female becomes abundant at the beginning of June. During summer there occurs on the underside of the leaves a smaller form which differs morphologically from that occurring in spring in some respects. The alate viviparous female is rather rare, only a few specimens having been collected at the beginning of June. The sexuales emerge at the beginning of October. This aphid does not cause any deformation nor discolouration on the leaves of the host plant, but when the infestation is heavy the leaves sometimes become sooty because of the black mould. This aphid is not visited by ants.