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XXXV.—Descriptions of Aphides

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mantle, one for the foot, and one in common, for branchiæ and anus.

It must not be supposed that I have mistaken the functions of this fissure, and that it only belongs to the anal apparatus. *This is not the case; it is beyond doubt a common cavity* for two distinct purposes, viz. anal and branchial.

Thus this apparently strangely-formed animal turns out to be very similar to most of the bivalves, having the branchial and anal openings close together, where they ought to be, at the posterior end, and the anterior tube-like fold being nothing more than an aid to the foot in locomotion. I should not be at all surprised if the tube of *Kellia suborbicularis*, when closely examined (as it shall be), turns out to be an open canal; but whether this is the case or not, it is not for branchial, but locomotive uses.

From this examination it results, that the only essential difference between the two species is, that the one is *viviparous* and the other *oviparous*. You will now be able to judge if the genus *Poronia* must be adopted.

In the twelve specimens no young were found, as in the summer-time; I therefore conclude that "Alma Venus," as Lucretius styles the goddess, does not influence the self-sufficing loves of these mollusca until

. "species patefacta est verna diei,
Et reserata viget genitabilis aura Favoni."

I am, my dear Sir, most truly yours,

Ed. Forbes, Esq.

WILLIAM CLARK.

XXXV.—*Descriptions of Aphides.* By FRANCIS WALKER, F.L.S.

[Continued from p. 53.]

61. *Aphis Ribis.*

Aphis Ribis, Linn. Syst. Nat. ii. 733. 1; Faun. Suec. 975; Gmel. ed. Syst. Nat. i. 2201; Fabr. Syst. Ent. 734. 5; Sp. Ins. ii. 385; Ent. Syst. iv. 211. 7; Syst. Rhyn. 295. 7; Frisch, Ins. ii. 9. t. 14; Réaum. Ins. iii. 281–350. t. 22. f. 7–10; Hausm. Ill. Mag. i. 437. 2; Leuwenh. Arc. ep. 90. 545. t. 548; Blanck. Ins. 164. t. 14. f. D. 2; Schrank, Faun. Boic. ii. 1. 108. 1195; Sir Oswald Mosley, Gard. Chron. i. 628; Kalt. Mon. Pfl. i. 39. 26.

Ribifex, Amyot, Ann. Soc. Ent. 2^{me} série, v. 476.

This *Aphis* feeds on *Ribis rubrum*, *R. nigrum*, *R. alpinum*, *R. grossularia*, and *R. uva crispa*, from March till November.

The viviparous wingless female. In the spring and when very young it is dark olive-green, oval, short, and plump: the feelers

are yellow with brown tips, and not half the length of the body : the eyes are black : the nectaries are white, and about one-twelfth of the length of the body.

1st var. The body is mottled with paler green : the feelers are nearly all white : the eyes are dark brown.

2nd var. The nectaries are pale green with brown tips, and about one-seventh of the length of the body.

It attains its full size in April, and is then greenish yellow, oval, convex, and slightly hairy above : there is a rim on each side of the body, and two vivid green lines along the back : the feelers are almost white with the exception of four black rings, and hardly half the length of the body : the mouth is very pale green ; its tip and the eyes are brown : the nectaries are pale straw-colour with brown tips, and about one-sixth of the length of the body : the legs are very pale green ; the feet and the tips of the shanks are brown.

3rd var. Yellowish green.

4th var. Grass-green.

5th var. The limbs are white ; the feelers are more than half of the length of the body, and the nectaries are about one-fifth of its length.

6th var. Bright yellow : the limbs are white : the feelers are a little shorter than the body : the eyes, the tip of the mouth, and the feet are black : the nectaries are one-fourth of the length of the body.

7th var. In the autumn and when it is young it is pale yellow and half transparent : the tips of the joints of the feelers, the tip of the mouth, and the feet are black. When full-grown it is yellow, convex, smooth, shining, oval, or nearly elliptic : the feelers are a little shorter than the body : the eyes are red : the nectaries are whitish with black tips, and about one-sixth of the length of the body : the legs are whitish ; the knees are gray ; the feet and the tips of the shanks are black.

8th var. Like the preceding, but the body is almost white.

9th var. Like the preceding, but with a lively green stripe down the middle of the body.

10th var. The feelers are much longer than the body.

11th var. Bright yellow : the limbs are pale yellow : the feelers are a little longer than the body ; the tips of their joints, the eyes, and the tip of the mouth are black : the nectaries have black tips, and are as long as one-fifth of the body : the knees and the tips of the shanks are gray : the feet are black.

12th var. Greenish white.

13th var. Nearly white.

It varies much in breadth and in outline ; some of the insects are slender and spindle-shaped, others are stout and elliptical or

oval. During the spring and the early part of summer it abounds under the red swollen leaves, and like many of the clustering species is the favourite food of the grubs of the ladybirds and of the *Syrphi*.

The viviparous winged female. While a pupa it is pale green ; the limbs are almost white ; the feelers are as long as the body ; the tips of some of the joints are pale brown : the eyes are dark red : the nectaries are rather more than one-fifth of the length of the body : the feet and the tips of the shanks are brown.

1st var. Greenish white.

2nd var. Nearly white.

3rd var. Grass-green.

4th var. Bright yellow, nearly elliptical, and having a vivid green stripe along the back : the eyes are red : the limbs are pale yellow or almost white.

The wings are unfolded in May, and the insect is then yellow and slightly varied with green : the head, the chest and the breast are brown : there is a large black spot near the tip of the abdomen, and a row of small black spots on each side : the feelers are brown, and longer than the body : the eyes are black : the mouth is pale yellow with a black tip : the nectaries have also black tips, and are nearly one-fifth of the length of the body : the legs are dull yellow ; the feet and the tips of the thighs and of the shanks are black : the wings are colourless, and very much longer than the body : the wing-ribs are very pale yellow ; the wing-brands and the veins are brown.

5th var. The head and the chest are buff : the abdomen is pale green varied with darker colour : the feelers are black, pale green towards the base ; the base of the third joint is pale yellow : the eyes are dark brown : the tip of the mouth is brown : the nectaries are pale yellow with brown tips, and nearly one-fourth of the length of the body : the legs are pale yellow ; the knees, and the tips of the thighs and of the shanks are brown : the wing-ribs are pale green ; the rib-veins are buff ; the wing-brands are dark buff.

6th var. The head, the chest and the abdomen are black : the feelers are black, yellow at the base, and a little shorter than the body.

7th var. Yellow : the back of the head is brown : the chest is streaked with dull red : there are transverse black spots with dark green edges on the back of the abdomen : the feelers are black, and a little longer than the abdomen : the nectaries are pale yellow, and about one-eighth of the length of the body.

8th var. Yellow : there is a broad brown band across the fore-chest : the middle-chest is brown : the breast is black : the abdomen has a large quadrate black spot on its disc, and a row

of small black spots on each side: the feelers are black, and nearly as long as the body: the mouth is pale yellow; its tip and the eyes are black: the nectaries are spindle-shaped, dull yellow, darker towards the base and at the tips, and hardly one-fifth of the length of the body: the legs are pale yellow; the hind-thighs, excepting the base, the feet, and the tips of the other thighs and of the shanks, are black: the wing-ribs, the rib-veins, and the wing-brands are pale yellow; the other veins are pale brown. This, like its predecessor, the wingless female, almost disappears during some part of the summer and the autumn, but a solitary little individual may still be seen here and there beneath the leaves.

The oviparous wingless female. This lives in October and in the beginning of November, when it lays its eggs on the shoots of the currant: it is elliptical, olive-green, mottled with pale yellow: there is a large green spot on each side of the abdomen by the nectaries: the feelers are yellow, black towards the tips, and longer than the body: the mouth is pale yellow; its tip and the eyes are black: the nectaries are pale yellow with black tips, and as long as one-fourth of the body: the legs are pale yellow; the knees, the feet, and the tips of the shanks are black; the hind-shanks are shaded with pale brown.

1st var. Yellowish green.

2nd var. Yellowish white.

3rd var. A black band round the middle of each hind-shank.

The winged male. It pairs with the oviparous female before the end of October. The head and the chest are black: the abdomen is dull yellow, with a few short slight bands across its back: the feelers are rather thick till near their tips, and almost as long as the body: the mouth is yellow with a black tip: the nectaries are black, and as long as one-sixth of the body: the legs are yellow; the hind-thighs, the feet, and the tips of the other thighs and of the shanks are black: the wing-ribs are yellow; the wing-brands and the veins are brown.

1st var. The fore-chest beneath its borders above, and the abdomen are dull greenish yellow; the latter has a row of black dots on each side: the nectaries are as long as one-eighth of the body: the hind-thighs are pale yellow towards the base.

62. *Aphis Galeopsidis*, Kalténbach.

Aphis Galeopsidis, Kalt. Mon. Pflanz. i. 35. 23.

This is a very elegant insect: it is hairy like *A. Avellanæ* and *A. tetrahoda*, but in other characters it differs widely from these two species. It feeds from February to October on *Galeopsis tetralix*, *G. bifida*, *Lamium album*, *L. purpureum*, *L. amplexicaule*, *Polygonum Persicaria*, *P. lapathifolium*, *P. hydropiper*, *P. laxi-*

sporum, *Heracleum sphondylium*, *Plantago lanceolata*, *Stachys sylvestrica*, *Tussilago Farfara*, *T. petasites*, and *Potentilla anserina*.

The front is hairy and somewhat notched: the first joint of the feelers has on the inner side of its tip a slight process which is most developed in the wingless female. It is common in the neighbourhood of London and of Lancaster, and Mr. Hardy has found it near Newcastle.

The viviparous wingless female. This is small, hairy, elliptical, rather narrow and flat, almost transparent, white or tinged with a very pale green or straw-colour: the eyes are dark brown: the mouth is white with a black tip, and reaches the middle hips: the feelers are slender, setaceous, hairy, much longer than the body; their tips are brown; the fourth joint is much shorter than the third; the fifth is shorter than the fourth; the sixth is rather more than one-fourth of the length of the fifth; the seventh is nearly as long as the third: the eyes are black: the nectaries are rather more than one-fourth of the length of the body; they are somewhat thicker towards the tips which are black: the legs are long, slender and hairy: the feet are black. The young are narrow and linear. It is infested by an *Allotria*.

1st var. Pale green with two rows of transverse vivid green spots along the back.

2nd var. The nectaries are not more than one-twelfth of the length of the body.

3rd var. The feelers are rather longer than the body: the nectaries are about one-ninth of its length.

4th var. The body and the limbs are white: the eyes, the tips of the feelers, of the mouth, of the nectaries and of the feet are black: the nectaries are one-sixth of the length of the body.

5th var. Very pale rose-colour, or pale yellow tinged with pale red, not shining: there is a deep red stripe down the middle of the body: the head is white: the feelers are white, and much shorter than the body; the tips of some of the latter joints are black: the mouth is white; its tip and the eyes are black: the nectaries are white with black tips, and about one-sixth of the length of the body: the legs are white; the tips of the feet are black.

6th var. Greenish white with two very large vivid green spots near the base of the nectaries.

7th var. The body is white: the feelers are a little longer than the body: the eyes, the tip of the mouth, and the tips of the shanks and of the feet are black: the nectaries are nearly one-third of the length of the body.

8th var. The body is pale yellow: the feelers are black towards the tips, and a little longer than the body: the mouth is pale yellow; its tip and the eyes are black: the nectaries are also pale

yellow with black tips, and about one-third of the length of the body : the feet are black.

The viviparous winged female. While a pupa it resembles the wingless female in colour, and the rudiments of its wings are white, but when these organs are unfolded it is pale greenish yellow : the feelers are black, pale green at the base, and as long as the body : the fourth joint is much less than half the length of the third ; the fifth is shorter than the fourth ; the sixth is as long as the fifth ; the seventh is as long as the fourth : the eyes are dark red : the mouth is pale green ; its tip is black : the disc of the chest and that of the breast are dark green : the abdomen is very pale yellow with transverse broken bright green bands : the nectaries are pale yellow, and nearly one-sixth of the length of the body ; their tips are black : the legs are pale greenish yellow, long and slender ; the knees, the feet, and the tips of the shanks are black : the wings are colourless, and much longer than the body ; the wing-ribs and the rib-veins are pale yellow, the wing-brands are nearly colourless : the veins are brown ; the first and the second veins diverge, but the second and the third are nearly parallel to each other ; the first fork of the third vein is a little before one-third and the second after two-thirds of its length ; the fourth vein is much curved, and the angle of the brand whence it springs is very slight.

1st var. Dull yellowish green : the feelers are brown, white towards the tips : the disc of the chest and that of the breast are black : the abdomen is pale yellowish green, and on its disc there are a few small green marks and one large square dark green spot : the nectaries are pale yellowish green, and nearly one-fourth of the length of the body ; their tips are black : the wing-brands are very pale brown.

2nd var. Pale greenish white : the feelers are much longer than the body ; their tips are white : the discs of the head, of the chest and of the breast are brown or black, and there is also a brown or black spot on each side of the chest : the abdomen is traversed by black bands ; the first and the second are narrow ; the third and the fourth are broad : the eyes are dark brown : the nectaries are nearly white, and not more than one-tenth of the length of the body : the legs are pale yellow ; the tips of the thighs are brown ; the feet and the tips of the shanks are black : the wing-ribs are white ; the wing-brands are gray ; the veins are black. The pupa is all white except the eyes and the feet which are brown.

3rd var. While a pupa the chest is buff, and the rudimentary wings are white.

4th var. While a pupa it is pale greenish yellow or pale saffron, long-elliptic, rather flat, smooth, not shining : there is a green

stripe along the back, or a white stripe with a black line on each side of it: the feelers are pale yellow, pale green at the base, black towards the tips, and much shorter than the body: the rudimentary wings are pale green: the mouth is pale yellow; its tip and the eyes are black: the nectaries are nearly as long as one-sixth of the body; their tips are black: the legs are pale yellow; the thighs are pale green; the tips of the feet are black.

The oviparous wingless female. The body is pale yellow, elliptical, and convex: the abdomen is lengthened behind: the feelers are black towards their tips, and a little shorter than the body; the tip of the mouth and the eyes are black: the nectaries have black tips, and are as long as one-fourth of the body: the knees, the feet and the tips of the shanks are also black.

1st var. The body is red: the limbs are pale yellow: the feelers are black towards their tips, and as long as the body: the tip of the mouth and the eyes are black: the nectaries have black tips, and are as long as one-fourth of the body: the feet and the tips of the shanks are black.

Length of the body 1 line; of the wings $2\frac{1}{2}$ lines.

63. *Aphis Abietina*, n. s.

The viviparous wingless female. This is oval, green, convex, rather dull, and half a line in length: the head and the limbs are paler and sometimes tinged with yellow: the front of the head is convex in the middle, but concave on each side, from whence there is a small protuberance extending to the base of the feelers: the feelers are brown towards the tips and about half the length of the body; the inner side of the first joint is convex, and has no process; the fourth joint is more than half the length of the third; the fifth is much shorter than the fourth; the sixth is a little shorter than the fifth; the seventh is longer than the sixth: the eyes are dull red: the tip of the mouth is brown: the nectaries have brown tips, and are about one-fourth of the length of the body, which has a slight rim on each side of the back: the legs are moderately long; the knees, the feet, and the tips of the shanks are brown. The young ones are as usual narrow, flat, and linear, and have short white limbs.

In 1846, a year remarkable for the mildness of the winter and of the spring, it had attained its full size before the end of January, and was very abundant near London beneath the leaves of the spruce-firs, some of which were stripped of their foliage in consequence of its attacks. It does not disappear before the latter part of November.

The viviparous winged female. This form comprises the second generation, and in 1846 its wings were unfolded before the end

of March. It is green: the disc of the chest and that of the breast, the feelers, the tip of the mouth, the tips of the nectaries, the knees, the feet, and the tips of the shanks are brown: the feelers are more than half the length of the body; the fourth joint is very much shorter than the third; the fifth is a little shorter than the fourth; the sixth is shorter than the fifth; the seventh is a little longer than the sixth; and the nectaries are about one-sixth of the length of the body: the wings are colourless and about twice the length of the body: the wing-ribs and the brands are green, and the veins are pale brown; the first and the second veins diverge much from each other, but the second and the third veins are nearly parallel; the latter has its first fork after one-third and its second fork a little before two-thirds of its length; it is more or less obsolete at the base; the fourth vein is much curved, and the angle of the brand whence it springs is hardly perceptible.

Variations of the wing-veins.—1st var. The lower branch of the first fork of the third vein is wanting.

Length of the body $\frac{3}{4}$ line; of the wings $2\frac{1}{4}$ lines.

64. *Aphis Rosarum*, Kalt.

Aphis Rosarum, Kalt. Mon. Pfl. i. 101. 76.

This species feeds on *Rosa centifolia* and *gallica* in gardens, and Mr. Hardy has forwarded to me specimens found on *Rosa spinosissima* in October near Newcastle.

The viviparous wingless female. This little species appears on the rose (*Rosa centifolia* and *gallica*) in the beginning of March or later, and is then dull green, paler beneath, rather flat, and very long: the feelers are rather more than one-fourth, and the nectaries are about one-seventh of the length of the body: the eyes are brown: the legs are short and stout. During its growth it acquires a brighter green hue, and then the limbs are almost white: the front of the head is very convex in the middle: the first joint of the feelers has a slight protuberance on the inner side of its tip; the fourth joint is shorter than the third, but longer than the fifth; the sixth is a little shorter than the fifth; the seventh is much longer than the sixth. It much resembles *A. Caprea*.

1st var. Whitish green, with two vivid green stripes along the back.

2nd var. Whitish green, with two bluish green stripes along the back.

The viviparous winged female. Is black: the fore-chest is green, having in front a blackish green band which is sometimes broad and sometimes narrow: the abdomen is green; each segment is traversed by a black band and has a black spot on each side: the

feelers are black, rather thick at the base, and about half the length of the body : the fourth joint is about half the length of the third ; the fifth is shorter than the fourth ; the sixth is much shorter than the fifth, but more than half its length ; the seventh is as long as the fourth : the mouth and the nectaries are black, and the latter are about one-eighth of the length of the body : the thighs and the shanks, especially of the fore-legs, are dull pale yellow towards the base : the wings are colourless, and much longer than the body ; the wing-ribs are pale yellow ; the brands are pale brown, and the veins are darker ; the second vein diverges from the first, but is nearly parallel to the third, whose first fork is a little after one-third, and its second fork long after two-thirds of its length.

1st var. The thighs and the shanks are yellow with black tips.

2nd var. Black : the abdomen has interrupted gray bands above, and is very dark green beneath : the feelers are nearly as long as the body : the mouth and the nectaries are dark green ; the former has a black tip, and the latter are about one-sixth of the length of the body : the legs are dull buff ; the thighs are pale yellow ; their tips and those of the shanks and the feet are black.

Variations in the wing-veins.—1st var. With no second fork in one wing.

2nd var. The third vein has not two forks, but is divided into three branches.

The oviparous wingless female. Very small, yellow, narrow, long, spindle-shaped, rather flat, and not shining : there are two green stripes along the whole length of the back : the limbs are pale yellow : the feelers have black tips, and are about half the length of the body : the tip of the mouth, the eyes, and the tips of the nectaries are black, and the latter are as long as one-fourth of the body : the legs are moderately long ; the knees, the feet, and the tips of the shanks are black.

The winged male. Appears in September and October, and pairs in the latter month with the oviparous female : it is small and black : the borders of the fore-chest and the fore-breast are pale green : the abdomen is green : the feelers are as long as the body : the mouth is pale yellow with a black tip : the nectaries are dull green with black tips, and as long as one-sixth of the body : the legs are pale yellow ; the feet and the tips of the thighs and of the shanks are black : the wing-ribs and the rib-veins are pale yellow ; the wing-brands and the other veins are pale brown.

1st var. The borders of the fore-chest and the fore-breast are dark green : the abdomen has a row of black spots on each side : the mouth is dull yellow with a black tip : the nectaries are black : the four hinder thighs excepting the base are also black.

Length of the body $\frac{3}{4}$ line ; of the wings 2 lines.

65. *Aphis Avellanæ*, Schrank.

Aphis Avellanæ, Schrank, Faun. Boic. 112. 1207; Kalt. Mon. Pfl. 143. 116.

This species clusters on the stalks and shoots of *Corylus Avellana*, whereas *A. Coryli* is scattered on the leaves of that tree.

The viviparous wingless female. The body is oval, convex, hairy, pale green, and varies in breadth: the front is bristly, and has a protuberance in the middle, and one more slight at the inner base of each feeler: the feelers are pale yellow and very much longer than the body; the tips of the joints are brown; the first and the second joints are bristly, and the third is also so to a less degree; the fourth joint is a little shorter than the third; the fifth is as long as or longer than the fourth; the sixth is less than half the length of the fifth; the seventh is more than four times the length of the sixth: the mouth reaches the hind hips, or very near thereto, and even much beyond them in the young insects: the nectaries are green, and full one-fourth of the length of the body; they are slightly tapering from the base to the tips: the tip of the abdomen does not form a tube: the legs are pale yellow, very long and hairy; the shanks are very slightly curved; the fore-legs are but little shorter than the hind-legs; the feet and the tips of the shanks are brown: the young ones in the body sometimes amount to twenty or upwards.

1st var. The feelers are a little shorter than the body; the fifth joint is longer than the fourth; the sixth is full half the length of the fifth; the seventh is about one-third of the length of the sixth.

2nd var. The seventh joint of the feelers is about five times the length of the sixth.

3rd var. The body is rose-colour.

4th var. The body is lilac-colour.

The viviparous winged female. While a pupa it resembles the wingless *Aphis* in colour: the rudimentary wings are pale green, and when they are unfolded, the head and the disc of the chest have a darker colour: the wings are colourless, and much longer than the body; the second vein diverges rather more from the first than it does from the third; the forks of the latter are inconstant in length, and sometimes the situation of their source varies in the opposite wings of the same insect; the fourth vein is but slightly curved, and the angle of the brand whence it springs is extremely slight.

Length of the body 1 line; of the wings 3 lines.

[To be continued.]