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## THE EARLIEST LITERATURE ON *PSYLLOIDEA* (*Insecta Homoptera*)

ABSTRACT - CONCI C., 1998 - The earliest literature on *Psylloidea* (*Insecta Homoptera*).

Atti Acc. Rov. Agiati, a. 248, 1998, ser. VII, vol. VIII, B: 41-66.

The earliest literary works that report data on *Psylloidea* are examined. Some related and very rare original figures are reprinted. Pre-Linnean Authors of the XVII and of the first half of the XVIII century are recorded: C. Bauhin (1620, 1623), M. Malpighi (1679), R. Morison (1699), J. L. Frisch (1730) and R. A. F. Réaumur (1737). Also C. Plinius Secundus (Roman Antiquity) is mentioned.

KEY WORDS - *Psylloidea*, earliest literature.

RIASSUNTO - CONCI C., 1998 - I più antichi riferimenti bibliografici sugli *Psylloidea* (*Insecta Homoptera*).

Si danno notizie sulle prime opere in letteratura con riferimenti sugli *Psylloidea*, riportando illustrazioni di alcuni rarissimi originali. Sono esaminati i lavori pubblicati nel secolo XVII e nella prima metà del XVIII: C. Bauhin (1620, 1623), M. Malpighi (1679), R. Morison (1699), J. L. Frisch (1730) and R.A.F. Réaumur (1737). Si accenna anche a C. Plinius Secundus (Antichità romana).

PAROLE CHIAVE - *Psylloidea*, primi riferimenti bibliografici.

### 1. INTRODUCTION

Many groups of insects were know, described and figured from the Antiquity. The Psyllids, on the contrary, entered in the world literature only in 1620 and with indirect reference. Subsequently, till the second half of XVIII century, the progress in their knowledge was very slow

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(\*) The author dedicate this note to Livio Tamanini, friend, master and student, with whom he worked in collaboration for almost all his life.

and sporadic and may be reported schematically with the works of only 5 Authors, with:

- 1) Description, figuration or reference to galls that, however, only much later were connected with Psyllids (BAUHIN, 1620, 1623; MALPIGHI, 1679; MORISON, 1699).
- 2) Description of nymphs of a *Psylla* and figuration perhaps of the same one (FRISCH, 1730).
- 3) Description and figuration of nymphs and adults and connections of galls with their Psyllids; separation of Psyllids from Aphids (RÉAUMUR, 1737).

The reported Authors were, in chronological progression: Swiss, Italian, British, German and French.

After Réaumur's books, there are Linnaeus' works with the new nomenclature. Subsequently the references to Psyllids became progressively always more frequent and numerous.

This rarity of ancient reports regarding Psyllids was produced by the little size, the modest appearance and the absence then in the group of very noxious species.

In the present article data are reported regarding the mentioned pioneers and some figures of their very rare books.

The reference to Biographies and Bibliographies are only synthetic: other notes may be found in the reported works.

## 2. PLINIUS CAIUS (or Gaius) SECUNDUS (Pliny the Elder), Como 23 A.D. - Napoli (Naples) 25.8.79 A.D.

*Biographies and Bibliographies*: HORN & SCHENKLI, 1928: 947-948; NISSEN, 1969: 319; CONCI, 1975: 989; CONCI & POGGI, 1996: 314.

According to some bibliographical reports, the knowledge on Psyllids might have a very old origin and the first Psyllid record could be the one given by the Roman Author Caius Plinius Secundus.

PLINIUS in *Historia Naturalis* (or *Historia mundi*) (vol. 17, chapter 37, morbi arborum) wrote «Est etiamnum peculiare olivis et vitibus - araneum vocant - , cum veluti telae involvunt fructum et absumunt».

Other editions have little variations.

Namely: «It is another disease, peculiar to olive-trees and to vines - denominated cobweb - when a kind of cloth wraps the fruit and destroys it».

COSTA O.G. (1839: 111-112; 1940: 23) ascribed this sentence of Plinius to the olive Psyllid (now *Euphyllura olivina*). This interpretation is reported also recently by annotators of Plinius (for example

ARAGOSTI *et al.*, 1984: 639). Nevertheless, it is reasonable to ascribe the above quotation to some moth species (Lepidoptera) as for example the Yponomeutidae *Prais oleae* (Bernard) or the Pyraustidae *Palpita unionalis* (Hb.) rather than to a Psyllid.

Therefore, the Psyllids were unknown wheter in the Greek-Roman Antiquity, or in the Medieval times.

3. BAUHIN CASPAR (or Gaspard or Kaspar), or Bauhinus Casparus, Basel 17.1.1560 - Basel 5.12.1624.

*Biographies and Bibliographies*: NISSEN, 1966: 10-11; STAFLEU & COVAN, 1976: 147-149.

Physician and botanist, professor of anatomy and botany at Basel University.

C. Bauhin in his work «*Prodromos theatri botanici*» (1620) (our fig. 1), at page 12 (our figs 2-3) wrote: «Gramen iunceum folio articulato cum utriculis, ..., cui raro capitula corymbacea insident, sed utriculi unciales paleacei, in capillamenta fisci, modo virides, modo purpurascetes, idcirco figura exprimi curavimus».

In free translation: «Stalk of *Juncus* with articulate leaves with little utricular formations..., seldom they have little heads as corymbs and also utricular formations partially straw-coloured, amog the filament of the head, whether grees or reddish; therefore we reported them in the figure».

These formations are certainly galls formed by *Livia juncorum* (L.). The figure of Bauhin at page 12, fig. on the right, is very good and agrees with reality. It is a wood-engraving.

Therefore this is the first indication and the first figure in the literature connected with a psyllid.

A second edition of this book was published in 1671 (by me not seen).

The same Author reported also the second notice in the literature, again indirectly, related to a Psyllid.

C. Bauhin in his book «*Pinax theatri botanici*» (1623) (our fig. 4) at page 165 (our fig. 5) after the report of «*Valeriana campestris inodora major*», mentions a «*Valerianella altera nudo umbilicato & brevi femine*, Col.

Variat magnitudine, foliis angustioribus, latioribus & integris: quare figurae duae apud Taber. & Ger. reperiuntur, & abortiva, floris explicatione ab insectis prohibita».

The plant could be ascribed to a taxon of the present *Valerianella* of *locusta*-group (ex *olitoria*). Bauhin report «that on this one the func-

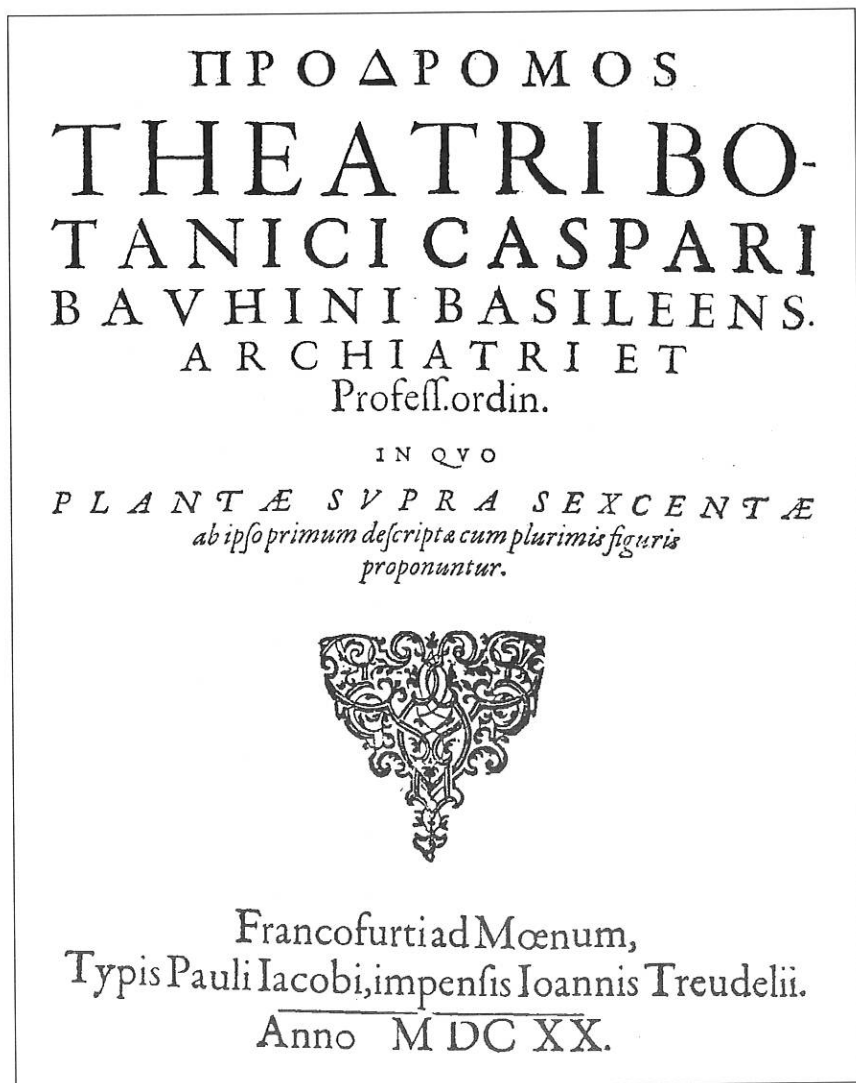


Fig. 1 - BAUHIN C., 1620 - Prodromos theatri botanici. Title page. Reduced.

tion of the flower is prevented by insects». The reference to the flower-galls caused by *Trioza centranthi* is evident.

A second edition of this work was published in 1671 (not seen). A re-issue was published in 1740 (not seen).

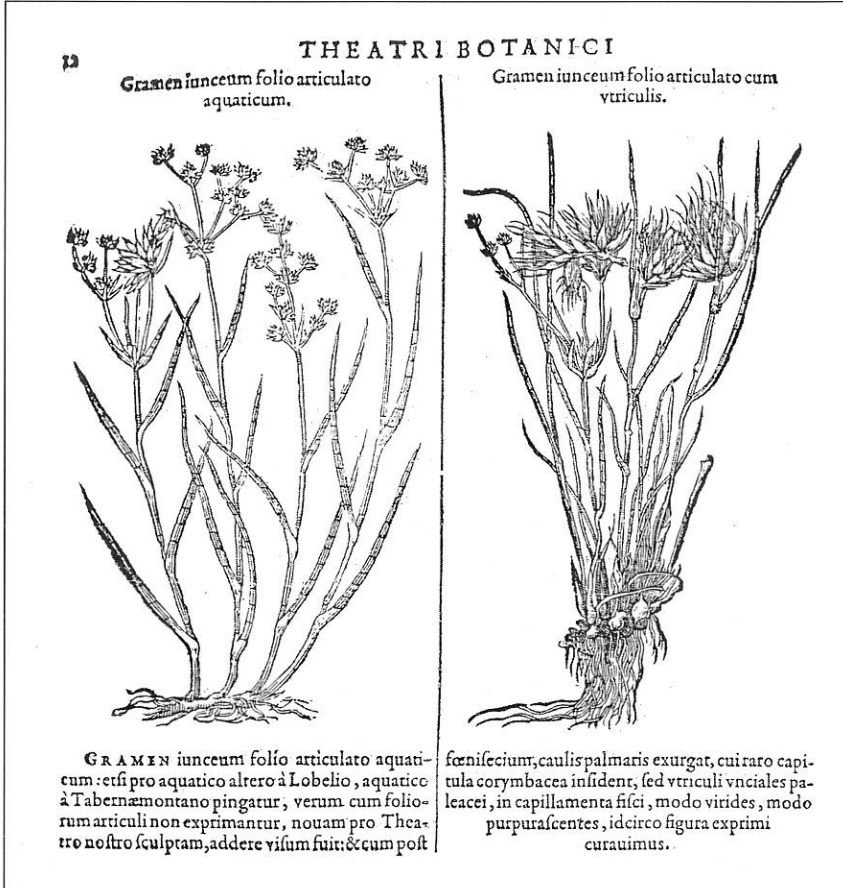


Fig. 2 - BAUHIN C., 1620 - Prodomos theatri botanici, pag. 12. Reduced.

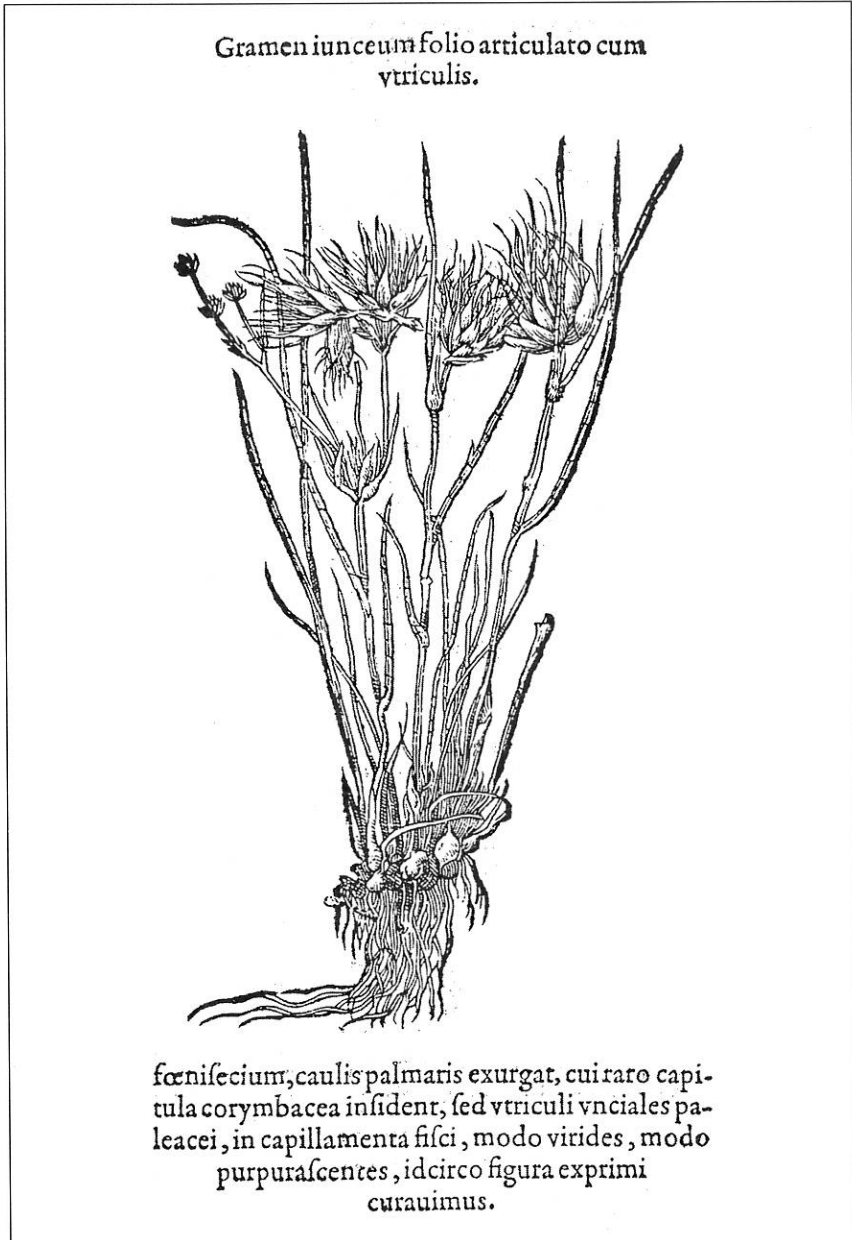


Fig. 3 - BAUHIN C., 1620 - Prodomos theatri botanici, pag. 12, fig. at right. Tuft of *Juncus* with galls of *Livia juncorum*. Natural size. It is the first report of a Psyllid, but indirect.

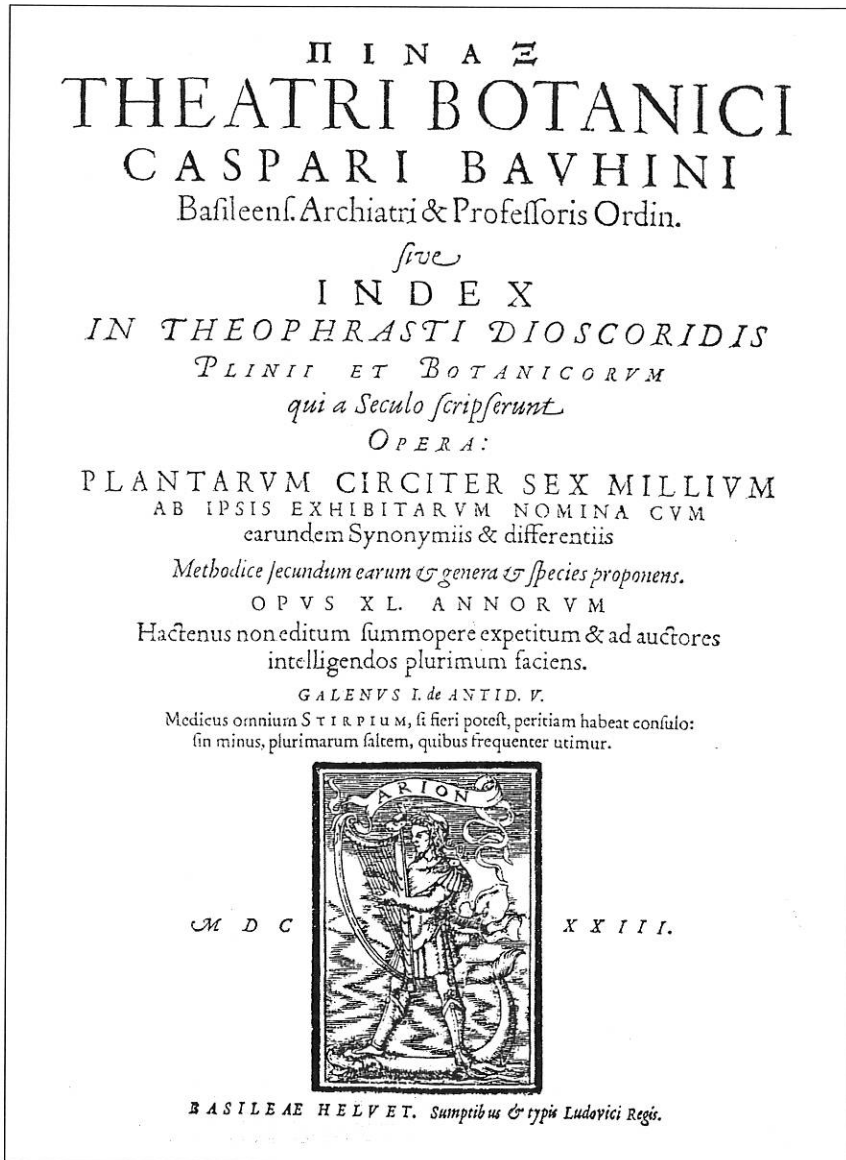


Fig. 4 - BAUHIN C., 1623 - Pinax theatri botanici. Title page. Reduced.

LIB. IV. SECT. VI.		165
an Valeriana inodora i. Cæf.	Locusta quibusdam, Gef. hor.	
XIII. Valeriana montana subrotundo folio.	Phu minimum alterum, Lob. Lugd.	
Valeriana montana, Lugd.	Album olus, Dod.	
XIV. Valeriana montana inodora.	Polypremon Cæsiani: Chalceum Plinii l. 26. c. 7.	
Valeriana inodora altera, Cæf.	à foliorum colore, Lugd.	
Valeriana annua ex Ilva, Cam.	Valeriana campestris, Cam.	
XV. Valeriana alpina Nardo celticæ similis.	Laſuca agnina, Tab. Ger.	
Valeriana fyl. alpina z. laxatilis, Cluf. hiſt.	Bupleuron, Cæf. 477	
XVI. Valeriana alpina minor: quæ 5. in Prod.	an Valerianella altera nudo umbilicato & brevi	
XVII. Valeriana rubra.	femine, Col.	
Polemonii altera ſpecies, Dod. gal. Gef. hor.	Variat magnitudine, foliis anguſtioribus, latioribus & integris: quare figuræ duæ apud Taber.	
Limonium Monſpelienſium, Gef. hor.	& Ger. reperiuntur, & abortiva, floris explicatio-	
Ocymaſtrum Valerianthos, Ad. Lob.	ne ab infeſtis prohibita.	
Valeriana rubra, Dod. Tab. Cam. Ger. Eyſt.	XX. Valerianella echinata.	
Valeriana inodora 3. Cæf. 475.	Valerianella cornucopoides echinata, Col.	
Phu peregrinum, Cam. ep.	XXI. Valerianella femine ſtellato.	
Sunt qui Narcifſum Virgilii & Columellæ in	Phu minus petræum, Tab. 469.	
hortis: alii Behen rubrum: alii Struthium: alii	Valeriana petræa, Ger.	
Condurum Plinii l. 26. c. 5. velint.	Valerianella altera tenuifolia femine Scabioſæ	
XVIII. Valeriana rubra anguſtifolia: quæ 7. in	ſtellato, Col.	
Prod.	XXII. Valeriana fyl. foliis tenuis. diviſis.	
XIX. Valeriana campeſtris inodora major.	Phu minimum, Ad. Lob. Lugd.	
Bupleuron Hipp. apud Plin. l. & c. 2. 2. videtur.		
<b>N A R D U S M O N T A N A</b>		
& Celtica.		
<b>N</b> ardus montana, veſp. & ἀρην & νακάρης, Dioſc. l. 1. c. 7. at Celtica, quæ Spica Celtica, vel Romana Of-		
ficinis; Eid. cap. 8. καλὴν καὶ βίον, ἢ ἀλιόβιον ſive Saliunca, & l. 6. c. 19. ἀρην dicitur. Saliunca Plinio		
l. 21. c. 7. & 20. & Nardus Gallica l. & c. 12. & l. 21. c. 20.		
I. Nardus montana radice olivari.	Nardum gallicum, Cæf.	
Nardus montana, Matth. Ang. Ad. Lob. Lug. Cluf. hiſt. Cæf. Cam. Tab.	Spica Celtica, Lugd.	
Radices: binas, ternas & quaternas aſphodelii modo, habet.	V. Nardus Celtica altera.	
II. Nardus montana radice oblonga.	Spica celtica, ſaſtigiato ſtoſculorum ordine, Cam. ep.	
Nardus mont. longius radicata, Cam. ep.	Spica celtica, Tab.	
III. Nardus Cretica ſtipendulæ radice.	Nardus celtica repens, Ger.	
Nardus Cretica Valerianæ ſimillima, Hon. Belli ep. 4.	VI. Nardus ex Apulia.	
Nardus Cretica Belli, Pon.	Saliunca Neapolitana, Lugd.	
IV. Nardus Celtica Dioſcoridis.	Phu minus Apulum, Tab.	
Nardus Celtica, Matth. Cord. hiſt. Gef. hor. Tur.	VII. Nardo celticæ ſimilis inodora: in Pro-	
Guilan. (cui & Saliunca) Ad. Lac. Lob. Caſt. Cam.	dromo deſcripta.	
Tab. Ger. 572. 2.	IIIX. Nardo Celticæ ſimilis hirculus.	
Nardus alpina ſeu celtica, Cluf. pan. & hiſt.	Hirculus, Ad. Lob. Cam. ep. Cæf. Tab. Ger. 573. 2.	
	Hirculus veterum, Cluf. in Gar. Lugd.	
	Hirculus & Nardus Samphoritica, Ang.	
	X 3; LI-	

Fig. 5 - BAUHIN C., 1623 - Pinax theatri botanici, pag. 165, with reference to the galls of *Trioxa centranthi* on «Valeriana campestris». Reduced. It is the second report to a Psyllid, but again indirect.



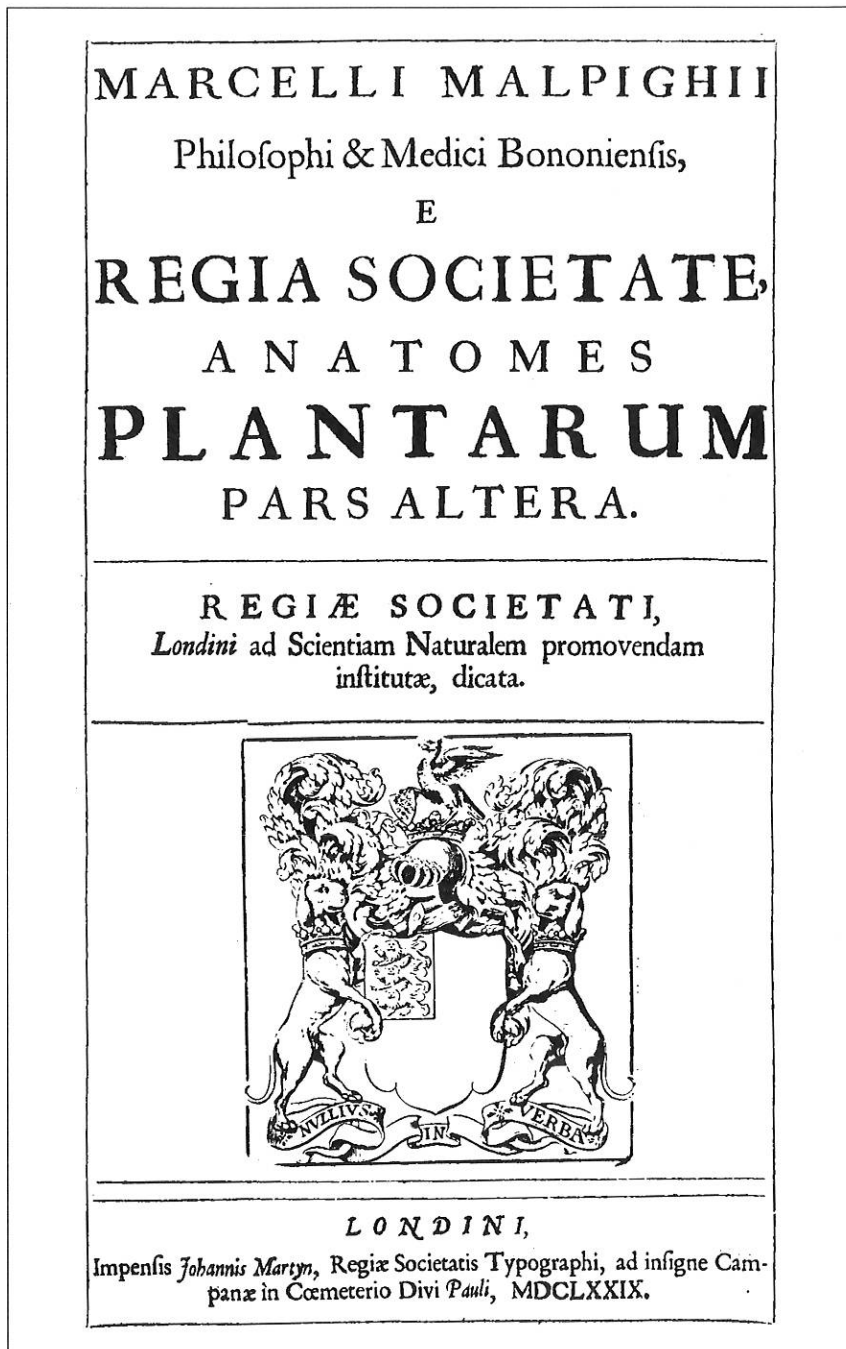


Fig. 6 - MALPIGHI M., 1679 - Anatomes Plantarum Pars altera. Title page. Reduced.

4. MALPIGHI MARCELLO, Crevalcore (Bologna) 10.3.1628 - Roma 29.11.1694.

*Biographies and Bibliographies*: HORN & SCHENKLING, 1928: 784; id. 1929: 1416; NISSEN, 1966, II: 115-116; NISSEN, 1969: 268-269; CONCI, 1975: 950-951; GILBERT, 1977: 242; CONCI & POGGI, 1996: 278, 2 portraits.

The second Author that wrote notices on Psyllids, again indirectly, was the famous Italian physician and naturalist Marcello Malpighi, professor in the University of Bologna and in other cities.

In the part «*De Gallis*» of the «*Anatomes plantarum pars altera*» (1679), our fig. 6), Malpighi founded the Cecidology. In this work (at page 23, (our fig. 7) Malpighi mentions galls on leaves of *Laurus* from Italy; these galls clearly are those formed by the psyllid *Trioza alacris* Flor (or *Lauritrioza*).

This reference to deform leaves of Laurel is the first (though indirect) record in the world of damages caused by a Psyllid to a cultivated plant.

Regarding this notice of Malpighi, I refer to the exhaustive report by CONCI & TAMANINI (1985: 253-255, figs 44-45).

Minori plantarum dispendio, insectorum quidam foetus mirè foventur; ut passim in *Lauro*, & *Quercu* ipsa (8.) intuemur; cuius folia, licet interdum à primæva deturbentur forma; adhuc tamen vegetare non desinunt, & reflexis denticulatis apicibus *A* versùs folii partem terram spectantem, ejectos foetus fovent. Reflexa interea folii portio, turgentibus utriculorum seriebus, crassior redditur, & decolor. In aliquibus tota folii latitudo, pro incubandis ovis curvata, subcrevit. Ità (9.) in *Perforatæ*, &

Fig. 7 - MALPIGHI M., 1679 - *Anatomes Pantarum Pars altera*, page 23. A reference to the galls on leaves of *Laurus*, caused by *Trioza alacris*. It is the first record in the world of damages caused by a Psyllid to a cultivated plant.

5. MORISON ROBERT, Aberdeen in Scotland 1620 - London 9.11.1683.

*Biographies and bibliographies*: NISSEN, 1966: 129; STAFLEU & COVAN, 1981: 587-588.

R. Morison was professor of botany in Oxford.

LÖW (1881: 157) with reference to galls of *Livia juncorum* von *Juncus*, wrote exactly: «Eine weniger deutliche Abbildung dieser Deformation [with reference to BAUHIN, 1620] gab fast hundert Jahre später R. Morison in seinem Werke *Plantarum hist. universalis oxoniensis*, Tom. III, 1715, Sect. 8, Tab. 9, Fig. 2».

I could not see this very rare work. NISSEN (1966: 129) reports that the third part of this work was published posthumous in 1699. STAFLEU & COWAN (1981: 587-588) report the date 1680-1699. We think doubtful the date of Löw, but in order to clarify these references it is necessary to examine the original work.

6. FRISCH (VON) JOHANN LEONHARD, Sulzbach (Bavaria) 19.3.1666 - Berlin 21.3.1743.

*Biographies and Bibliographies*: HORN & SCHENKLING, 1928: 386; HOWARD, 1930, pl. 16, fig. 1 (portrait); NISSEN, 1969: 151; GILBERT, 1977: 128.

J. L. Frisch (fig. 8) was Rector of Gymnasium in Berlin.

This Author published, besides few little notes, a large work on Insects (*Beschreibung von allerley Insekten in Teutschland...*, Berlin 1720-1738, in 13 parts). See also, for details, HORN & SCHENKLING, 1928.

In the VIII part (1730) of this very rare work (fig. 9) the XIII chapter «of the Sucking-Worm of the alder-trees» (figs 10-11) regards nymphs (that the Author denominate «Wurm») that lives on these plants. Frisch report, among other notes, the long characteristic white thread which the insect emits, its oblique movements and its lifting of the abdomen.

These observations allow to ascribe likely the «Wurm» of Frisch to a nymph of Psyllid, probably to *Psylla alni* L., a determination already supposed by PFLUGFELDER (1941: 1).

Frisch compares this insect with a «worm producing foam», reported in his preceding chapter XII, which is a Homopterous of the Auchenorrhyncha that lives on willows.

The Autor, besides the data on the text, reports in table XIII (our fig. 12) two enlarged figures of this «worm», that he ascribes to two nymphal instars; in a third figure he reports the natural size of the nymph. These figures are very rough and unprecise; their certain attribution is difficult: for example their pointed abdomen and the lack of antennae are very strange. If we consider the figures with fantasy, with the justification of the modest optics of the Author, these illustrations would be

the first ones in the literature referring to a Psyllid, in preimaginal instar.

However, the figures of Frisch might be the nymphs of an Homopterous Auchenorrhyncha of the family Cicadellidae, that lives also on the alder-tree. In this case Frisch would have observed on alder tree as one taxon, both Psyllids (that described), and Cicadellidae (that figured).

The work of Frisch is written in ancient Gothic type and it causes other difficulties.

We report therefore the English translation of the chapter XIII: «On the sucking-worm of the alder-trees».

«In the same period of the year, that is in June, I found a sucking-worm [insect] of the alder-trees. But much smaller than the sucking-worms of the willow-trees. When it sucked, foam did not spring from its abdomen, but a thicker substance, as a white thread, directed above and curved on the upper part of the body; this thread frequently was long as three times as the insect. The insect was a little wider than thicker and showed something like two close, round canals in the zone of the intestine and of its opening. There is another difference between the humor of alder-trees and the ones of willow trees. The foam more bubbles than lymph and the insect is also greater. The insect has more substance around itself than this one. But there are specimen of the alders is a little hairy on the body, but the little hairs are not visible with the naked eye. The wing-pads are white. On the other hand this insect looks like the sucking-worm of the willow-trees. It sucks the buds, walks very often sideways, lifts its abdomen, raises the body and pushes strongly the rostrum in the tissue. The eyes however are not so distant. The figures can show the remainder.

num. 1, XIII table of II plate. A specimen that changed the skin another time.

n. 2, A specimen that changed the skin the third time.

n. 3, its natural size.

I have not found its appearance after the last ecdysis».



Fig. 8 - FRISCH J.L. (1666-1743). From HOWARD, 1930, pl. 16, fig. 1.



Fig. 9 - FRISCH J.L., 1730 - Beschreibung von allerley Insecten in Teutschland, acter Theil. Title page, slightly decreased.

## Vom Saug-Wurm auf

tung sieht man seine doppelte Flügel deutlich in ihrem schwarzen Futteral liegen. In Blankarts Beschreibung dieses Wurms c. 31, habe ich hier mit unterschiedlicher, so er nicht so bemerckt, zu ersetzen gesucht. Hingegen ist er darinnen weiter gekommen, daß er von dem Leser etwas mehr melden können, als ich annoch thun kan; Weil mir viel Gewisheit der Observationen dabey fehlt. In den Figuren, sonderlich der Teutschen Übersetzung, ist mir des Käfers-Figur so verdächtig, als der hier beschriebene Wurm, woraus er wird dafelbst übel gezeichnet und gestochen ist.

1. Der Schaum-Wurm nach der ersten Häutung, wie der Stachel zwischen den Füßen steht.
2. Nach der dritten Häutung, da man die Flügel sehen kan.
3. Wie er auf dem Bauch aussteht.

### XIII.

## Vom Saug-Wurm auf den Erlen oder Erlen.

**S**W eben solche Zeit des Jahrs nemlich im Junio hab ich einen Saug-Wurm auf den Erlen gefunden. Aber viel kleiner als den Weiden-Sauger. Wan er saugte so drang kein Schaum aus dem Hintern, sondern ein dicker Saft, als ein weißer Faden, der gieng in die Höhe, und drehte sich oben herum, daß das Faden-Stück offt dreymahl so lang als der Wurm war. Es war etwas breiter als dick, und zeigte von dem Raum und Gestalt des Darms und dessen Deffnung, als wann zwey runde Canäle neben einander wären. Man sieht auch daraus den Unterschied des Erlen-Saffts, und des Weiden-Saffts. Der Schaum-Wurm hat zwar mehr Materie um sich als dieser. Aber es sind mehr Blasen als Saft, und der Wurm ist auch grösser. Dieser auf den Erlen ist dabey etwas rauch am ganzen Leib ob man gleich äußerlich mit dem blossen Auge die Härlein nicht sieht. Die Flügel-Scheiden sind weiß. Sonst ist das meiste wie bey dem Weiden-Sauger. Er saugt bey den Knospen

Fig. 10 - FRISCH J.L., 1730 - Beschreibung von allerley Insecten in Teutschland, acter Theil, pag. 28. Slightly reduced.

## den Elsen oder Erlen.

29

pen, laufft gern nach der gwer, trägt den Hinter-Leib in die Höhe; hebt den Leib auf, und drückt darmit den Stachel desto stärker hinein. Die Augen aber stehen nicht so weit heraus. Das übrige kan man alles aus den Figuren sehen.

num. 1. Auf der XIII. Tabelle der II. Platte ist einer der sich zum andernmahl gehäutet,

n. 2. Der die Haut zum drittenmahl abgelegt.

n. 3. Seine natürliche Grösse.

Was er nach seiner letzten Häutung für eine Gestalt bekomme, hab ich noch nicht gefunden.

## XIV.

Von einer Art geschwängter Würme, die einige Ufer-Nas heissen; und von der ungeschwängten Fliege so daraus wird.

**S**achdem ich Männlein und Weiblein in ihrem Gatten gefangen, legte das Weiblein bald darauf Eyer, und die meisten als einen Fils neben einander. Die Eyer sind voll kleiner Spizen aneinander, daß kein Wasser dazwischen kommen kan, daher bleibt gleich die Luft dazwischen gefangen, daß sie weiß aussehen, da sie sonst ganz schwarz sind. Und das Wasser laufft davon herab, ohne sie zu benehen. Eine Spitze sieht an jedem Ey vor andern heraus. Nach wenig Tagen krochen die Zungen aus, und was das Wasser nicht gleich erreichen kunte, das starb. Die aber in das Wasser kamen, stiegen an drey Spizen hinten auszubreiten, die doch hernach die Fliege nicht hat. Von den grössern Arten aber, haben auch die Fliegen solche Spizen. Herr Blankart in seinem Schau-Platz der Raupen c. 32. beschreibet die grössste Art. Man heisset sie Ufer-Nas, weil sich der Wurm von der grösssten Art, am Ufer in einem Löchlein aufhält, das er sich gemacht. Woraus ihn die, so mit Angeln fischen, nehmen, und an den Angel stecken. Gleichwie man sonst die Regen-Würmer daran steckt, welche man deswegen Pyr-Nas heisset, weil sie auch zum Nas an die Angel dienen.

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Fig. 11 - FRISCH J.L., 1730 - Beschreibung von allerley Insecten in Teutschland, achter Theil, pag. 29. Slightly reduced. This chapter reports the first description of a Psyllid nymph (*Psylla alni*).



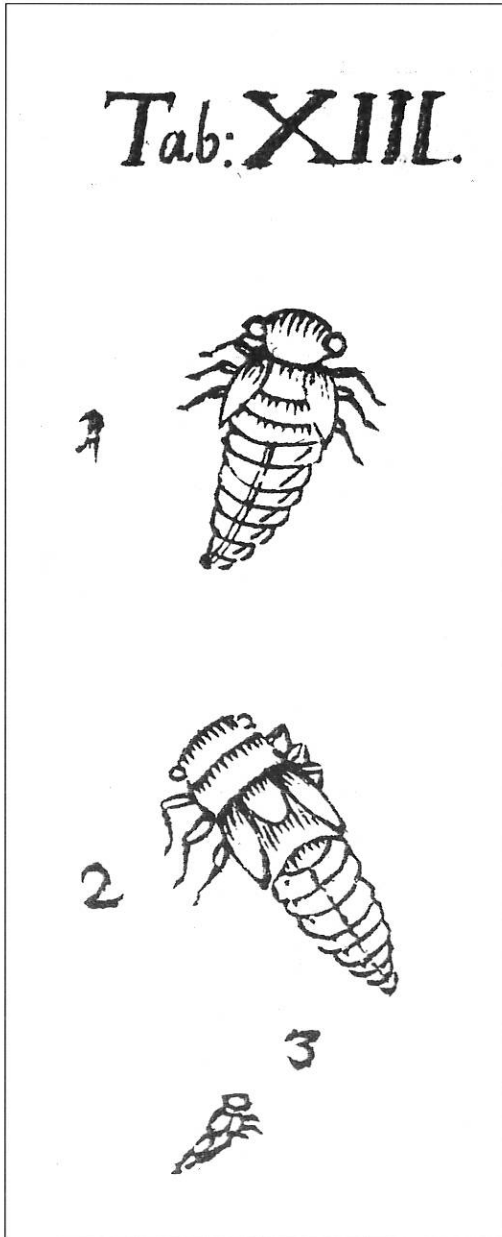


Fig. 12 - FRISCH J.L., 1730 - Beschreibung von allerley Insecten in Teutschland, achter Theil, Tab. XIII. Enlarged. The illustration should represent nymphs of *Psylla alni*, first figuration of a Psyllid nymph; but there are doubts on their interpretation.

7. RÉAUMUR (DE) RENÉ ANTOINE FERCHAULT, La Rochelle (Nord) 28.2.1683 - Bermondière (Maine) 17.10.1757.

*Biographies and Bibliographies*: HORN & SCHENKLING, 1928: 975-976; HOWARD, 1930: pl. 15, fig. 3 (portrait); MONTALENTI, 1935: 948; NISSEN, 1969: 331-332; GILBERT, 1977: 310-311).

From a noble and wealthy family; celebrated, very eclectic and active scholar.

This famous French entomologist (fig. 13) published a monumental work «*Mémoires pour servir à l'histoire des Insectes*» in 6 volumes with almost 4000 pages, with 267 copper tables (1734-1742); another edition was published in Amsterdam (1737-1748).

The work of Réaumur regarding Psyllids, examined in the vol. III (1737) (our figs 14-18) is a enormous jump of quality.

He passed from the vague and often unprecise previous informations to long, detailed and exact descriptions. Also the figures, from copper engravings, are of good level, compared to the old illustrations by Frisch.

Réaumur denominate the Psyllids «Faux Pucerons» and described extensively two species, the «Faux puceron du buis» - now *Asphagidella buxi* (L.) - pages 356-360, tab. 29, figs 1-16, and the «Faux puceron du figuier» - now *Homotoma ficus* (L.) -, pages 351-356, tab. 29, figs 17-24 (our figs 16-18).

Réaumur was the first author who distinguished clearly the Psylloidea and discriminates them from close taxa.

He described and figured the morphology of nymphs, adults and galls and reportet also informations on their biology.

It is the first that described and Figured adults of Psyllids.

#### ACKNOWLEDGEMENTS

I thank: Dr. Enrico Banfi, for botanical information; Dr. Giorgio Bardelli for taking some photos; Dr. Daniel Burckhardt who made me avaiable the precious copies of the very rare works of Bauhin; Prof. Vera D'Urso who confirmed my doubt about the attributions of the figures by Frisch to a Psyllid nymph; Dr. Paola Livi for the facilities in the consultation of some rare books preserved in the library of the Milan Museum (Frisch and Réaumur); Dr. Carlo Violani for the help in the English translation.



Fig. 13 - RÉAUMUR R.A.F. (1683-1757). From Howard, 1930, pl. 15, fig. 3.

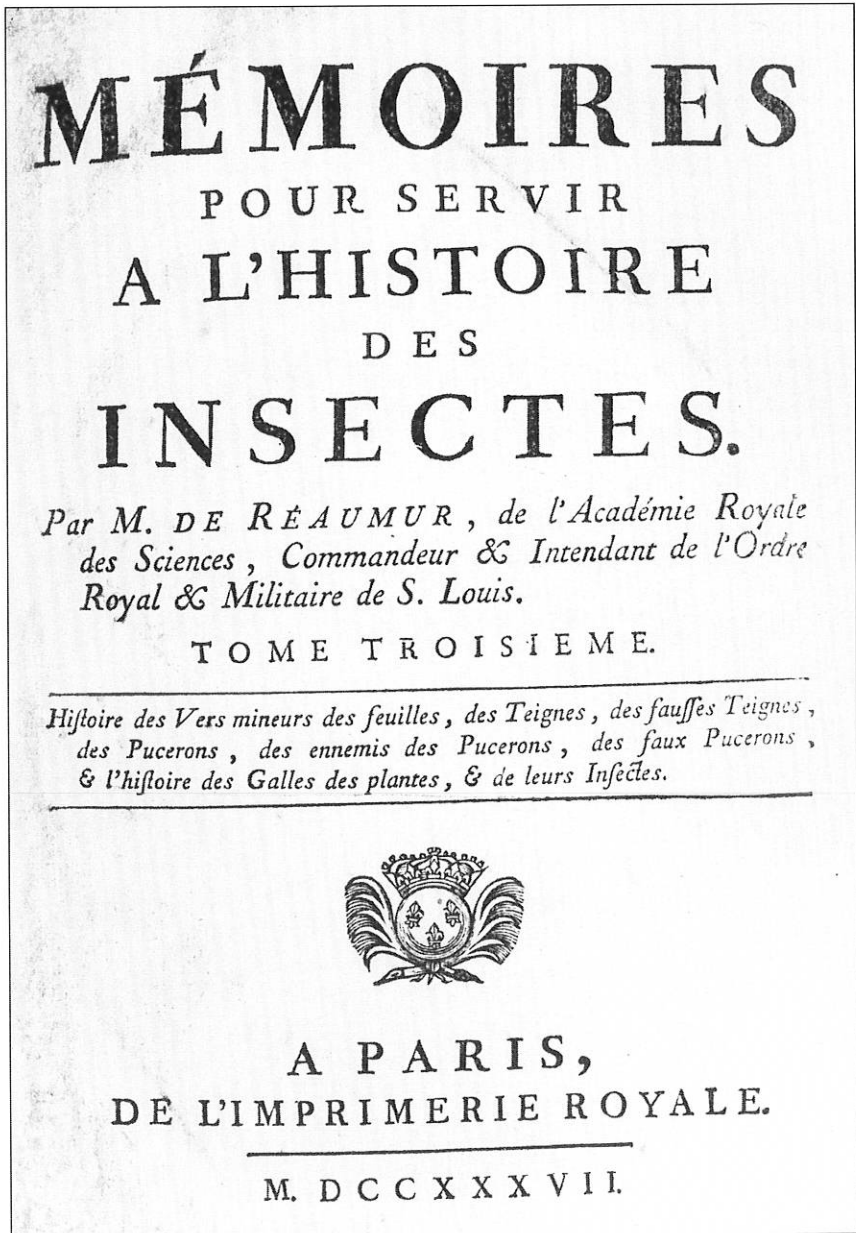


Fig. 14 - RÉAUMUR R.A.F., 1737 - Mémoires pour servir à l'histoire des Insectes, vol. 3. Title page. Reduced.

DES INSECTES. X. *Mém.* 351

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DIXIEME MÉMOIRE.

DES FAUX PUCERONS  
DU FIGUIER,  
ET DE CEUX DU BUIS.

EN cherchant à observer les pucerons sur des feuilles d'arbres ou de plantes, on y pourra voir d'autres insectes qu'on seroit disposé à confondre avec les premiers; ils leur ressemblent par leur grandeur, ou plutôt par leur petitesse, par la tranquillité avec laquelle ils se tiennent assés constamment dans la même place, par la maniere dont ils se nourrissent du suc de la plante, par la nature des excréments qu'ils rejettent, & souvent par les poils cotonneux dont ils sont couverts. Ce sont ces ressemblances qui m'ont déterminé à nommer les derniers de *faux pucerons*, & à les faire connoître actuellement, afin qu'on sçache les distinguer des véritables pucerons, dont on ne les trouve différens que quand on les étudie.

Les faux pucerons \* du figuier se tiennent plaqués contre le dessous des feuilles de cet arbre. Leur corps est assés aplati \*, & leurs jambes sont courtes. C'est M. Grandjean qui me détermina à les observer; la figure de ces petits insectes lui ayant paru singuliere, il m'en apporta pour sçavoir si je les connoissois, & si je pourrois lui apprendre ce qu'ils devenoient; je cherchai alors à faire connoissance avec eux. Vers le 15 Mai, j'en trouvai sous presque toutes les feuilles de mes figuiers de Charenton; mais ils n'y étoient pas en aussi grand nombre que le sont les pucerons

\* Pl. 29. fig.  
17 & 18. P.  
p, &c.  
\* fig. 19.

Fig. 15 - RÉAUMUR R.A.F., 1737 - Mémoires pour servir à l'histoire des Insectes, vol. 3, pag. 351. Beginning of the wide report on the Psyllids.

DES INSECTES. X. Mém. 361

EXPLICATION DES FIGURES  
DU DIXIEME MÉMOIRE.

PLANCHE XXIX.

LA Figure 1, est celle d'une branche de buis, terminée par des feuilles qui forment ensemble une espece de boule *q*, qui donne des logemens à des faux pucerons.

La Figure 2, fait voir la boule de feuilles d'autour de laquelle on a ôté les feuilles plates ou presque plates qui la cachoient en partie. *c, c*, deux feuilles extérieures courbées en calottes.

La Figure 3, représente un tas de matiere cotonneuse adhérente au corps d'un faux puceron, & sous lequel il est entièrement caché.

La Figure 4, est celle d'un faux puceron du buis dans son premier âge, & grossi ici. Il n'a point encore les fourreaux de ses ailes.

La Figure 5, est celle d'un faux puceron plus âgé que le précédent. *f, f*, les fourreaux de ses ailes.

Les Figures 6, 7 & 8, sont celles de trois faux pucerons dont chacun a au derriere une espece de *vermicelli* de matiere transparente; celle de différens pucerons est différemment contournée. *u f*, ces especes de *vermicelli*.

Les Figures 9 & 10, sont celles de deux *vermicellis* détachés du corps, auquel ils tenoient par le bout *u*; l'autre bout est terminé par une boule *b*.

Dans la Figure 11, le faux puceron est encore plus grossi que dans les figures ci-dessus, & cela pour rendre sa trompe *t*, plus sensible.

La Figure 12, est celle du faux puceron très-grossi & vû par-dessous. *f*, partie qui se joint à la trompe. *t*, la véritable trompe.

Tome III,

Z z

## 362 MÉMOIRES POUR L'HISTOIRE

La Figure 13, représente, en grand, le moucheron de la petite mouche dans laquelle le faux puceron du buis se transforme. *t*, sa trompe.

La Figure 14, est celle de la partie antérieure du moucheron de la figure 13, vûe pardeffous. *f*, partie qui se joint à la trompe. *t*, la véritable trompe.

La Figure 15, fait voir, en grand, le bout du derriere du faux puceron ailé de la fig. 13, de celui qui est mâle.

La Figure 16, fait voir, en grand & pardeffous, le bout du derriere du faux puceron ailé, qui est femelle.

Les Figures 17 & 18, sont celles de deux portions de feuilles de figuier, sur lesquelles de faux pucerons *pp*, &c. se sont appliqués.

La Figure 19, représente en grand, & vû pardeffus un faux puceron des feuilles du figuier. *e, e*, les fourreaux des ailes. En *a*, est sa tête.

La Figure 20, montre pardeffous le faux puceron vû pardeffus dans la figure précédente. *e, e*, les fourreaux des ailes. *c, c*, deux cornes. *f*, espece d'étui de la trompe. *t*, filet qui paroît être la véritable trompe.

La Figure 21, est celle du faux puceron pris dans l'instans où il acheve de se tirer de sa dépouille. *d*, cette dépouille, au bout du derriere de laquelle est une bulle *b*, transparente. *c, c*, les cornes.

La Figure 22, représente en grand, pardeffus & de côté, l'insecte ailé dans lequel se métamorphose le faux puceron du figuier.

La Figure 23, est celle du même insecte ailé, & également grossi, vû pardeffous.

La Fig. 24, est celle du moucheron ou de la petite mouche des deux dernieres figures, dans sa grandeur naturelle.



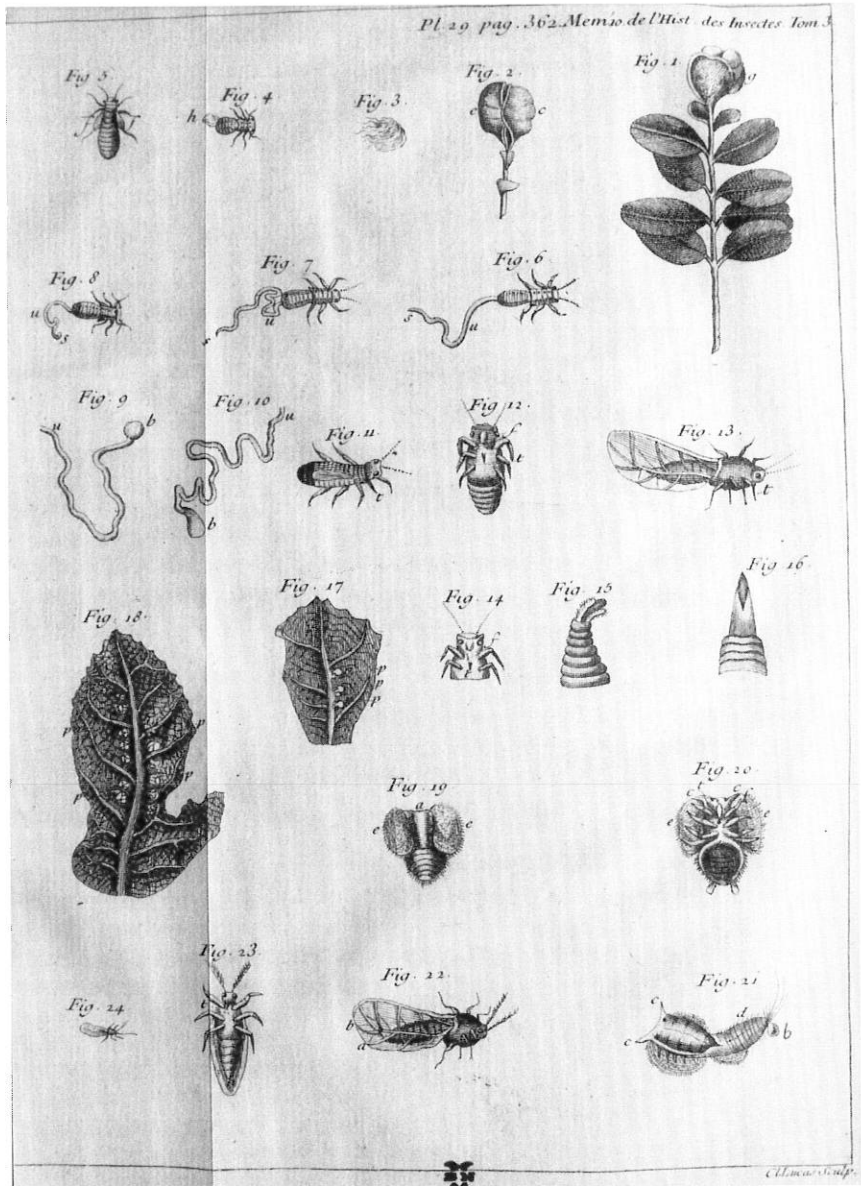


Fig. 18 - RÉAUMUR R.A.F., 1737 - Mémoires pour servir à l'histoire des Insectes, vol. 3, planche 29. Reduced. The original is a two-folded plate outside text. Also adults of Psyllids are figured for the first time.



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