

OSMYLIDAE: ILLUSTRATIONS IN THE EARLY  
ENTOMOLOGICAL LITERATURE AND THE DISCOVERY OF  
EARLY STAGES AND CLARIFICATION OF THE BIOLOGY  
(NEUROPTERIDA: NEUROPTERA)

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This paper gives an account of the early research on those insects now included in the family Osmylidae, with detailed information on first descriptions and illustrations, nomenclature of the first described species and genus, on illustrations until 1820 and on the discovery of early stages and of the biology.

Key words: Neuroptera, Osmylidae, history of entomology

INTRODUCTION

*Osmylus fulvicephalus* (SCOPOLI, 1763) is one of the most conspicuous and largest lacewings in Europe. It has been found in almost all the European countries (ASPÖCK *et al.* 1980, 2001), sometimes being quite abundant.\* Nevertheless, this insect, as well as other species of the family Osmylidae, appeared in the entomological literature rather late, and the biology also remained a mystery until the middle of the nineteenth century.

FIRST DESCRIPTION AND FIRST ILLUSTRATION

It is surprising that none of the authors of the famous books on insects published in the 17th and early 18th century – TH. MOUFET (1634), U. ALDROVANDUS (1638), J. JONSTON (1657), J. L. FRISCH (1720–1738), R. A. F. DE REAUMUR (1734–1742), J. SWAMMERDAMM (1752) – mentioned anything about these insects.

To the best of my knowledge the first description was published by A. J. RÖSEL VON ROSENHOF (1755) in the third volume of his famous “Insecten-Be-

\* Except for the Caucasus region and the Ukraine, Europe harbours only this species of the family Osmylidae (ASPÖCK *et al.* 2001).

lustigung” (Figs 1–5). In a German that sounds extremely circumstantial and old-fashioned today, he described “die kleine Land-Libelle mit braun-gefleckten breiten Flügeln” (= the small terrestrial dragonfly with brown-spotted broad wings) (Figs 2–3) and he even said that this insect is not rare in his region (i.e. Southern Germany). RÖSEL VON ROSENHOF also provided a beautiful illustration (Figs 4–5), the first in the entomological literature. RÖSEL VON ROSENHOF’s son-in-law, C. KLEEMANN, edited a Dutch translation of the “Insecten-Belustigung”, and all copper plates were again published, but on much better quality paper than in the German edition, and with broad margins.

### NOMENCLATURE

RÖSEL VON ROSENHOF used a very circumstantial German name only; the third volume of his “Insecten-Belustigung” appeared three years before the introduction of binominal nomenclature by LINNAEUS (1758). In LINNAEUS’ *Editio decima* of his “*Systema naturae*” there is no description of any insect that could be interpreted as an *Osmylus*. The first nomenclaturally valid name is *Hemerobius fulvicephalus* introduced by SCOPOLI (1763) who described and illustrated the insect quite adequately (Figs 6–9). Table 1 shows the synonymy.

The species was often but erroneously called “*Hemerobius chrysops*” (“*Osmylus chrysops*”) which is definitely incorrect. When LINNAEUS (1758) introduced the name, he clearly described a chrysopid. It is hardly understandable that even KRÜGER (1912) in his remarkable monograph treated the species as “*Osmylus chrysops*”.

The genus *Osmylus* was described by LATREILLE (1802) for *Hemerobius maculatus* FABRICIUS, 1787, by monotypy (OSWALD & PENNY 1991). Interestingly, in the 13th volume of his “*Histoire naturelle...*” LATREILLE (1805) included not only *Hemerobius maculatus* FABRICIUS, but also *Hemerobius phalaenoides* LINNAEUS, 1758, in this genus. The family was formally established (as Osmylida) by LEACH in BREWSTER (1815), with *Osmylus maculatus* only.

**Table 1.** Synonyms of *Osmylus fulvicephalus* (SCOPOLI, 1763)

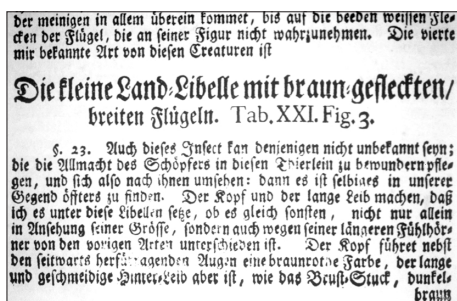
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<i>Hemerobius fulvicephalus</i> SCOPOLI, 1763: VILLERS (1789)
<i>Hemerobius chrysops</i> auct. [nec LINNAEUS, 1758]: SULZER (1776), HERBST & SOTZMANN (1786), ROEMER (1789)
<i>Hemerobius maculatus</i> FABRICIUS, 1787
<i>Hemerobius laurifoliaeformis</i> RAZOUMOWSKY, 1789
<i>Osmylus maculatus</i> (FABRICIUS): LATREILLE (1802), GERMAR (1817)

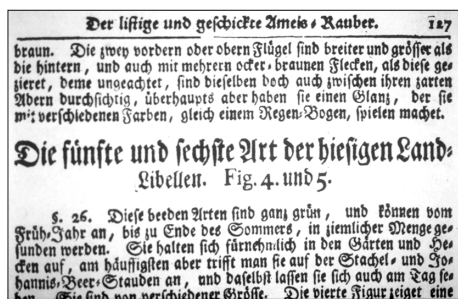
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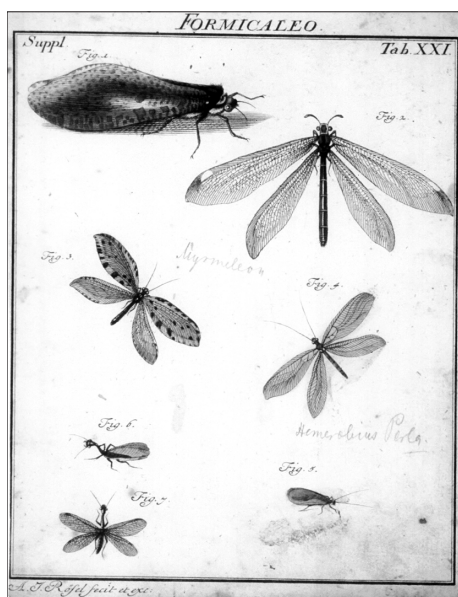
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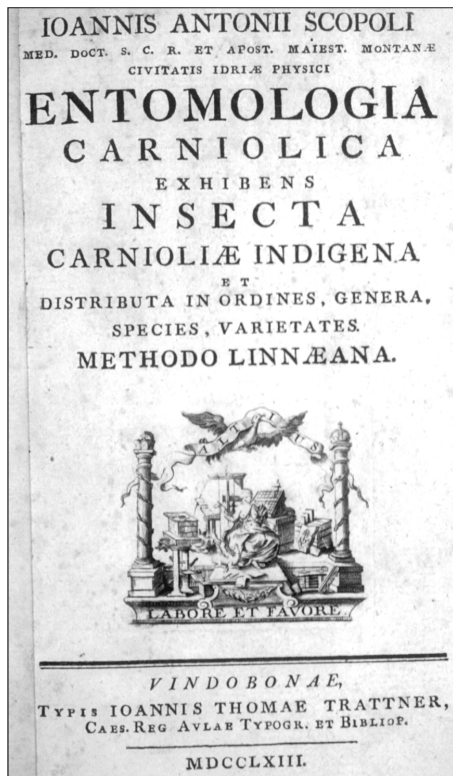


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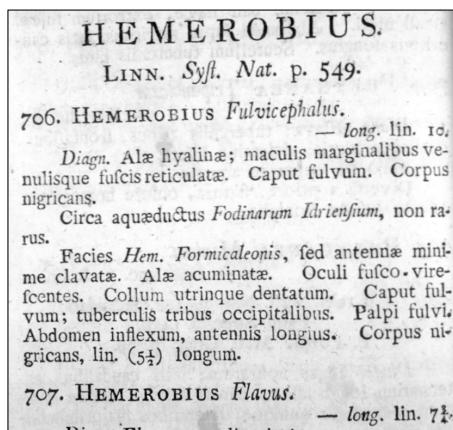


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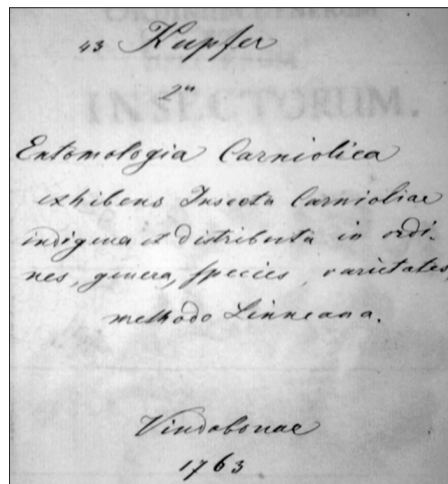




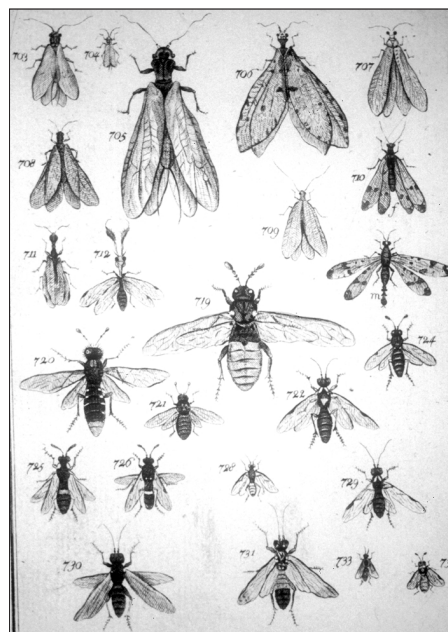
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**Figs 6–9.** 6 = SCOPOLI (1763): Title page (Library H. & U. ASPÖCK); 7 = SCOPOLI (1763): Description of *Hemerobius fulvicephalus* (Library H. & U. ASPÖCK); 8 = SCOPOLI (1763): Handwritten title page of one of the few existing copies of the volume containing the illustrations (Library Naturhistorisches Museum Wien); 9 = SCOPOLI (1763): Plate with figures 703–736 (706 = *Hemerobius fulvicephalus*) (Library Naturhistorisches Museum Wien)



## ILLUSTRATIONS UP TO 1820

After RÖSEL VON ROSENHOF (1755) and SCOPOLI (1763) and before 1820, illustrations of *Osmylus fulvicephalus* were published by SCHAEFFER (1769), SULZER (1776), HERBST and SOTZMANN (1786), ROEMER (1789), VILLERS (1789), DONOVAN (1797), OLIVIER (1797), WILHELM (1798, 1811), SHAW (1806), GERMAR (1817) and SAMOUELLE (1819) (Table 2).

These illustrations are of very different quality. RÖSEL VON ROSENHOF's figure is certainly one of the best, but the figures published by SULZER (1776) and, in particular, that of DONOVAN (1797) are also of a high standard, while those of HERBST and SOTZMANN (1786), OLIVIER (1797) and, particularly, of WILHELM (1798, 1811) and of GERMAR (1817) are incredibly poor. As in many other early illustrations of Neuropterida little attention was paid to correct drawings of the wing venation by many authors, particularly if other characters were sufficiently conspicuous to ensure recognition of the insects (ASPÖCK 1998, 1999).

## DISCOVERY OF EARLY STAGES AND OF THE BIOLOGY

When RÖSEL VON ROSENHOF described the insect for the first time in 1755, he had no idea how it developed, and throughout almost the following hundred years the early stages and biology remained unknown. Some of the early authors mentioned association with moist habitats. SCOPOLI (1763) wrote "circa aquaeductus Fodinarum Idriensium, non rarus." DONOVAN (1797) stated "Like the ephemerae ... it delights in moist places particularly among weeds. The larva is un-

**Table 2.** Authors of publications with illustrations of Osmylidae (all representing *Osmylus fulvicephalus* SCOPOLI, 1763) before 1820. (In chronological order of the pertinent publications.)

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AUGUST JOHANN RÖSEL VON ROSENHOF (1705–1759), German (of Austrian origin); 1755: Figs 1–5.
JOHANN ANTON SCOPOLI (1723–1788), Austrian; 1763: Figs 6–9.
JACOB CHRISTIAN SCHAEFFER (1718–1790), German; 1769: Figs 10–11.
JOHANN HEINRICH SULZER (1735–1813), Swiss; 1776: Figs 12–14.
JOHANN FRIEDRICH WILHELM HERBST (1743–1807), German, and D. F. SOTZMANN (?–?), German; 1786: Figs 15–17.
JOHANN JAKOB ROEMER (1761–1819), Swiss; 1789: Figs 18–20.
CHARLES JOSEPH DE VILLERS (1724–1810), Frenchman; 1789: Figs 21–23.
EDWARD DONOVAN (1768–1837), Englishman; 1797: Figs 24–26.
ANTOINE GUILLAUME OLIVIER (1756–1814), Frenchman; 1797: Figs 27–29.
GOTTLÖB TOBIAS WILHELM (17..–1811), Austrian or German (Bavarian) ?; 1798: Figs 30–32.
GEORGE SHAW (1751–1813), Englishman; 1806: Figs 35–36.
ERNST FRIEDRICH GERMAR (1786–1853), German; 1817: Figs 37–38.
GEORGE SAMOUELLE (17..–1846), Englishman; 1819: Figs 39–40.

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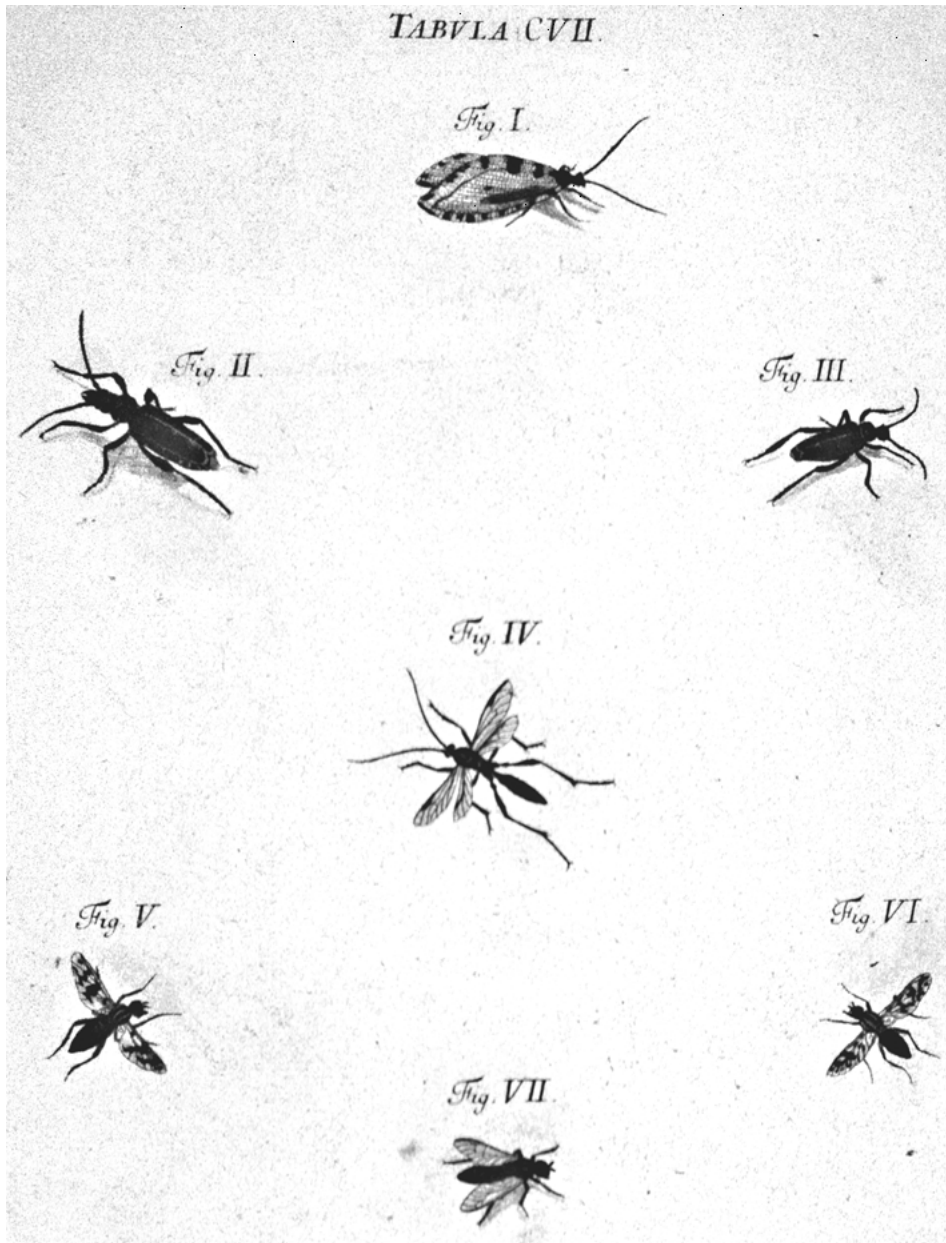
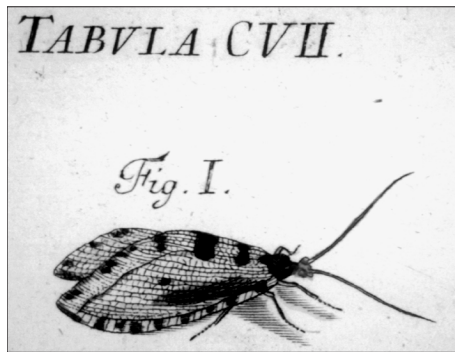
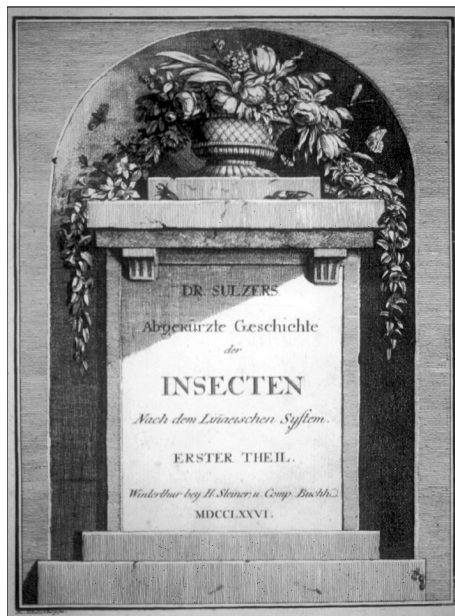


Fig. 10. SCHAEFFER (1769): Plate CVII. (Library H. & U. ASPÖCK)



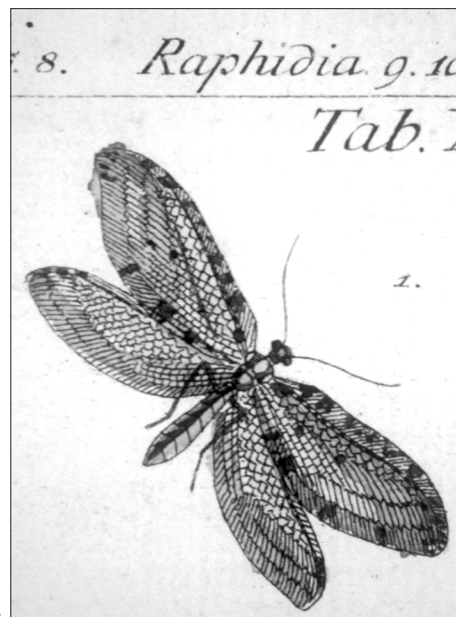
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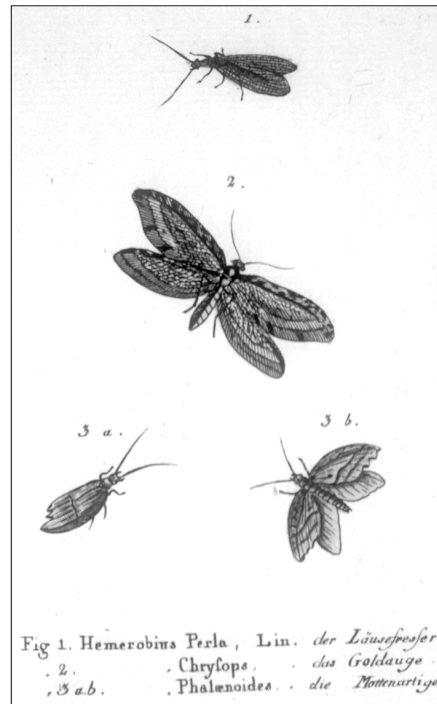


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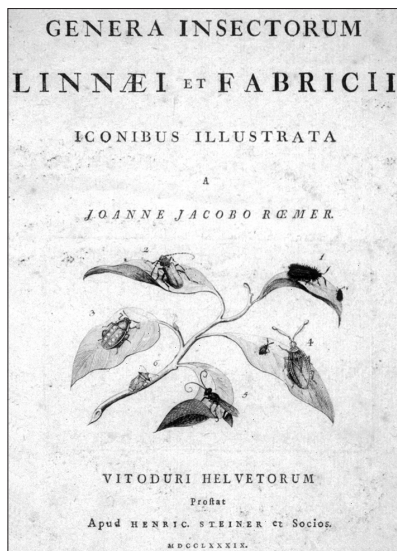
**Figs 11–14.** 11 = SCHAEFFER (1769): Detail of Plate CVII (Fig. 1) (Library H. & U. ASPÖCK); 12 = SULZER (1776): Title page (Library H. & U. ASPÖCK); 13 = SULZER (1776): Plate XXV. (Library H. & U. ASPÖCK); 14 = SULZER (1776): Detail of Plate XXV. (Library H. & U. ASPÖCK)



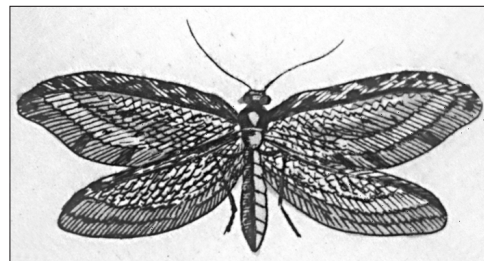
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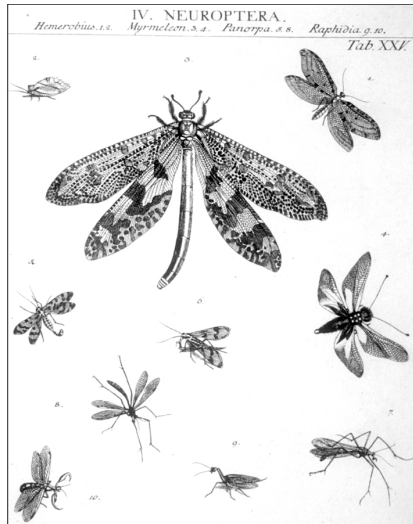
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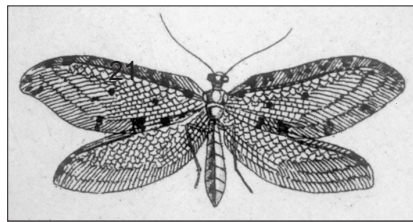
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**Figs 15–18.** 15 = HERBST & SOTZMANN (1786): Title page (Library H. & U. ASPÖCK); 16 = HERBST & SOTZMANN (1786): Plate 320. (Library H. & U. ASPÖCK); 17 = HERBST & SOTZMANN (1786): Detail of Plate 320. (Library H. & U. ASPÖCK); 18 = ROEMER (1789): Title page (Library H. & U. ASPÖCK)

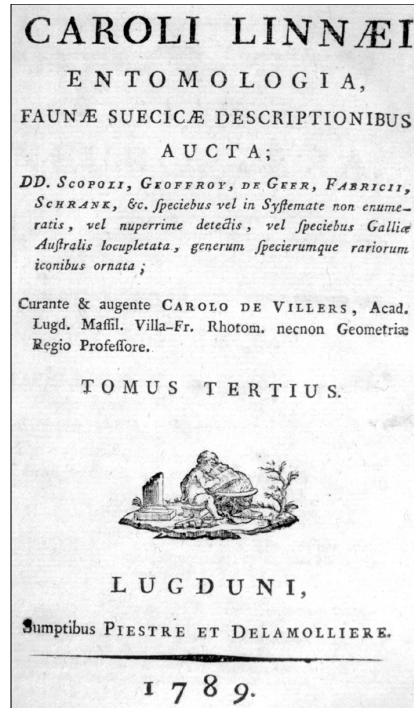




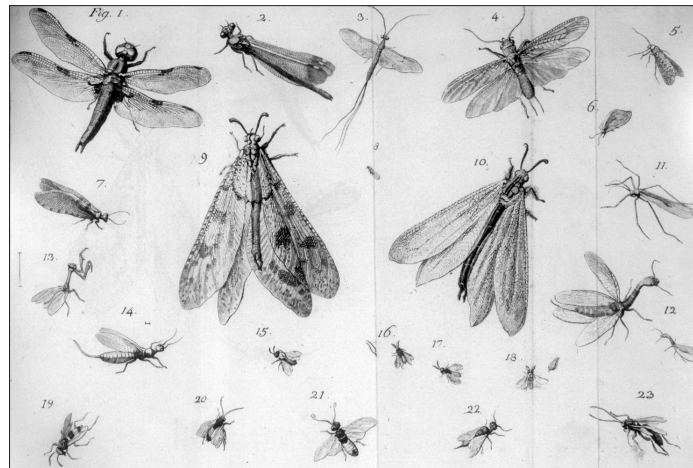
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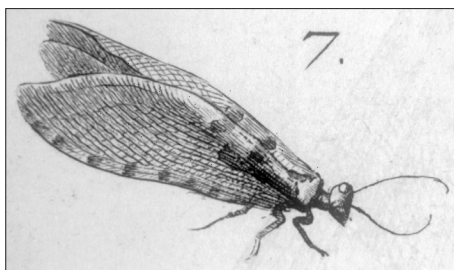
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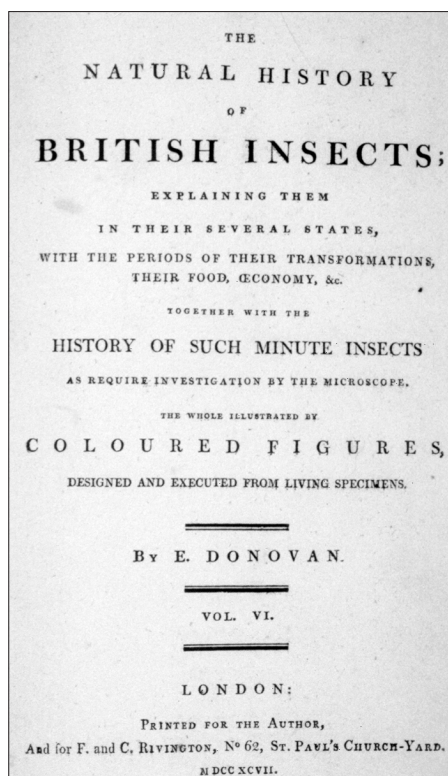
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**Figs 19–22.** 19 = ROEMER (1789): Plate XXV. (Library H. & U. ASPÖCK); 20 = ROEMER (1789): De-  
tail of Plate XXV. (Library H. & U. ASPÖCK); 21 = VILLERS (1789): Title page (Library H. & U.  
ASPÖCK); 22 = VILLERS (1789): Plate VII. (Library H. & U. ASPÖCK)

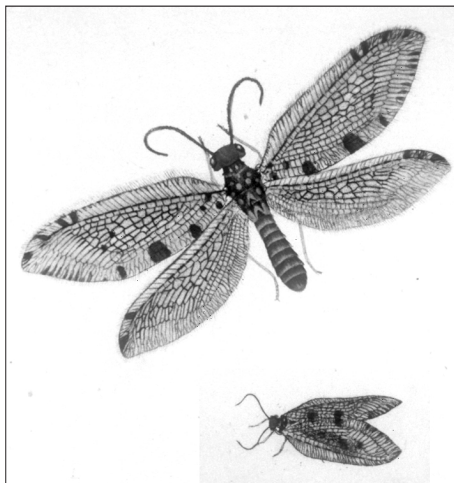
known, but is conceived to be of the aquatic kind.” LATREILLE (1805) mentioned similarly “Ces insectes habitent plus particulièrement les lieux frais et humides” and STEPHENS (1836) wrote “...found in great abundance in some places, especially on the margins of a brook...”. Shortly after that, STEIN (1838) found a pupa which yielded an *Osmylus*. He described the exuvia and stated that it had come



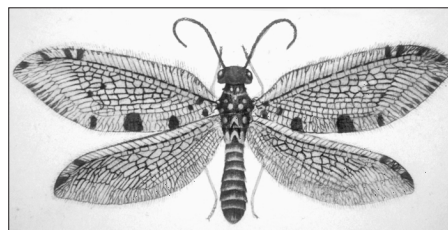
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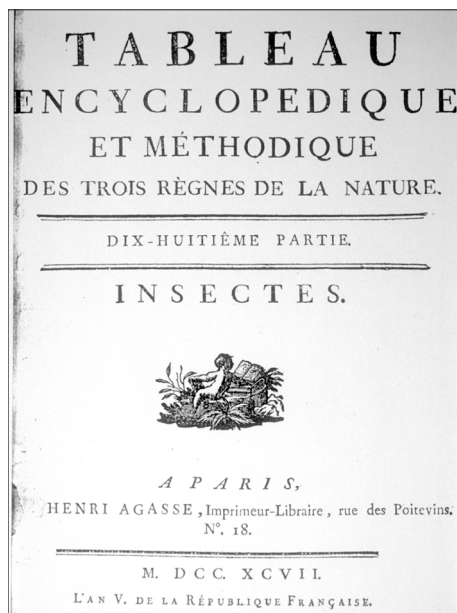
**Figs 23–26.** 23 = VILLERS (1789): Detail of Plate VII. (Library H. & U. ASPÖCK); 24 = DONOVAN (1797): Title page (Library H. & U. ASPÖCK); 25 = DONOVAN (1797): Plate 188 (Library H. & U. ASPÖCK); 26 = DONOVAN (1797): Detail of Plate 188 (Library H. & U. ASPÖCK)

from moist soil. (“Die Puppe lebt an Wassergräben, wahrscheinlich ...im feuchten Erdboden. Wenn sie sich verwandeln will, kriecht sie aus dem Gras hervor.”)

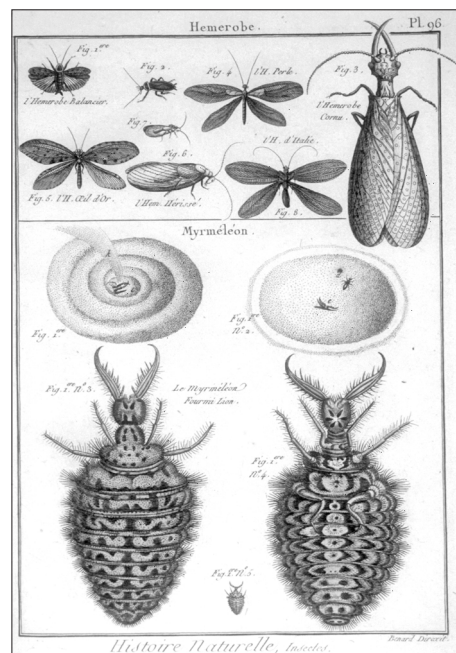
In 1839 H. C. BURMEISTER, author of the famous Handbook of Entomology and an authority of outstanding reputation, doubted that the larva lived in moist soil, but assumed that it was also a predator of aphids and similar to larvae of *Chrysopa*. In the same work BURMEISTER described the second known species of the family Osmylidae, *Osmylus strigatus* (now *Porismus strigatus*) from Australia, 84 years after RÖSEL VON ROSENHOF’s first description and 76 years after SCOPOLI’s first valid description of an osmylid.

In 1848 L. DUFOUR, author of an outstanding study of the morphology and anatomy of the adult stage of *Osmylus fulvicephalus*, wrote that the biology is absolutely unknown (“...on ignore completement ses metamorphoses, son genre de vie...”).

At that time in Vienna, a boy named FRIEDRICH MORITZ BRAUER, born in 1832, grew up as a young enthusiastic entomologist. While still a teenager he began his studies on the biology of Neuroptera, and among these also on *Osmylus*. He found the larva at a brook near Grinzing (a village west of Vienna, today a part of



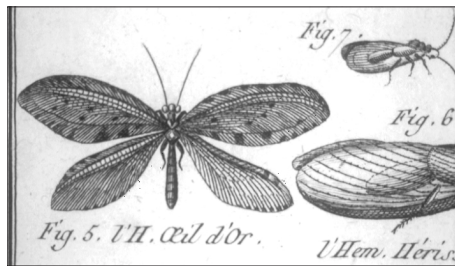
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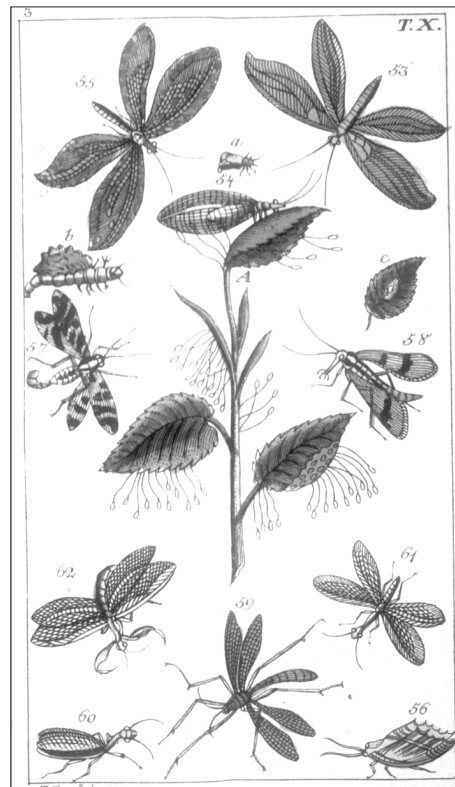
**Figs 27–28.** 27 = OLIVIER (1797): Title page (Library H. & U. ASPÖCK); 28 = OLIVIER (1797): Plate 96. (Library H. & U. ASPÖCK)





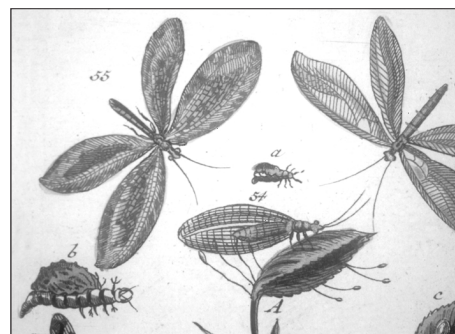
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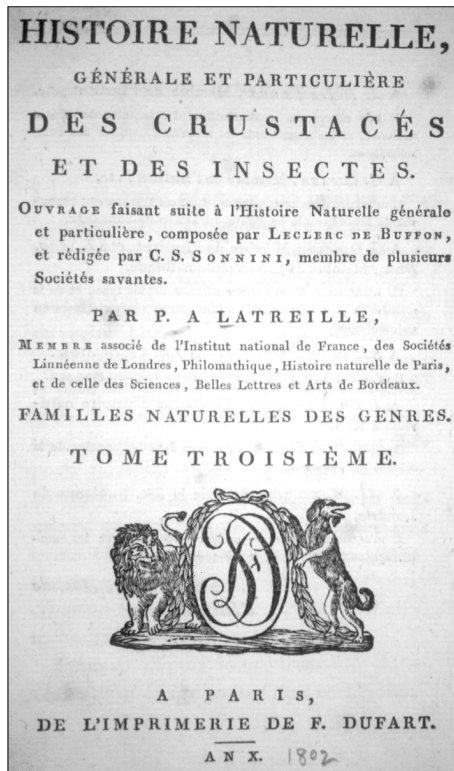
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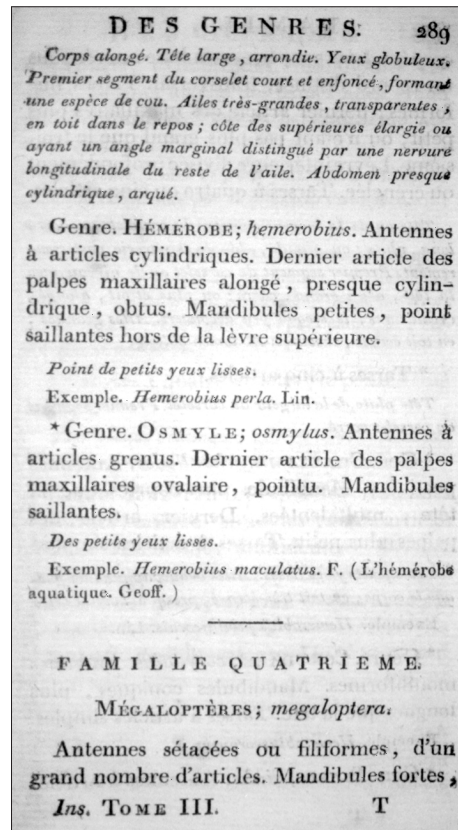
**Figs 29–32.** 29 = OLIVIER (1797): Detail of Plate 96. (Library H. & U. ASPÖCK); 30 = WILHELM (1798): Title page (Library H. & U. ASPÖCK); 31 = WILHELM (1798): Plate X. (Library H. & U. ASPÖCK); 32 = WILHELM (1798): Detail of Plate X. (Library H. & U. ASPÖCK)



the city) and studied the biology. As a pupil of 18 he presented his findings at a meeting of naturalists in Vienna and one year later, in 1851, he published his results (Figs 42–43). Stimulated by, and based upon BRAUER's findings, and with the help of living material sent from Vienna to Königsberg (now Kaliningrad) in Eastern Prussia (today Russia) HERMANN HAGEN carried out extensive and thorough studies on the life history and anatomy of *Osmylus*. He published a remarkable paper (HAGEN 1852), which is a masterpiece of observation and anatomy in entomology for the middle of the 19th century (Figs 44–45).



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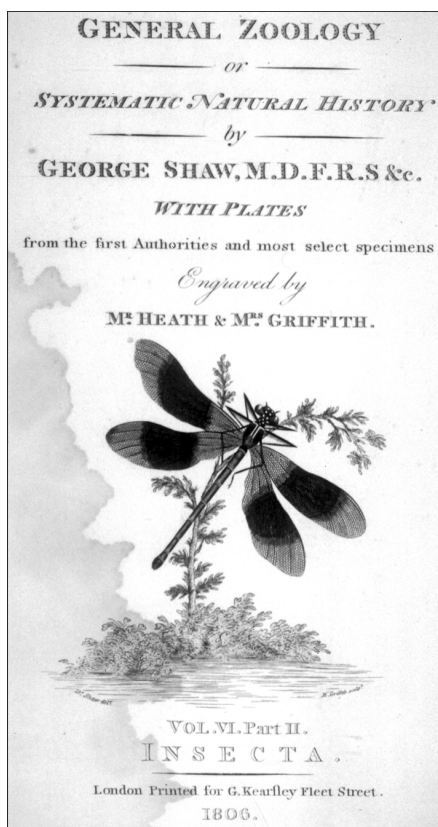


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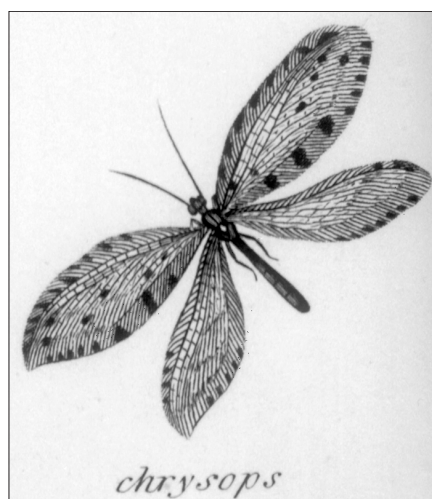
Figs 33–34. 33 = LATREILLE (1802): Title page (Library H. & U. ASPÖCK); 34 = LATREILLE (1802): Description of *Osmylus* (Library H. & U. ASPÖCK)

## OUTLOOK

When BRAUER and HAGEN published their findings, only two species of the family were known. Today we know about 160 described species assigned to 23 genera and 8 subfamilies. The distribution of the Osmylidae includes Europe, Asia, Africa, Australia and South America. It is possible that our planet harbours about 200 species of Osmylidae comprising a considerable biodiversity. The biology of most is entirely unknown – a large open field for future research.

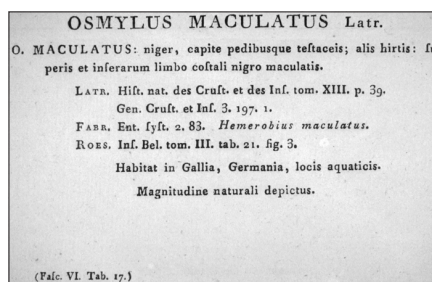


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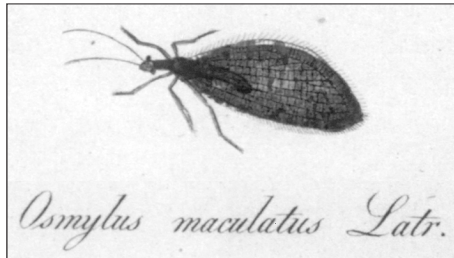


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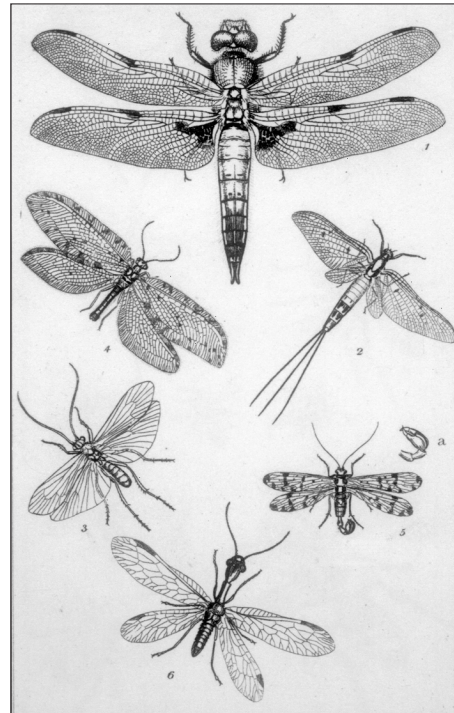
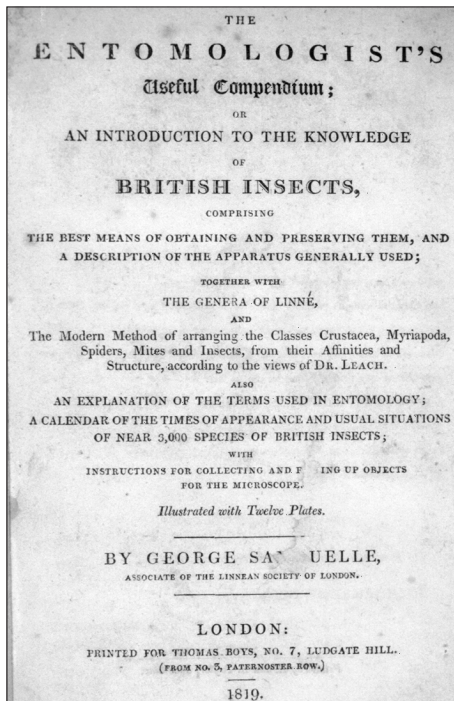


**Figs 35–37.** 35 = SHAW (1806): Title page (Library H. & U. ASPÖCK); 36 = SHAW (1806): Detail of Plate 83. (Library H. & U. ASPÖCK); 37 = GERMAR (1817): Text to Fasc. VI, Plate 17. (Library H. & U. ASPÖCK)



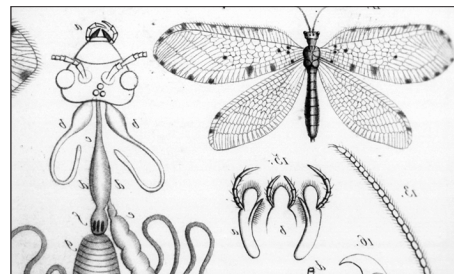
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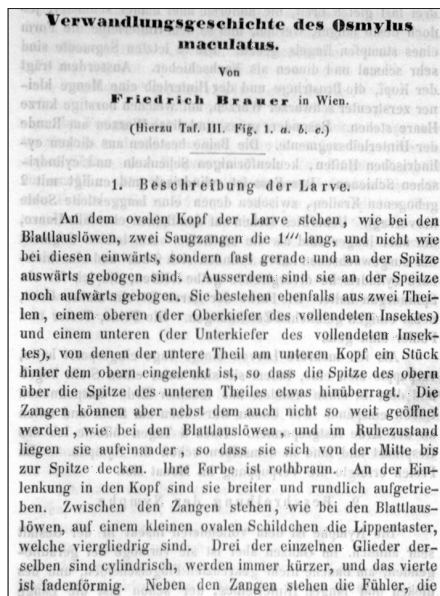
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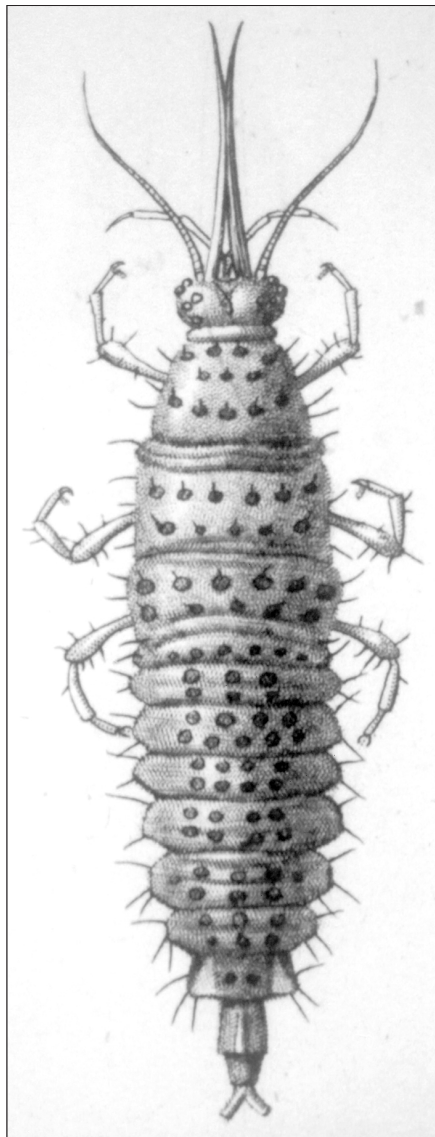


**Figs 38–41.** 38 = GERMAR (1817): Plate 17 of Fasc. VI. (Library H. & U. ASPÖCK); 39 = SAMOUELLE (1819): Title page (Library H. & U. ASPÖCK); 40 = SAMOUELLE (1819): Plate 7. (Library H. & U. ASPÖCK); 41 = DUFOUR (1848): Detail of plate showing an imago of *Osmylus fulvicephalus* (Library Naturhistorisches Museum Wien)

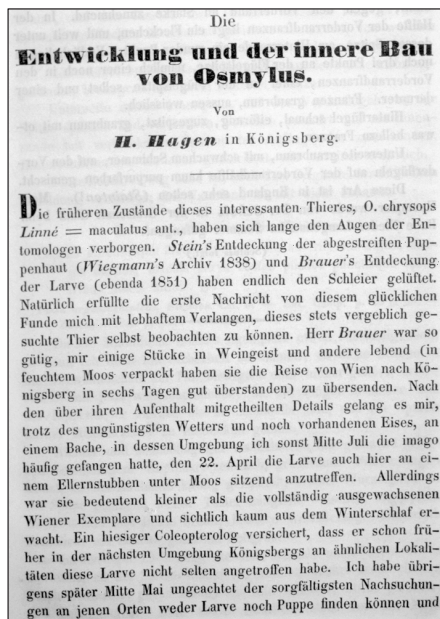




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**Figs 42–44.** 42 = BRAUER (1851): First page (Library Naturhistorisches Museum Wien); 43 = BRAUER (1851): Detail of plate with the oldest illustration of the larva of *Osmylus fulvicephalus* (Library Naturhistorisches Museum Wien); 44 = HAGEN (1852): Title page (Library Naturhistorisches Museum Wien)



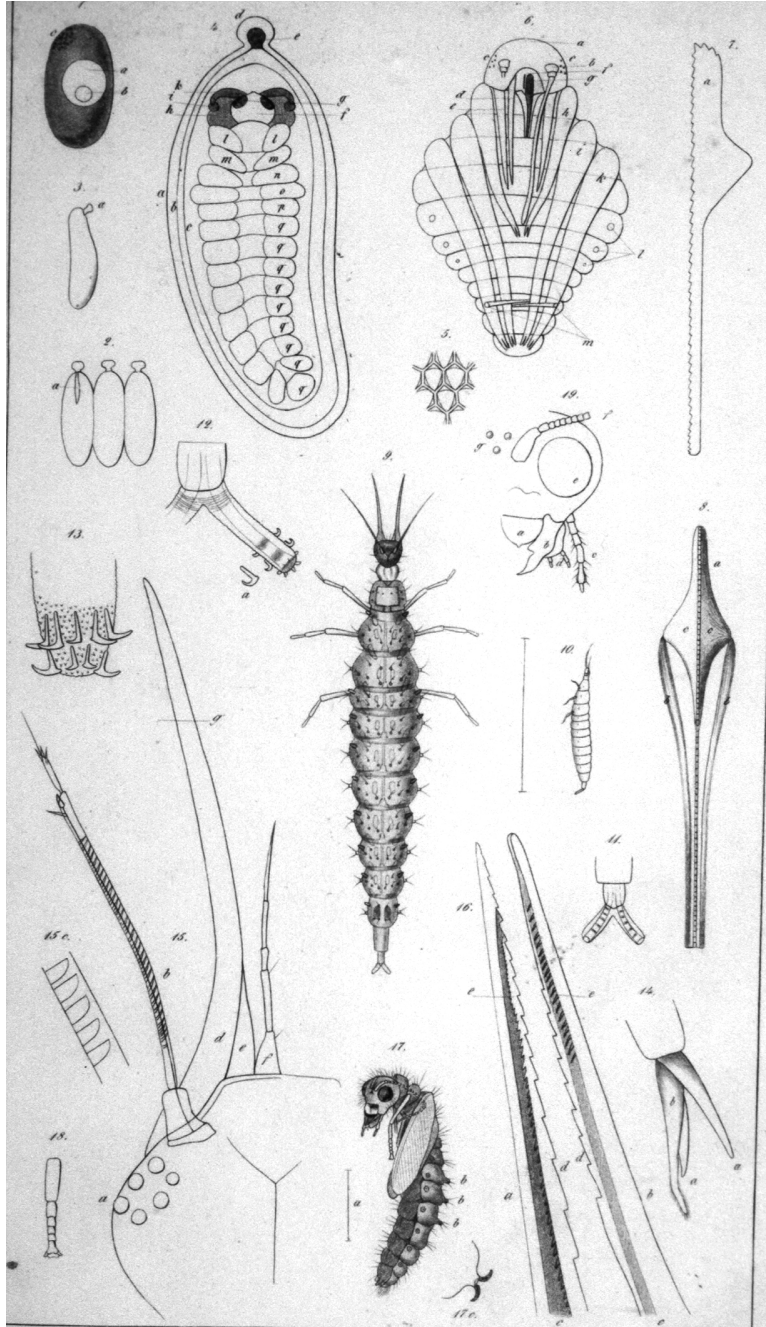


Fig. 45. HAGEN (1852): Plate with egg, larva, pupa and various morphological details of *Osmylus fulvicephalus* (Library Naturhistorisches Museum Wien)

\*

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