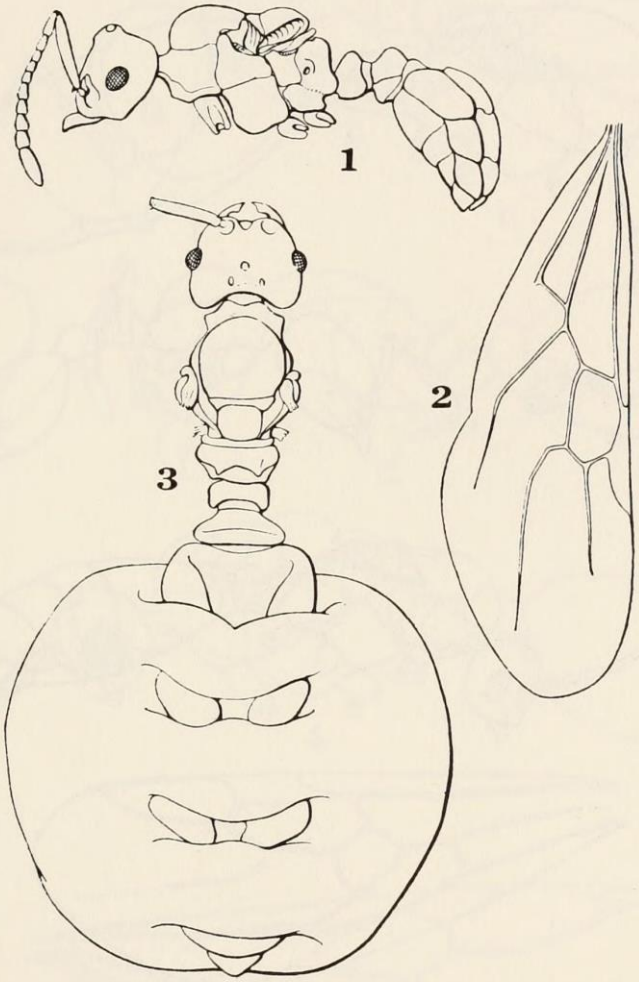

PLATE 29

Anergates atratulus Schenck

1. Virgin female. 2. Wing. 3. Fertile female.

Fig 29: from Creighton, W. S., 1950; Museum of Comparative Zoölogy [at Harvard College].

The Extreme, Workerless Inquilines of the World.

The inquiline species.

***Tetramorium* Mayr, 1855** (Only a few species in a big genus.) (= ***Teleutomyrmex* Kutter, 1950**, by Ward, Brady, Fisher, Schultz, 2015 ("2014"), the old genus, complete.).

01) *Tetramorium inquilinum* Ward, Brady, Fisher, Schultz, 2015 ("2014")
(= *Teleutomyrmex schneideri* Kutter, 1950)
(= *Tetramorium schneideri* (Kutter, 1950), by Ward, Brady, Fisher, Schultz, 2015 ("2014"))
(not *Tetramorium schneideri* Emery, 1898)
(= *Tetramorium inquilinum* Ward, Brady, Fisher, Schultz, 2015 ("2014"), replacement name)
02) *Tetramorium kutteri* (Tinaut, 1990)
(= *Teleutomyrmex kutteri* Tinaut, 1990)
(= *Tetramorium kutteri* (Tinaut, 1990), by Ward, Brady, Fisher, Schultz, 2015 ("2014"))
(not *Tetramorium semilaeve* André, 1883 var. *kutteri* Santschi, 1927)
03) *Tetramorium seiferti* (Kiran & Karaman, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017)
(= *Teleutomyrmex seiferti* Kiran & Karaman, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017)
(= *Tetramorium seiferti* (Kiran & Karaman, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017), by analogy)
04) *Tetramorium buschingeri* (Lapeva-Gjonova, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017)
(= *Teleutomyrmex buschingeri* Lapeva-Gjonova, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017)
(= *Tetramorium buschingeri* (Lapeva-Gjonova, in Kiran, Karaman, Lapeva-Gjonova, Aksoy, 2017), by analogy)

Not yet described species of extreme, workerless inquiline, from the genus ***Tetramorium* Mayr, 1855** (= ***Teleutomyrmex* Kutter, 1950**.).

05) The new, undescribed species from *Tetramorium* Mayr, 1855 (= *Teleutomyrmex* Kutter, 1950) from Farab, Turkmenistan… See Dlussky, Soyunov, Zabelin, 1990 ["1989"].

***Tetramorium* Mayr, 1855** (Only a few species in a big genus.) (= ***Anergates* Forel, 1874**, by Ward, Brady, Fisher, Schultz, 2015 ("2014"), the old genus, complete.).

06) *Tetramorium atratulum* (Schenck, 1852)
(= *Myrmica atratula* Schenck, 1852)
[Also described as new by Schenck, 1853b]
(= *Tetramorium atratulum* (Schenck, 1852), by Mayr, 1855)
[= *Tomognathus atratulus* (Schenck, 1852), by Mayr, 1863 following Mayr, 1861, obsolete combination.]
(= *Anergates atratulus* (Schenck, 1852), by Forel, 1874)
(= *Tetramorium atratulum* (Schenck, 1852), by Ward, Brady, Fisher, Schultz, 2015 ("2014"))
07) *Tetramorium friedlandi* (Creighton, 1934)
(= *Anergates friedlandi* Creighton, 1934)
[= *Tetramorium friedlandi* (Creighton, 1934), by analogy]

***Tetramorium* Mayr, 1855** (Only a few species in a big genus.).

08) *Tetramorium microgyna* Santschi, 1918
09) *Tetramorium parasiticum* Bolton, 1980

***Pheidole* Westwood, 1839** (Only a few species in a big genus.).

10) *Pheidole neokohli* Wilson, 1984
(= *Anergatides kohli* Wasmann, 1915)
(= *Pheidole kohli* (Wasmann, 1915), by Wilson, 1984)
(not *Pheidole kohli* Mayr, 1901)
(= *Pheidole neokohli* Wilson, 1984, replacement name)
11) *Pheidole acutidens* (Santschi, 1922)
(= *Bruchomyrma acutidens* Santschi, 1922)
(= *Pheidole acutidens* (Santschi, 1922), by Wilson, 1984)
12) *Pheidole argentina* (Bruch, 1932)
(= *Gallardomyrma argentina* Bruch, 1932)
(= *Pheidole argentina* (Bruch, 1932), by Wilson, 1984)
13) *Pheidole parasitica* Wilson, 1984

Excluded from the extreme, workerless inquilines. Once this species was included in the extreme, workerless inquilines but now it is considered to be a workerless inquiline without extreme reductions, e.g. no pupoid males but normal ones. The decision to exclude it was made by Edward Osborne Wilson in 1984 in a study of the inquilines in the genus ***Pheidole* Westwood, 1839**.

***Pheidole* Westwood, 1839** (Only one species in a big genus.).

14) *Pheidole kusnezovi* Wilson, 2003
(= *Eriopheidole symbiotica* Kusnezov, 1952)
(= *Pheidole symbiotica* (Kusnezov, 1952), by Wilson, 1984)
(not *Pheidole symbiotica* Wasmann, 1909)
(= *Pheidole kusnezovi* Wilson, 2003, replacement name)

Distribution.

01) Europe (Alps, Pyrenees and Northern Spain)
02) Europe (Southern Iberia)
03) Turkey (Anatolia)
04) Europe (Southern Balkans or, more precisely, Bulgaria)

05) Turkmenistan

06) Palaearctic region (most important: Europe)
07) North America

08) Southern Africa
09) Southern Africa

10) Central Africa
11) South America
12) South America
13) India

14) South America

The host species.

01), 02), 03), 04), 05), 06), 07), 08) and 09) Certain species of the genus ***Tetramorium*** **Mayr, 1855**.

01) *T. alpestre* Steiner, Schlick-Steiner & Seifert, 2010 and *T. impurum* (Förster, 1850)
and maybe *T. caespitum* (Linnaeus, 1758)?
02) *T.* cf. *caespitum* (Linnaeus, 1758)
03) *T.* cf. *chefketi* Forel, 1911
04) *T.* cf. *chefketi* Forel, 1911

05) A species from the genus *Tetramorium* Mayr, 1855…

06) *T. impurum* (Förster, 1850), *T. caespitum* (Linnaeus, 1758), *T. immigrans* Santschi, 1927,
T. staerckei Kratochvíl, in Kratochvíl, Novák, Šnoflák, 1944
and *T. moravicum* [Kratochvil, in] Novák & Sadil, 1941, *T. diomedeum* Emery, 1908,
T. chefketi Forel, 1911
07) *T. immigrans* Santschi, 1927

08) *T. sericeiventre* Emery, 1877 and *T. sepositum* Santschi, 1918
09) *T. avium* Bolton, 1980

10), 11), 12), 13) and 14) Certain species of the genus ***Pheidole*** **Westwood, 1839**.

10) *P. megacephala* (Fabricius, 1793) subsp. *melancholica* Santschi, 1912
11) *P. strobeli* Emery, 1906
12) *P. nitidula* Emery, 1888
13) *P. indica* Mayr, 1879

14) *P. obscurior* Forel, 1886

A remark about synonymy.

Tetramorium friedlandi (Creighton, 1934) is now a synonym from *Tetramorium atratulum* (Schenck, 1852), more precisely an introduced form in North America (see also Schär, Talavera, Espadaler, Rana, Andersen, Cover, Vila, 2018.). This synonymy was given by Creighton, 1950. So, the name is *Tetramorium atratulum* (Schenck, 1852)...

Synonyms of the host species.

- *T. impurum* (Förster, 1850) (= *Myrmica impura* Förster, 1850)
- *T. caespitum* (Linnaeus, 1758) (= *Formica caespitum* Linnaeus, 1758)
- *T. chefketi* Forel, 1911 (= *T. caespitum* (Linnaeus, 1758) var. *chefketi* Forel, 1911)
- *T. immigrans* Santschi, 1927 (= *T. caespitum* (Linnaeus, 1758) var. *immigrans* Santschi, 1927)
- *T. staerckei* Kratochvíl, in Kratochvíl, Novák, Šnoflák, 1944 (= *T. caespitum* (Linnaeus, 1758) subsp. *hungarica* Röszler, 1935 ("1933-34") var. *staerckei* Röszler, 1936)
- *T. diomedeum* Emery, 1908 (= *T. caespitum* (Linnaeus, 1758) var. *diomedea* Emery, 1908)
- *T. sepositum* Santschi, 1918 (= *T. gladstonei* Forel, 1913 var. *seposita* Santschi, 1918)
- *P. megacephala* (Fabricius, 1793) (= *Formica megecephala* Fabricius, 1793) (= *Formica edax* Forskål, 1775, a nomen oblitum under Art. 23.9 of ICZN (1999))
- *P. megacephala* (Fabricius, 1793) subsp. *melancholica* Santschi, 1912 was originally described as *P. punctulata* Mayr, 1866 st. *melancholica* Santschi, 1912

- *P. strobeli* Emery, 1906 (= *P. perversa* Forel, 1908 subsp. *richteri* Forel, 1909, or, in 1922, at the moment the extreme, workerless inquiline species was described, = *P. strobeli* Emery, 1906 subsp. *richteri* Forel, 1909.)
- *P. nitidula* Emery, 1888 (= *P. triconstricta* Forel, 1886 var. *nitidula* Emery, 1888)
- *P. obscurior* Forel, 1886 (= *P. susannae* Forel, 1886 r. *obscurior* Forel, 1886)

And then...

…, if you follow the line further that Ward, Brady, Fisher, Schultz, 2015 ("2014") outlined, the first 9 extreme, workerless inquilines become a few species in the genus ***Strongylognathus* Mayr, 1853**.

01) *Strongylognathus inquilinum* (Ward, Brady, Fisher, Schultz, 2015 ("2014"))
(= *Strongylognathus schneideri* (Kutter, 1950))
02) *Strongylognathus kutteri* (Tinaut, 1990)
03) *Strongylognathus seiferti* (Kiran & Karaman, in Kiran, et al. 2017)
04) *Strongylognathus buschingeri* (Lapeva-Gjonova, in Kiran, et al. 2017)

06) *Strongylognathus atratulus* (Schenck, 1852)
07) (= *Strongylognathus friedlandi* (Creighton, 1934))

08) *Strongylognathus microgyna* (Santschi, 1918)
09) *Strongylognathus parasiticum* (Bolton, 1980)

If you followed the systematics of ants in 2014-2015, you noticed that all the species of *Teleutomyrmex* Kutter, 1950 and *Anergates* Forel, 1874 became *Tetramorium* Mayr, 1855. But normally, they should have the name *Strongylognathus* Mayr, 1853. No, they, Ward, Brady, Fisher, Schultz, 2015 ("2014"), didn't like that! So, until the ICZN would say different, they kept *Tetramorium* Mayr, 1855.

And now you find under a few species, described in the "normal" genus "*Teleutomyrmex* Kutter, 1950", this:

[Note: Kiran, et al. 2017: 146, retain the paraphyletic genus *Teleutomyrmex*.]

But they keep themselves a paraphyletic genus, nl. *Tetramorium* Mayr, 1855!. So it should be *Strongylognathus* Mayr, 1853...

For Europe, only the numbers 01-07 are important.

Key to parasitic *Tetramorium* Mayr, 1855 (= *Teleutomyrmex* Kutter, 1950) species.

"This key is based on Kiran, K., Karaman, C., Lapeva-Gjonova, A. & Aksoy, V., 2017, "Two new species of the "ultimate" parasitic ant genus *Teleutomyrmex* Kutter, 1950 from the Western Palaearctic." Myrmecological News, vol. 25, p. 145-155.
Originally assigned their own genus, *Teleutomyrmex*, these ants parasitises other *Tetramorium* species. The species *Tetramorium atratulum* is not included in this key and bears no resemblance to the other parasites in the genus.
Males of *T. buschingeri* have yet to be collected."

"1
Gynes 2
Males 5
2
Carinae or teeth on dorsal surface of propodeum absent, dorsal profile of propodeum much shorter than the declivitous one. All lateral surfaces of mesosoma and petiole covered by a well-developed reticulate or alveolate microsculpture. Head length index CL / CW < 0.945. Southern Balkans . . . . . *Tetramorium buschingeri*.
Carinae or teeth on dorsal surface of propodeum present, dorsal profile of propodeum not much shorter than the declivitous one. Surfaces of lateral mesosoma and petiole only in patches covered by a reticulate or alveolate microsculpture or completely smooth. Head length index CL / CW > 0.945 3
3
Scape long, SL / CS > 1.00. Distance of frontal carinae clearly larger than petiolar width, DFC / PW > 1.096. Size small, CW < 464 µm. Scapes and tibiae with weaker, largely decumbent pilosity. Southern Iberia . . . . . *Tetramorium kutteri*.
Scape shorter, SL / CS < 1.00. Distance of frontal carinae not much larger than petiolar width, DFC/PW < 1.096. Size larger, CW > 464 µm. Scapes and tibiae with profuse erect or suberect pilosity 4
4
Ratio of distance between lateral ocelli and large diameter of complex eye larger: DLO / EL 0.93 - 1.11. Katepisternum with many long decumbent hairs, posterior corners of head posterior of the eyes smooth, absolute scape length larger: SL > 457 µm. Anatolia . . . . . *Tetramorium seiferti*.
Ratio of distance between lateral ocelli and large diameter of complex eye smaller: DLO / EL 0.70 - 0.80. Katepisternum without or only with a few decumbent hairs, posterior corners of head posterior of the eyes densely microreticulate, absolute scape length smaller: SL < 457 µm. Alps and Pyrenees . . . . . *Tetramorium inquilinum*.
5
Anterior clypeal margin straight 6
Anterior clypeal margin concave medially . . . . . *Tetramorium seiferti*.
6
Subgenital plate broadly convex, sagitta with sinusoidal shape . . . . . *Tetramorium kutteri*.
Subgenital plate slightly concave, sagitta broadly convex . . . . . *Tetramorium inquilinum*."

Distribution in detail (from AntWiki.org.).

01) France, Iberian Peninsula, Russian Federation, Spain, Switzerland, Turkmenistan.
Endemic to this region.
02) Iberian Peninsula, Spain.
Endemic to this region.
03) Turkey.
Endemic to this region.
04) Bulgaria.
Endemic to this region.

06) Albania, Armenia, Austria, Belarus, Belgium, Bulgaria, Channel Islands, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iberian Peninsula, Italy, Latvia, Lithuania, Luxembourg, Netherlands, Norway, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland.
07) United States (introduced).

08) Angola, South Africa, Zimbabwe.
Endemic to this region.
09) South Africa.
Endemic to this region.

10) Democratic Republic of Congo.
Endemic to this region.
11) Argentina, Brazil.
Endemic to this region.
12) Argentina.
Endemic to this region.
13) India.
Endemic to this region.

14) Argentina.
Endemic to this region.

The original descriptions of *Tetramorium* and *Strongylognathus*.

Tetramorium Mayr, 1855.

Tetramorium [Myrmicinae: Tetramoriini].
- *Tetramorium* Mayr, 1855: 423. Type-species: *Formica caespitum*, by subsequent designation of Girard, 1879: 1016.

Strongylognathus Mayr, 1853.

Strongylognathus [Myrmicinae: Tetramoriini].
- *Strongylognathus* Mayr, 1853: 389. Type-species: *Eciton testaceum*, by monotypy. Replacement name for *Myrmus* Schenck, 1853: 188. [Junior homonym of *Myrmus* Hahn, 1832: 81 (Hemiptera).].

Myrmus [junior homonym, see *Strongylognathus*].
- *Myrmus* Schenck, 1853: 188. Type-species: *Myrmus emarginatus* (junior synonym of *Eciton testaceum*), by monotypy. [Junior homonym of *Myrmus* Hahn, 1832: 81 (Hemiptera).].
- *Strongylognathus* Mayr, 1853: 389, replacement name for *Myrmus* Schenck.

Myrmus Schenck, 1853.

Myrmus [junior homonym, see *Strongylognathus*].
- *Myrmus* Schenck, 1853: 188. Type-species: *Myrmus emarginatus* (junior synonym of *Eciton testaceum*), by monotypy. [Junior homonym of *Myrmus* Hahn, 1832: 81 (Hemiptera).].
- *Strongylognathus* Mayr, 1853: 389, replacement name for *Myrmus* Schenck.

First descriptions of, and last revisions of the species complexes of, the senior homonyms of *Teleutomyrmex* species when they are placed in the genus *Tetramorium*.

- ***Tetramorium schneideri* Emery, 1898**, valid.

Tetramorium schneideri Emery, 1898: 145 (w.) KAZAKHSTAN. Palearctic.
Tarbinsky, 1976: 115 (q.); Radchenko & Scupola, 2015: 234 (m.).
Material of the unavailable name *Tetramorium striativentre schneideri longispina* referred here by Dlussky et al., 1990: 207; Radchenko, 1992: 52.
Tetramorium striativentre schneideri longispina Karavaiev, 1912, unavailable.

Tetramorium striativentre subsp. *schneideri* var. *longispina* Karavaiev, 1912: 585 (w.) TRANSCASPIA. Palearctic.
Unavailable name; material referred to *Tetramorium schneideri* by Dlussky et al., 1990: 207; Radchenko, 1992: 52.

- ***Tetramorium semilaeve kutteri* Santschi, 1927**, junior synonym of current valid taxon *Tetramorium indocile* Santschi, 1927.

Tetramorium semilaeve var. *kutteri* Santschi, 1927: 57 (w.) SWITZERLAND. Palearctic.
Primary type information: Brig, Switzerland
Junior synonym of *Tetramorium indocile*: Wagner et al., 2017: 116.

The future.

But there are of course still more parasites in the genus *Tetramorium*, but they aren't extreme, workerless inquilines. One of the most recent described species is a parasite of *Tetramorium immigrans*, nl. *T. aspina* Wagner, Karaman, Aksoy, Kiran, 2018. From its description follows:

"Biology: Putative social parasite of *T. immigrans*. Likely monogynous. Small eyes and yellowish color indicate subterranean activity."

"Ecology: The type locality is a subalpine, sparse, and almost 100-year-old forest with large sun-exposed treeless areas. The nest was located on a stony and rocky east slope with a 50 - 55° inclination. Herb layer plants are *Anthemis* sp., *Daucus* sp., *Malva* sp., *Medicago* sp., *Myosotis* sp., *Poaceae* species, *Rosa* sp., *Rubus* sp., *Taraxacum* sp., *Trifolium* sp., *Verbascum* sp., and *Veronica* sp. *Camponotus aethiops* (Latreille, 1798), *Formica cunicularia* Latreille, 1798, *Formica fusca* Linnaeus, 1758, *Lasius alienus* (Foerster, 1850), *Lasius flavus* (Fabricius, 1782), *Manica rubida* (Latreille, 1802), *Messor structor* complex, *Proformica pilosiscapa* Dlussky, 1969, *Temnothorax artvinensis* Seifert, 2006, *Temnothorax unifasciatus* (Latreille, 1798), *Tetramorium immigrans*, *Tetramorium* cf. *impurum*, and a further non-identified *Tetramorium* sp. were also recorded from the same locality."

This is a species, not extreme, with workers, but an inquiline. There are surely more species, described or not, that encompass the whole system from free living to specialised inquiline. But this species doesn't belong here. So, go on and search for more extreme, workerless inquilines…..

Or, with the help of this booklet, and like Prof. Alfred Buschinger said, "It appears to be very helpful for the few specialists interested in these ants.".