

THE GENERA AECIDIUM, UREDO AND PUCCINIA OF PERSOON

by

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According to the International Code of Botanical Nomenclature, Art. 23, the nomenclature of the *Uredinales*, *Ustilaginales* and *Gasteromycetes* begins with Persoon's "Synopsis Methodica Fungorum", published in 1801. His descriptions, however, are partly not very explicit and as, according to the Code, Art. 69, rust names are valid solely in so far as they refer to "spores giving rise to basidia", *i. e.* the teleuto-stage, the present author found it desirable to examine Persoon's collection of rusts preserved in the Rijksherbarium, Leiden. Through the courtesy of Dr. R. A. Maas Geesteranus, Mycologist of the Rijksherbarium, all specimens of the genera *Aecidium*, *Uredo* and *Puccinia* were lent to the Botanical Museum of the University of Oslo, where the author got the opportunity of examining them. The collection contained 792 numbers, comprising 221 species of rusts, 19 species of smuts, and 14 species of other fungus groups. A complete list of determinations is filed in the Rijksherbarium. The main aim was to find suitable lectotypes for Persoon's taxa of 1801, among specimens containing teleuto. And owing to the type method now being established (Code, Art. 18) it seems natural to consider a *Uredo* name valid if the type contains teleuto, even if this stage has not been mentioned in the author's description of the species in question (cp. D. P. Rogers, *Mycologia*, 45 pp. 250—251, 1948, and D. B. O. Savile, *Canadian Journ. Bot.*, 3 p. 490, 1955). This view makes Persoon's names *Uredo betae* and *U. viciae-fabae* valid.

However, most of the specimens had clearly been collected after 1801 and were consequently unsuitable as material for lectotypes. This younger material contains many species that are not mentioned in *Syn. Meth. Fung.* and consequently not treated in the present publication. For the taxa established by Persoon in 1801 have particularly been taken into consideration those specimens that in Persoon's handwriting are solely furnished with the same name (or sometimes with a somewhat differing one) as in *Syn. Meth. Fung.* and without author name, or sometimes with Persoon's own. Most of the other specimens of the same taxa are also labeled solely or partially by Persoon, but have not been taken into consideration as material for lectotypes because the names do not correspond with those in *Syn. Meth. Fung.*, or are obviously younger than 1801 (*e. g.* if published by De Candolle, Link, or other contemporary authors). Many of these

specimens Persoon had received from other botanists, particularly Chaillet, Balbis, and Mougeot. Only one specimen presumably older than 1801 is mentioned as having been received from another person, viz. Smith (presumably J. E. Smith in England); it is labeled *Uredo linearis* β . *Polypodii* and contains *Hyalopsora polypodii* (Diet.) Magn.

For several taxa in Persoon's herbarium (to a very great extent among the smuts) suitable type material was not found; among the smuts it was possible to select one type only, viz. for *Uredo Anemones* = *Urocystis anemones* (Pers.) Wint. Types have not been selected for varieties and for invalid species (thus for none of the taxa under *Aecidium*), but for valid species of *Uredo* and *Puccinia* in so far as suitable type material was present, viz. for 5 species of *Uredo* and 8 species of *Puccinia*.

Usually Persoon's specimens are not furnished with locality name and collecting date, and often the name of the host is not given. Many specimens are given the epithet "Doublett", but some of the so-called doublets are more representative than the main specimens; the latter are even sometimes lacking.

In the present text are, as a general rule, under each of Persoon's species and variety names, first mentioned those specimens that are considered to be older than 1801 and are corresponding with Persoon's names in Syn. Meth. Fung. Subsequently, beginning with a new text line, are mentioned the presumably younger specimens of the same taxa, or of other taxa in the herbarium furnished with the same name.

The number after the specific and varietal names of Persoon refer to the corresponding page in Syn. Meth. Fung. The numbers between brackets denote the herbarium numbers of the Rijksherbarium under which the material is being preserved.

AECIDIUM.

1. AECIDIUM CORNUTUM (Syn. 205).

"*Aecidium cornutum*. Vosges" on *Sorbus aucuparia* (910.256-1771); "*Aecidium cornutum* sur le Sorbier cultivé, misit Smith" on *Sorbus aucuparia* (910.255-243) — *Gymnosporangium cornutum* Arth., I.

"*Aecidium cornutum* var. in Amelanchier" (910.255-214); "*Aecidium cornutum* [Persoon's handwriting], *Aecidium amelanchieri*" (from Chaillet) (910.255-229) — *Gymnosporangium amelanchieris* E. Fisch., I.

"*Aecidium cornutum*" on *Mespilus germanica* (910.255-215); "*Aecidium Mespili* Decand., *Aecidium Oxyacanthae*?" (910.255-228); "*Aecidium cornutum* var." (910.250-1613) — *Gymnosporangium confusum* Plowr., I.

2. AECIDIUM CANCELLATUM (Syn. 205).

"*Aecidium cancellatum*" on pear leaves (910.255-126, 910.255-217, 910.255-231) — *Gymnosporangium fuscum* DC. (syn. *G. sabinae* Wint.), I.

3. AECIDIUM OXYACANTHAE (Syn. 206).

"Aecidium Oxycanthae Syn. Fung." on *Crataegus* (910.255-412) — *Gymnosporangium clavariiforme* (Pers.) DC., I.

"Aecidium laceratum Dec., Ae. Oxycanthae P. Syn. fung." on *Crataegus* (910.250-1545) — *G. clavariiforme*, I.

4. AECIDIUM RHAMNI (Syn. 205).

No suitable type material.

"Aecidium Rhamni, sur le Nerprum purgatif" [= *Rhamnus catharticus*] (from Delastre) (910.255-87) — *Puccinia coronata* Corda, I.

5. AECIDIUM GALII (Syn. 207).

"Aecidium Galii" on *Galium uliginosum* (910.250-1593) — *Puccinia punctata* Link, I. — Persoon in Syn. Meth. Fung. gives the host as *Galium boreale*, but no aecidial stage is known for this species.

6. AECIDIUM RUMICIS (Syn. 207).

"Aecidium Rumicis" on *Rumex aquaticus* (910.255-338) and *Rumex* sp. (910.255-353) — *Puccinia phragmitis* (Schum.) Körn., I.

"Aecidium rubellum Gmel." on *Rumex* sp. (910.255-71) and *R. aquaticus* (910.255-85) — *P. phragmitis*, I.

6β. AECIDIUM GROSSULARIAE (Syn. 207).

No suitable type material.

"Aecidium Grossulariae Decand." on *Ribes grossularia* (910.250-1577); "Aecidium Ribis alpini" (from Chaillet) on *R. alpinum* (910.255-72) — *Puccinia caricina* DC. (syn. *P. pringsheimiana* Kleb.), I.

7. AECIDIUM PRENANTHIS (Syn. 208).

"Aecidium Prenanthis S. F. (Germania)" on *Lactuca muralis* (910.255-416) — *Puccinia prenanthis* Kunze, I, and *P. opizii* Bub., I. This number also contains *P. dioicae* Magn. (syn. *P. silvatica* Schroet.), I, on *Taraxacum*.

"Acid. prenanthis Syn. Fung." [Persoon's handwriting], "Aecidium hieracii Paludosi" (from Chaillet) on *Crepis paludosa* (910.255-384) — *Puccinia major* Diet., I.

8. AECIDIUM CRASSUM (Syn. 208).

"Aecidium crassum" on *Rhamnus frangula* (910.250-1627) — *Puccinia coronata* Corda.

The following specimens contain the same rust on the same host: "Aecidium Pomaceorum" (from Junghuhn) (910.255-402) and "Aecidium Rhamni" (910.255-73).

8β. AECIDIUM FICARIAE (Syn. 208).

"Aecidium Ficariae" (910.250-1580, 910.250-1595) — *Uromyces dactylidis* Otth s.l. (syn. *Urom. poae* Rabh.), I. The former number also contains *Viola* sp. with *Puccinia violae* DC., I.

9. *AECIDIUM ASPERIFOLII* (Syn. 209).

"*Aecidium Asperifoliorum*" probably on *Anchusa officinalis* (910.255-122) — *Puccinia recondita* Rob. (syn. *P. rubigo-vera* Wint., *P. dispersa* Eriks. & Henn.), I.

10. *AECIDIUM TUSSILAGINIS* (Syn. 209).

"*Aecidium Tussilaginis*" (910.255-89, 910.255-407) — *Puccinia poarum* Niels. I. The former number also contains *Coleosporium tussilaginis* (Pers.) Lév., II + III.

"*Aecidium tussilaginis*. Hb. Junghuhn" (910.255-75) — *P. poarum*, I.

11. *AECIDIUM BERBERIDIS* (Syn. 209).

"*Aecidium Berberidis*" (910.255-106, 910.255-116, 910.255-119, 910.255-120) — *Puccinia graminis* Pers., I, in number 910.255-116 spermatogonia only.

"*Aecidium Berberidis* γ . *elongatum*" (from Chaillet) (910.255-121); "*Aecidium Berberidis* ϵ . *fructigenum*" (from Chaillet 1821) (910.255-105) — *P. graminis*, I.

"*Aecidium Berberidis* β . *Campanulatum* fl. fr." (from Chaillet) (910.255-104) — *Puccinia arrhenatheri* (Kleb.) Eriks., I.

12. *AECIDIUM OROBI* (Syn. 210).

"*Aecidium Orobi*" on *Lathyrus montanus* (910.255-398) — *Uromyces fabae* DeBary var. *orobi* (Schum.) Jørst. [= *Urom. orobi* (DC.) Lév.], I. (*Urom. fabae* DeBary = *Urom. viciae-fabae* (Pers.) Otth, see p. 10).

13. *AECIDIUM RANUNCULI ACRIS* (Syn. 210).

No suitable type material.

"*Aecidium Ranunculi*. Dedit DeC., *Aecidium Ranunculacearum* Dec.," on *Ranunculus repens* (910.255-88) — *Uromyces dactylidis* Otth s.l., I. This number also includes "*Aecidium in Ranunculo montano*", viz. the race *Uromyces poae-alpinae* Rytz of *Urom. dactylidis* s.l.

14. *AECIDIUM ALLII URSINI* (Syn. 210).

"*Aecidium allii in allio ursino*" [not Persoon's writing] (910.255-125) — *Puccinia sessilis* Schneid., I.

15a. *AECIDIUM EUPHORBIAE* (Syn. 211).

"*Aecidium Euphorbiae*" at least in part on *Euphorbia cyparissias* (910.250-1599) — As Persoon in Syn. Meth. Fung. gives *Euph. cyparissias* as the host of *Ae. Euphorbiae*, the present specimen must be considered belonging to *Uromyces pisi* (DC.) Otth s.l. (cp. Hylander, Jørstad & Nannfeldt, Opera Bot. Soc. Bot. Lund., 1, 1 p. 93, 1953). However, *Ae. euphorbiae* Pers. is commonly used as a collective name for indeterminate aecidial stages on species of *Euphorbia*.

"*Aecidium Cyparissiae*" (910.250-1586) — *Uromyces pisi* Otth

s. l., I. — "Aecidium Euphorbiae. Hb. Junghuhn" (910.250-1583) and "Aecid. scutellatum" (910.255-351) are on *Euphorbia* spp. and may be placed under *Ae. euphorbiae* Pers. (coll.).

15b. *AECIDIUM TRAGOPOGI* (Syn. 211).

No suitable type material.

"Aecidium cichoracearum. Sub hoc nomine dedit Dec." on *Tragopogon* (910.255-239) — *Puccinia hysteriorum* (Str.) Röhl. (syn. *P. tragopogonis* Corda), I + III; "Puccinia Hyst. mixta cum Uredine candido et Aecidio Tragopogi (910.263-331) — *P. hysteriorum*, (I) + III, and *Albugo tragopogi* S. F. Gray; "Uredo Hysteriorum. Tragop. pratens." (from Strauss) (910.263-322) — *P. hysteriorum*, III.

16. *AECIDIUM SII FALCARIAE* (Syn. 212).

"Aecidium Sii Falcariae" (910.255-385) — *Puccinia falcariae* (Spreng.) Fuck., I.

"Aecidium Falcariae. Hb. Junghuhn" (910.250-1597) — *P. falcariae*, I.

17. *AECIDIUM ANEMONES* (Syn. 212).

"Aecidium Anemones (Anem. nemorosa)" (910.255-110) — *Ochropsoara ariae* (Fuck.) Syd., I.

"Aecidium punctatum" on *Anemone nemorosa* (910.255-405) — *Ochropsoara ariae*, I.

18. *AECIDIUM PUNCTATUM* (Syn. 212).

No suitable type material.

"Aecidium quadrifidum" on *Anemone ranunculoides* (910.255-127) — *Tranzschelia pruni-spinosae* (Pers.) Diet., I; "Aecidium quadrifidum Decand. In Anem. hortensis" (910.255-433) — *Tr. discolor* (Fuck.) Tranz. & Litv., I; "Sphaeria Anemones, Aecidium quadrifidum. Mai, no. 254. Pontery" (910.255-403) — *Tr. discolor*, I.

19. *AECIDIUM PINI* (Syn. 213).

"Aecidium Pini" (910.255-400, 910.255-429) — *Cronartium flaccidum* (Alb. & Schw.) Wint. s. l. (includes also the non-alternating aecidial stage), I.

"Aecidium Pini var. Perid. columnare" (910.255-142) — *Cronart. flaccidum* s. l., I; "Aecidium Pini, feuille de pinus maritima" (910.355-415) — *Coleosporium tussilaginis* (Pers.) Lév. s. l., I; "Aecidium Pini Pers. in foliis Pini sylvestre" (from Mougeot) (910.255-409) — *Coleosp. tussilaginis* s. l., I.

UREDOS.

1. *UREDO MYCOPHILA* (Syn. 214).

"Uredo mycophila", also labeled "Trichoderma mycophila Sweidnitz" and "Sepedonium mycophilum Link" (910.264-163); "Uredo mycophila", also labeled "Mycobanche chryso sperma" and "Sepedonium chryso spermum"

(910.264-167); both on *Boletus* — *Sepedonium chrysospermum* Bull. ex Fr.

2 α . UREDO CONFLUENS α . RIBIS ALPINI (Syn. 214).

"Uredo confluens" (910.264-389 pr. p.; 910.264-390) — *Melampsora* cf. *ribesii-purpureae* Kleb. (belonging to *M. epitea* Thüm.), I.

2 β . UREDO CONFLUENS β . MERCURIALIS PERENNIS (Syn. 214).

"Uredo confluens" (910.264-386; 910.264-389 pr. p.) — *Melampsora rostrupii* Wagn. (belonging to *M. populnea* (Pers.) Karst.), I.

3. UREDO ALCHEMILLAE (Syn. 215).

No material present of *Trachyspora intrusa* (Grev.) Arth. on *Alchemilla "vulgaris"*, the primary uredo of which Persoon described.

"Uredo Alchemillae Pers. in fol. Rubi saxatilis" (from Kunze) (910.264-972) — *Gymnoconia peckiana* (Howe) Trott., I; "Uredo. In Alchemilla alpina" (from Balbis) (910.264-224) — *Trachyspora melospora* (Therry) Tranz., III.

4. UREDO EUPHORBIAE HELIOSCOPIAE (Syn. 215)

No suitable type material.

"Uredo" (host given as "Euph. dendroid.", but the label probably belongs to number 910.264-287, see below) on *Euphorbia helioscopia* and *Euph. falcata* (910.264-292); "Uredo. Euphorbia peplus" (910.264-293); "Uredo Euphorbiae var. in foliis Euphorbiae helioscopiae" (from Mougeot) (910.264-560). — All contain II of *Melampsora euphorbiae* (Schub.) Cast. (syn. *M. helioscopiae* Wint.) on *Euphorbia helioscopia*.

4 β . UREDO EUPHORBIAE EXIGUAE (Syn. 215).

"Uredo Euph. exiguae" (910.264-561, 910.264-562) — *Melampsora euphorbiae* (Schub.) Cast., II + III.

"Uredo punctata" (from DeCandolle) on *Euphorbia peplus* (910.264-198); "Uredo" on *Euph. cf. dendroides* (910.264-287); "Uredo Cyparissiae Euph." (from Balbis) on *Euph. cyparissias* (910.264-366, 910.264-367); "Uredo Euphorbiae" on *Euph. peplus* (910.264-557). — All contain II of *M. euphorbiae*, the first-mentioned number also III.

5. UREDO ROSAE CENTIFOLIAE (Syn. 215).

No material with this label.

6. UREDO MINIATA (p. 216).

"Uredo miniata P." on *Rosa* sp. (910.264-159); "Uredo rosaeae. U. miniata" on *Rosa* sp. (cult.) (910.264-158) — *Phragmidium mucronatum* (Pers.) Schlecht., I + II.

"Uredo ornata" on *Rosa* sp. (910.264-49) — *Phr. tuberculatum* J. Müll., I; "Uredo Rosae var." on *Rosa* sp. (910.264-140) — *Phr. mucronatum*, II + (III).

See also *Puccinia mucronata*, p. 14.

6 α . UREDO EGLANTERIAE (Syn. 216).

No material with this label.

6 β . UREDO LINI (Syn. 216).

No suitable type material.

"Uredo" on *Linum maritimum* (910.264-281) — *Melampso-
rini* (Ehrenb.) Lév., II + III.

7 α . UREDO LINEARIS α . FRUMENTI (Syn. 216).

"Uredo linearis" on leaves possibly belonging to *Avena sativa* (910.263-319) — *Puccinia coronata* Corda, II + III (also trace of *P. graminis* Pers., III); "Uredo linearis Pers. Syn. Fung." on similar leaves as in the foregoing (910.263-323) — *P. cf. coronata* II. No. 910.263-319 seems valid, but *P. linearis* Röhl. (= *P. graminis* Pers.) saves the name *P. coronata*.

"Uredo linearis" (from Mougeot) on leaves probably of *Avena sativa* (910.263-320) — *P. cf. coronata*, II; "Uredo linearis Pers." (from Mougeot) on *Phalaris arundinacea* (910.263-318) — *Ustilago echinata* Schroet.; "Uredo linearis?" on gramineous leaves (910.264-187) — *P. striiformis* West. (syn. *P. glumarum* Eriks. & Henn.), II, and *P. cf. coronata*, II.

7 β . UREDO POLYPODII (Syn. 217).

"Uredo Polyp. frag." (from Smith, but Persoon's handwriting) (910.264-117) — *Hyalopso-
ra polypodii* (Diet.) Magn., II.

"Uredo Polypodii mihi, in foliis Polypodii Dryopteridis" (from Mougeot, not Persoon's handwriting) (910.264-113, 910.264-115) — *Hyalopso-
ra aspidiotus* (Magn.) Magn., II.

8. UREDO CAMPANULAE (Syn. 217).

"Uredo Campanulae Syn. fung." on *Campanula trachelium* (910.263-186, 910.263-189) — *Coleosporium campanulae* Lév. (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.), II.

"Uredo campanulae var., in foliis Ranunculacearum" (from Mougeot) (910.263-185); "an Uredo campan.?" (from Balbis) (910.263-178) — *Col. campanulae*, II, in the first-mentioned number also III, both on *Campanula trachelium*.

9. UREDO SONCHI ARVENSIS (Syn. 217).

No material on *Sonchus arvensis* which Persoon gives as the host.

"Uredo sonchi" on *Sonchus oleraceus* and *palustris* (910.264-66) and on *Sonchus palustris* (910.264-70) — *Coleosporium sonchi* (Str.) Lév. (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.), II + III.

10 α . UREDO FARINOSA α . UREDO CAPRAEAE (Syn. 217).

"Uredo capraeae" on *Salix caprea* (910.263-154) — an *Melampso-
ra capraearum* Thüm. (syn. *M. larici-capraearum* Kleb.), II.

"Uredo" on *Salix caprea* (910.264-47) — *M. capraearum*, II + III; "Uredo capraearum" (from DeCandolle) (910.263-158); "Uredo populina var. in fol. Pop. albo" (from Balbis) (910.264-102, 910.264-107

pr. p.); "Uredo" (910.264-299) — an *M. capraearum*, II, on *Salix caprea*.

"Uredo Salicis capraeae" on *Salix nigricans* (910.264-94, 910.264-99); "Uredo Salicis. In Salice serpyllifolii" (from Balbis) (910.264-87); "Uredo" on *Salix purpurea* (910.264-217) — *Melampsora epitea* Thüm., II.

10β. UREDO SENECIONIS (Syn. 218).

"Uredo senecionis" on *Senecio sylvaticus* (910.264-64, 910.264-71) — *Coleosporium senecionis* Tul. ex Kickx (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.), II + III.

11. UREDO RUBI FRUTICOSI (Syn. 218).

No suitable type material.

"Uredo in rubo fruticosa" (from Balbis) (910.264-232) — *Kuehnela uredinis* (Link) Arth., II, and *Phragmidium violaceum* (C. F. Schultz) Wint., II + III; "Uredo?" (910.264-277) — *Phr. bulbosum* (Str.) Schlecht. (syn. *Phr. rubi* (Pers.) Wint.), II.

See also *Puccinia mucronata* β. *Puccinia Rubi*, p. 15.

12. UREDO RUBI IDAEI (Syn. 218).

No suitable type material.

"Uredo gyrosa Rebert., Montagne, Ardennes, mis. Lèveillé" (911.143-21); "Uredo gyrosa Rebert., Ardennes, mis. Dr. Montagne" (911.143-22); "Aecidium columellatum Schum., Aec. gyrosum" (910.255-24); *U. gyrosa* Rebert., *Uredo Rubi Idaei* Syn. fung." (910.263-342); "Uredo Rubi Idaei, *U. gyrosa* Rebert. (910.264-142); "Uredo" (910.264-225) — *Phragmidium rubi-idaei* (DC.) Karst., I, on *Rubus idaeus*.

See also *Puccinia mucronata* β. *Puccinia Rubi*, p. 15.

13. UREDO TUSSILAGINIS (p. 218).

"Uredo Tussilaginis" (910.264-17; 910.264-18, *lectotype*) — *Coleosporium tussilaginis* (Pers.) Lév., II + III. The teleuto-stage is abundant and clearly indicated in Persoon's description "unctis subconcentricis miniato-rubris".

"Uredo Tussilaginis Syn., *Caeoma compransor* Schlecht. — Link" (910.264-19) — *Col. tussilaginis*, II + III.

14. UREDO POPULINA (Syn. 219).

"Uredo populina P. Syn. fung., prope Parisios" on *Populus balsamifera* (910.264-112) — *Melampsora larici-populina* Kleb., II + III. The teleuto-stage is not mentioned in Persoon's description, but even if recognized as instrumental in making his name valid, *Mel. populina* is already occupied, because *Mel. populina* ("Pers.") Lév., Ann. Sci. Nat., Bot., 8 p. 375, 1847, is based upon *Sclerotium populneum* Pers. (= *Mel. populnea* (Pers.) Karst.) on *Populus tremula*, although Lèveillé changed "populnea" to "populina".

"Uredo populnea" (910.264-116); "Uredo populina, *U. cylindrica* Dec." (910.264-120, 910.264-121); "Uredo longicapsula Decand." (910.264-171)

— *Mel. larici-populina* Kleb., II, in the last-mentioned number also III, all on *Populus balsamifera*.

“*Uredo. Populi fastigiatae* prope Parisios” (910.263–1158); 911.143–16); “*Uredo*” (910.264–282 pr. p.) — *Mel. larici-populina*, II, in the first-mentioned number also a little III, all on *Populus nigra*.

14β. UREDO BETULINA (Syn. 219).

“*Uredo betulina*” on *Betula verrucosa* (910.264–730, 910.264–796, 910.264–797, 910.264–798) — *Melampsorium betulinum* (Fr.) Kleb., II, in 910.264–797 also III.

“*Uredo betulina* var.” on *B. verrucosa* (910.264–107 pr. p.); “*Uredo*” on *B. verrucosa* (910.264–282 pr. p.); “*Uredo Betulae*” on *B. nana* (from Balbis) (910.264–751, 910.264–789) — *M. betulinum*, II, in 910.264–282 also III.

15α. UREDO PUSTULATA α. EPILOBII (Syn. 219).

“*Uredo pustulata*” on *Epilobium* sp. (910.264–190; 910.264–191, the latter number also labeled “*Uredo epilobiae*”) — *Pucciniastrum epilobii* Otth, II.

15β. UREDO CERASTII (Syn. 219).

No material present.

16. UREDO MENTHAE (Syn. 220).

“*Uredo Menthae* Link” on *Mentha sylvestris* (910.264–184) — *Puccinia menthae* Pers., II + III.

“*Uredo Labiatarum* β. *Melissophylli* fl. fr.” (from Chaillet) (910.263–317); “*Uredo Menthae* Pers.?” on *Mentha* (pr. p. *M. aquatica*) (from Delastre) (910.264–162); “*Uredo menthae* Pers. in *Thymo acino*” (from Kunze) (910.264–179); “*Uredo. Clinop. vulgare*” (910.264–221); “*Caeoma Calaminthae, in foliis Cl. Nepetae*” (from Nees) (910.264–775) — *P. menthae*, II.

“*Uredo Menthae* Syn. fung., U. *Labiatarum* v. *Mentharum* Decand.” on *Mentha* sp. (910.264–168, 910.264–169); “*Uredo Calaminthae*” (from Strauss) (910.264–168, 910.264–169) — *P. menthae*, II + III.

See also *Puccinia menthae*, p. 13.

17. UREDO SCUTELLATA (Syn. 220).

“*Uredo scutellata*” on *Euphorbia cyparissias* (910.264–77, *lectotype*) — *Uromyces scutellatus* (Pers.) Lév., III.

“*Uredo excavata* β. in *Euphorbia oleaefolia*” (from DeCandolle) (910.264–553 pr. p., 910.264–55) — *Urom. scutellatus*, III; “*Uredo scutellata*” on *Medicago sativa* (from Smith) (910.264–68, 910.264–80) — *Urom. striatus* Schroet., III.

18. UREDO BETAE (Syn. 220).

“*Uredo Betae*” (910.264–729; 910.264–741, *lectotype*) — *Uromyces betae* (Pers.) Tul., II + III. In 910.264–741 a beet leaf with plenty of uredosori, and a few teleutosori not easily seen, in 910.264–729 a beet leaf with uredosori only.

18β. UREDO CONVULVULI (Syn. 221).

"Uredo Convulvuli" on *Polygonum convolvulus* (910.264-385, 910.264-388) — *Puccinia polygoni-amphibii* Pers. var. *convulvuli* Arth., II. In Syn. Meth. Fung. Persoon gives the host as *Convolvulus arvensis*, but this apparently is an error for *Polyg. convolvulus*.

"Uredo Polygonorum Decand." (910.264-124); "Uredo polygonorum D." (from Mougeot) (910.264-125); "Uredo polygonorum" (910.264-130) — *P. polygoni-amphibii* var. *convulvuli*, II, in the first-mentioned number also III, all on *Polyg. convolvulus*.

19. UREDO SUAVEOLENS (Syn. 221).

"Uredo suaveolens" (910.264-23, 910.264-32) — *Puccinia punctiformis* (Str.) Röhl. (syn. *P. obtegens* Tul., *P. suaveolens* Rostr.), 0 + primary II.

"Uredo suaveolens. In fol. Serratulae off." (910.264-35); "Uredo Serratulae arvensi" (910.264-78); "Uredo punctiformis. Cnic. arvens." (from Strauss) (910.264-188 pr. p., 910.264-199 pr. p.) — *P. punctiformis*, 0 + primary II, in 910.264-199 also secondary II + III, all on *Cirsium arvense*.

20. UREDO VICIAE FABAE (Syn. 221).

"Uredo Fabae Syn. Fung." on *Vicia faba* (910.264-550, *lectotype*; 910.264-551) — *Uromyces viciae-fabae* (Pers.) Otth (syn. *Urom. fabae* DeBary), II, in the first-mentioned number also III.

"Puccinia" on *Vicia* sp. (from Mougeot) (910.263-160): "Uredo Orobi β. Decand. in Orobo verno" (910.264-146); "Uredo Orobi nigri (from Chaillet) (910.264-150); "Uredo Orobi β. verni" (from Chaillet) (910.264-154, 910.264-155); "Uredo in Vicia bithynica" (from DeCandolle) on *Vicia* spp. (910.264-222, 910.264-234); "Uredo Fabae Decand." on *Vicia faba* (910.264-543, 910.264-547) — *Urom. viciae-fabae*, II + III (in 910.264-146, 910.264-222 and 910.264-543 II only, in 910.263-160 III only).

21α. UREDO APPENDICULATA α. UREDO PHASEOLI (Syn. 222).

"Uredo appendiculata β. Phaseoli" (910.264-957; 910.264-981, *lectotype*) — *Uromyces appendiculatus* (Pers.) Ung., II + III.

21γ. UREDO GENISTAE TINCTORIAE (Syn. 222).

No suitable type material.

"Uredo Lathyri" on *Lathyrus* sp. (910.263-316); "Uredo Pisi β. Lathyri in L. pratensis" [really on *Pisum sativum*] (from Nees) (911.143-14) — *Uromyces pisi* (DC.) Otth, III in the former number, II + III in the latter.

21γ. UREDO GENISTAE TINCTORIAE (Syn. 222).

"Uredo Genistae" on *Genista tinctoria* (910.264-531, 910.264-536) — *Uromyces laburni* (DC.) Otth (syn. *Urom. genistae-tinctoriae* (Pers.) Wint., II + III.

"Uredo Cytisi, in Cytiso Laburni" (from Balbis) (910.264-565, 910.264-576) — *Urom. laburni*, III.

22. UREDO BULLATA (Syn. 222).

"Uredo bullata", apparently on *Conium maculatum*, on old stem (910.264-795) — *Puccinia conii* Fuck., III.

"Puccinia?, Uredo Bullata, Bullaria Bullata Decand. E Gallia prope Pontery, in Conio maculato" (910.263-1166); "Uredo bullata P. Syn. fung., Bullaria umbelliferarum Dec., Puccinia Bullaria Link. Prope Parisios (S. Germain)" (910.263-1168); "Uredo bullata P., Bullaria Umbelliferarum Dec. Ex Germania" (910.263-1169) — *P. conii*, III, on old stems apparently all belonging to *Conium maculatum*.

"Uredo Conii" (from Strauss), on leaf (910.264-383) — *P. Conii*, II.

Conium maculatum must be considered the type host of *Uredo bullata* Pers., but *Puccinia bullata* Link 1816 is a different species (cp. Hylander, Jørstad & Nannfeldt, Opera Bot. Soc. Bot. Lund., 1, 1 p. 36, 1953).

23. UREDO DIANTHI (Syn. 222).

No material labeled "Uredo Dianthi" or belonging to *Puccinia dianthi* Niessl.

24. UREDO ANEMONES (Syn. 223).

"Uredo Anemones" on *Anemone nemorosa* (910.264-934 pr. p.; 910.264-944, *lectotype*) — *Urocystis anemones* (Pers.) Wint.

25α. UREDO CANDIDA α. UREDO THLASPEOS (Syn. 223).

No material with this label.

"Uredo candida, auf Raphanus Raphanistr., Berl. 17" (910.263-155, 910.263-176); "Uredo candida, Arabis alpina" on *Capsella bursa-pastoris* (910.263-177); "Uredo candida. Sinapis arvensis" (910.263-184, 910.263-188); "338. Cochlearia armoracea" (910.264-204; "Uredo. Thlaspeos Bursae pastoris" (910.264-213); "Uredo cruciferarum" on *Cardamine* sp. (from DeCandolle) (910.264-384); "Uredo alpina, Uredo candida" on *Arabis* sp. (910.264-933); "Uredo armoraciae" on *Armoracia rusticana* (910.264-938, 910.264-948) — *Albugo cruciferarum* S. F. Gray (syn. *Cystopus candidus* (Pers. ex Chev.) Lév.).

See also below, under γ. *Uredo Alyssi* and *Uredo Cheiranthi*.

25β. UREDO TRAGOPOGI (Syn. 223).

"Uredo candida var. Tragopogi" (910.263-156, 910.263-157) — *Albugo tragopogi* S. F. Gray (syn. *Cystopus cubicus* (Str. ex Ung.) Lév.).

"Uredo Psylli" (910.263-144, 910.264-197); "Uredo candida. In allii", on *Tragopogon* (910.263-187); "Uredo candida" on *Tragopogon* (910.263-331 pr. p.; 910.264-991 pr. p.); "Uredo. In Scorzonera hispanica" (from Balbis) (910.264-211, 910.264-300); "Uredo valerianae" (910.264-264); "Uredo pulvere albo in Matricaria" (910.264-280, 910.264-290); "Uredo cubica Str. in fol. Scorzonerae" (from Nees) (910.264-375); "Uredo alba Pers." (910.264-939) — *Albugo tragopogi*, all on compositous hosts.

25γ. UREDO ALYSSI (Syn. 223)

"Uredo candida v. Alyssi" (910.263-159, 910.264-164) — *Albugo cruciferarum* S. F. Gray.

26. UREDO CHEIRANTHI (Syn. 224).

"Uredo lactea S. Cheiranthi incani. Aecidium candidum Cheiranthi" (910.263-325) — *Albugo cruciferarum* S. F. Gray.

27 α . UREDO SEGETUM α . UREDO HORDEI (Syn. 224)

No suitable type material.

"Uredo Ustilago γ . Hordei" on barley (910.264-12 pr. p.) — *Ustilago segetum* (Pers.) Ditm. (syn. *U. hordei* (Pers.) Lagh.).

27 β . UREDO TRITICI (Syn. 224).

No material present.

27 γ . UREDO AVENAE (Syn. 224).

No suitable type material.

"Uredo Ustilago γ . Hordei" on oats (910.264-12 pr. p.) — *Ustilago segetum* (Pers.) Ditm. (syn. *U. levis* (Kell. & Sw.) Magn.).

27 δ . UREDO PANICI MILLACEI (Syn. 224).

No material present.

27 ϵ . UREDO DECIPIENS (Syn. 225).

No material present.

28. UREDO CARICIS (Syn. 225).

No suitable type material.

"Uredo segetum var. caricis. DC. in Herb. Pers." (910.264-268) — *Cintractia caricis* (Pers.) Magn. s.l.; two host specimens, the one apparently *Carex panicea* and the other *Carex fusca*.

"An Uredo Caricis" (from Balbis) on wheat (910.263-146, 910.263-151) — *Puccinia graminis* Pers., III; in the former number also *Phyllachora graminis* (Pers. ex Fr.) Fuck. on a grass leaf, in the latter number also *Schizonella melanogramma* (DC.) Schroet. on *Carex digitata*.

29. UREDO TRAGOPOGI PRATENSIS (Syn. 225).

No suitable type material.

"Uredo receptaculorum Dec., Uredo Tragopogi P. Syn." (910.264-55, 910.264-180); *Ustilago Uredo receptaculorum* Decand., *U. Tragopogi pratensis* Syn. fung. p. 225" (910.264-172) — *Ustilago tragopogi-pratensis* (Pers.) Rouss.

30. UREDO VIOLACEA (Syn. 225).

No suitable type material.

"Uredo violacea Syn. fung., Ur. antherarum Dec." on *Stellaria* sp. (910.264-4); "Uredo violacea? Pers. Syn.?, Uredo antherarum Dec.; *A. Lychnidis dioicae*. *B. Dianthi Carthusianorum*. *C. Silenes nutantis*" (from Delastre) (910.264-5); "Uredo violacea in Lychnide dioica" (910.264-34, 910.264-258) — *Ustilago violacea* (Pers.) Rouss.

PUCCINIA.

1. PUCCINIA ANEMONES (Syn. 226).

"Puccinia Anemones nemorosae. Ex alpinis" (910.264-943, *lectotype*); "Puccinia anemones (Uredo)" (910.264-954) — *Tranzschelia anemones* (Pers.) Nannf.

"Puccinia anemones Pers. syn. Stirp. Crypt. voges. rhenan. fasc. 11, no. 191" (from Mougeot) (910.263-449) — *Tr. anemones*.

2. PUCCINIA PRUNI SPINOSAE (Syn. 226).

No suitable type material.

"Puccinia Pruni" (910.263-33, 910.263-35); "Puccinia Pruni" (from Decandolle) (910.264-98); "Puccinia Pruni" (from Balbis) (910.264-192); "Puccinia Pruni (Uredo)" (910.264-200) — *Tranzschelia pruni-spinosae* (Pers.) Diet., II + III (in the two first-mentioned numbers III only); all on plum leaves.

"Uredo Prunastri" on *Prunus spinosa* (from Chaillet) (910.264-97) — *Tr. pruni-spinosae*, II.

3. PUCCINIA MENTHAE (Syn. 227).

"Puccinia menthae" (910.264-170, *lectotype*) — *Puccinia menthae* Pers., II + III. On one large leaf, 11,5 × 5,5 cm, not reminding of *Mentha aquatica*, which in Syn. Meth. Fung. is given as the host. Teleospores finely punctate.

"Puccinia menthae. Env. de Paris" (from Lévillé) on *Mentha* sp. (910.263-1049); "Puccinia Clinopodii Cand.?" (from Chaillet) (910.264-392) — *P. menthae*, in the former number III only, in the latter II + III.

See also *Uredo Menthae*, p. 9.

4. PUCCINIA VALANTIAE (Syn. 227).

"Puccinia valantiae" (910.264-1, *lectotype*); "Puccinia (Uredo) Valantiae" (910.263-49) — *Puccinia celakovskiyana* Bub., II + III. Both specimens are on *Galium cruciata*. — *P. celakovskiyana* must be considered synonymous with *P. valantiae* Pers. Of the microform at present passing as *P. valantiae* Pers., Persoon's herbarium does not contain any material. See also below, p. 18.

P. celakovskiyana is closely allied to *P. punctata* Link, the diploid phase of which is represented by the following specimens: "P. galiorum Link [Persoon's handwriting], Puccinia Gallii sylvatici" (from Chaillet), II + III (910.263-465); "Puccinia gallii, sur le gallium palustre" (from Delastre), III (910.263-474); "P. galiorum Link [Persoon's hand], Puccinia Gallii Molluginis" (from Chaillet), III (910.263-475); "Pucc. galiorum Link [Persoon's hand] (from Chaillet), (II) + III (910.263-477); "Puccinia difformis, Galii sylvestr. Germania" (from Kunze), II + III (910.263-1038); "Uredo gallii, sur gallet de Marais" [= *G. palustre*] (from Delastre), II (910.264-532).

See also *Aecidium Galii*, p. 3.

5. PUCCINIA POLYGONI AMPHIBII (Syn. 227).

"Puccinia Polygoni amphibii. Uredo Polygoni" (910.264-114, *lectotype*; 910.264-133) — *Puccinia polygoni-amphibii* Pers., II + III. The epithet "*Puccinia Polygonii amphibii*" clearly belongs to 910.264-114, but has by some error been glued on 910.264-123, which contains *Pucc. gentianae*; 910.264-114 is now labeled "*Uredo Polygoni*", as also 910.264-133.

"*Puccinia Persicariae*" (from Chaillet) (910.263-22); "*Uredo*" (910.264-39) — *P. polygoni-amphibii*, in the former number III, in the latter II + III.

6. PUCCINIA POLYGONI AVICULARIAE (Syn. 227).

"*Puccinia Polygoni aviculariae*" (910.263-25, *lectotype*; 910.264-129) — *Uromyces polygoni-aviculariae* (Pers.) Karst., II, in 910.263-25 also III.

"*Uredo polygonorum*" on *Polygonum aviculare* (910.264-128) — *Urom. polygoni-aviculariae*, II + III.

7. PUCCINIA CIRCAEAE (Syn. 228).

"*Puccinia Circaeae*" on *Circaea intermedia* (910.264-394; 910.264-397, *lectotype*) — *Puccinia circaeae* Pers. Both collections also contain *Pucciniastrum circaeae* (Wint.) Speg., II.

8. PUCCINIA GRAMINIS (Syn. 228).

"*Puccinia graminis*" on gramineous culms (910.263-497; 910.263-499, *lectotype*) — *Puccinia graminis* Pers., III.

"An *Uredo Caricis*" (from Balbis), on wheat (910.263-146 pr. p.; 910.263-151 pr. p.); "*Puccinia graminis* Pers." (from Mougeot), on culms (910.263-480 pr. p.); "*Puccinia graminis*" (from Mougeot), on culm (910.263-492) — *P. graminis*, III.

9. PUCCINIA JUNIPERI (Syn. 228).

"*Puccinia Juniperi*", probably on *Juniperus sabina* (910.263-221) — *Gymnosporangium fuscum* DC. (syn. *G. sabinae* Wint.), III. The younger name *G. juniperi* Link refers to another species.

"*Puccinia Juniperi* Syn. fung., *Gymnosporangium conicum* Hedw. fil." (910.263-1041); "*Podisoma Juniperi* Link, *Puccinia Juniperi* Syn. fung." (910.263-218) — *Gymnospor. clavariiforme* (Pers.) DC.

10. PUCCINIA POTENTILLAE (Syn. 229).

Apparently no type material preserved.

"*Uredo Potentillarum* var. *Decand.*" on *Potentilla* sp., II (910.264-101); 910.264-103 pr. p.); "*Sphaeria potentillae*" (from Chaillet) on *Potentilla argentea*, III (910.264-108); "*Puccinia Potentillae*" on *Potentilla* sp. (not *P. argentea*), II + III (910.264-109); "*Uredo Potentillae* in *Pot. verna*", I or II (910.264-111) — *Phragmidium potentillae* (Pers.) Karst.

11a. PUCCINIA MUCRONATA α. PUCCINIA ROSAE (Syn. 230).

"*Puccinia mucronata α. Rosae*" (910.263-17, *lectotype*); "*Puccinia mucronata β. Rosae*" (910.263-23); both on *Rosa* sp. (cult.) — *Phragmidium mucronatum* (Pers.) Schlecht., II + III.

"*Puccinia (Uredo) rosae*" on a small-leaved rose (910.263-29); "*Puccinia Rosae* Decand., in foliis Rosarum in hortis" (from Mougeot) (910.263-31); "*Uredo*" on *Rosa* sp. (cult.) (910.264-295) — *Phr. mucronatum*, II + III.

"*Puccinia Rosae*" on "*R. rubiginosa*" and "*Rosa alpina*" (910.264-50), the former with *Phr. tuberculatum* J. Müll., III, and the latter with *Phr. fusiforme* Schroet., II + III.

See also *Uredo miniata*, p. 6.

11β. PUCCINIA RUBI (Syn. 230).

"*Puccinia mucronata* var. *Rubi*" on *Rubus "fruticosus"* (910.263-24) — *Phragmidium bulbosum* (Str.) Schlecht. (syn. *Phr. rubi* (Pers.) Wint.), III; "*Puccinia mucronata* β. *Rubi*" on *Rubus idaeus* (910.263-20) — *Phr. rubi-idaei* (DC.) Karst., III. This corresponds to the text in Syn. Meth. Fung. for this rust: "Autumno in foliis *Rubi fruticosi* praesertim, rarius et *Rubi Idaei* invenitur".

"*Puccinia mucronata*" (910.263-12, 910.263-28) — *Phr. bulbosum*, III on *Rubus* sp., *Phr. violaceum* (Schultz) Wint., III, on *Rubus* sp., and *Phr. rubi-idaei*, III, on *Rubus idaeus*; "*Puccinia mucronata*. In *Rubo fruticoso*" (910.263-26) — *Phr. bulbosum* (II) + III, and *Phr. violaceum*, III, each on a different species of the *R. fruticosus* group; "*Puccinia mucronata* in *Rubo Idaeo*" (910.263-27) — *Phr. rubi-idaei*, III; "*Puccinia* in *rubo caesio*" (910.263-120) — *Phr. bulbosum*, II + III; "*Puccinia rubi* in *rubo idaeo*" (from DeCandolle) on *Rubus "fruticosus"* (910.264-134) — *Phr. violaceum*, III; "(*Uredo*) *Puccinia rubi*" on *R. "fruticosus"* (910.264-144) — *Phr. violaceum*, II + III.

See also *Uredo Rubi fruticosi* and *U. Rubi Idaei*, p. 8.

REVIEW OF PERSOON'S SPECIES AND VARIETIES.

The numbers given below of Persoon's taxa are those in Synopsis Methodica Fungorum. The lectotype numbers refer to the herbarium numbers of the Rijksherbarium.

AECIDIUM.

None of the names are valid, as the likely type material, when present, consists of the aecidial stage only, what apparently is the case also where likely type material is lacking.

UREDO.

For the purpose of the present treatise the species and varieties may be divided up as follows:

A. Taxa the names of which start with Fries, Systema Mycologicum.

1. *Uredo mycophila* = *Sepedonium chrysospermum* Bull. ex Fr.

25. *U. candida* α. *Thlaspeos* and γ. *Alyssi* = *Albugo cruciferarum* S. F. Gray; β. *Tragopogi* = *A. tragopogi* S. F. Gray.

26. *U. Cheiranthi* = *A. cruciferarum* S. F. Gray.

B. Rust taxa represented by caeoma, suitable type material lacking.

5. *U. Rosae centifolia*, considered = *Phragmidium mucronatum* (Pers.) Schlecht. No material present.
 12. *U. Rubi Idaeo* = *Phr. rubi-idaei* (DC.) Karst.

C. Rust taxa represented by caeoma (in No. 6 also uredo), suitable type material present.

- 2 α . *U. confluens* α . *Ribis alpini* = *Melampsora* cf. *ribesii-purpureae* Kleb.
 2 β . *U. confluens* β . *Mercurialis perennis* = *Mel. rostrupii* G. Wagn. (belonging to *Mel. populnea* (Pers.) Karst. s.l.).
 6 α . *U. miniata* (α . *Eglanteriae*) = *Phragmidium mucronatum* (Pers.) Schlecht.

D. Rust taxa represented by uredo, suitable type material lacking.

3. *U. Alchemillae* = *Trachyspora intrusa* (Grev.) Arth.
 4. *U. Euphorbiae Helioscopiae* = *Melampsora euphorbiae* (Schub.) Cast. (syn. *Mel. helioscopiae* Wint.).
 6 β . *U. miniata* β . *Lini* = *Mel. lini* (Ehrenb.) Lév.
 9. *U. Sonchi arvensis* = *Coleosporium sonchi* (Str.) Lév. (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.). From Persoon's description only the presence of uredo can be concluded, but very possibly the type material, which is lacking, also carried teleuto. In Nos. 910.264-66 and 910.264-70, on *Sonchus oleraceus* and *palustris* and in Persoon's handwriting labeled "Uredo Sonchi", both uredo and teleuto occur. But anyway, *Col. sonchi* must be considered conspecific with *Col. tussilaginis*.
 11. *U. Rubi fruticosi*, considered = *Phragmidium rubi* ("Pers.") Wint. = *Phr. bulbosum* (Str.) Schlecht.
 15 β . *U. pustulata* β . *Cerastii*, considered = *Melampsorella caryophyllacearum* Schroet. No material present.
 21 β . *U. appendiculatus* β . *Pisi sativi*, considered = *Uromyces pisi* (DC.) Otth.

E. Rust taxa represented by uredo, suitable type material present.

- 7 β . *U. linearis* β . *Polypodii* = *Hyalopsora polypodii* (Diet.) Magn.
 8. *U. campanulae* = *Coleosporium campanulae* Lév. (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.).
 10 α . *U. farinosa* α . *Uredo capreae*, probably = *Melampsora capreaearum* Thüm.
 15 α . *U. pustulata* α . *Epilobii* = *Pucciniastrum epilobii* Otth.
 15 β . *U. Betae* β . *Convolvuli* = *Puccinia polygoni-amphibii* Pers. var. *convolvuli* Arth. — Persoon erroneously gave the host as *Convolvulus arvensis* and consequently this rust does not represent the uredo-stage of *P. convolvuli* Cast. as generally believed.

19. *U. suaveolens* = *Puccinia punctiformis* (Str.) Röhl. (syn. *P. suaveolens* Rostr.).

F. Rust taxa represented by uredo and teleuto, but only uredo was described by Persoon. Suitable type material present.

4β. *U. Euphorbiae helioscopiae* β. *Euphorbiae exiguae* = *Melampsora euphorbiae* (Schub.) Cast.

7α. *U. linearis* α. *frumenti* = *Puccinia coronata* Corda. — *P. linearis* Röhl. is synonymous with *P. graminis* Pers.

10β. *U. farinosa* β. *Senecionis* = *Coleosporium senecionis* Tul. ex Kickx (belonging to *Col. tussilaginis* (Pers.) Lév. s.l.).

14. *U. populina* = *Melampsora larici-populina* Kleb. — *Mel. populina* Lév. is synonymous with *Mel. populnea* (Pers.) Karst.

14β. *U. populina* β. *betulina* = *Melampsorium betulinum* (Fr.) Kleb.

16. *U. Menthae* = *Puccinia menthae* Pers. (see below, p. 18).

18. *U. Betae* = *Uromyces betae* (Pers.) Tul. Persoon's name may be considered valid. *Lectotype* 910.264-741.

20. *U. Viciae Fabae* = *Uromyces fabae* de Bary, but this name may now be changed to *Urom. viciae-fabae* (Pers.) Otth, Mitth. Naturf. Ges. Bern, 1863 p. 86 (however, Otth erroneously cited DC. instead of Pers.). *Lectotype* 910.264-550).

G. Rust taxa under *Uredo*, but the teleuto-stage was described by Persoon. Suitable type material present, except in No. 23.

13. *U. Tussilaginis* = *Coleosporium tussilaginis* (Pers.) Lév. *Lectotype* 910.264-18.

17. *U. scutellata* = *Uromyces scutellatus* (Pers.) Lév. *Lectotype* 910.264-77.

21α. *U. appendiculata* α. *Phaseoli* = *Uromyces appendiculatus* (Pers.) Ung. *Lectotype* 910.264-281.

21γ. *U. appendiculata* γ. *Genistae tinctoriae* = *Uromyces laburni* (DC.) Otth (syn. *Urom. genistae-tinctoriae* (Pers.) Wint.).

22. *U. bullata* = *Puccinia conii* Fuck. — *Puccinia bullata* Link is synonymous with *P. ribis* DC. *P. bullata* (Pers.) Wint., which is used as a collective name for certain brachyforms on members of various umbelliferous genera, is invalid and must be cancelled. At least some of the rust forms in question may be placed with *P. angelicae* (Schum.) Fuck.

23. *U. Dianthi* = *Uromyces dianthi* Niessl (Niessl did not cite Pers.). Material lacking.

H. Smut taxa, suitable type material of which is lacking (of Nos. 27 β., δ., ε. no material is present).

27α. *U. segetum* α. *Hordei* and γ. *Avenae* = *Ustilago hordei* (Pers.) Lagh. (syn. *Ust. levis* (Kell. & Sw.) Magn.). It seems that the species name should be changed to *Ust. segetum* (Pers.) Ditm.

27β. *U. segetum* β. *Tritici* = *Ustilago tritici* Jens., which by

some authors is now considered synonymous with *Ust. nuda* (Jens.) Rostr.

27δ. *U. segetum* δ. *Panici miliacei* = *Sphacelotheca destruens* (Schlecht.) Stev. & A. G. Johns.

27ε. *U. segetum* ε. *decipiens* = *Tilletia decipiens* (Pers.) Körn. This name should be changed to *Tilletia sphaerococca* (Rabh.) Fisch. v. Waldh., as *T. decipiens* is based upon a variety and is a younger name than *Uredo sphaerococca* Rabh.

28. *U. Caricis* = *Contractia caricis* (Pers.) Magn. s.l. Acc. to J. I. Liro, *Die Ustilagineen Finnlands*, II p. 236, 1938, *Carex pilulifera* is the type host.

29. *U. Tragopogi pratensis* = *Ustilago tragopogi-pratensis* (Pers.) Rouss.

30. *U. violacea* = *Ustilago violacea* (Pers.) Fuck.

I. Smut taxon with suitable type material present.

24. *U. Anemones* = *Urocystis anemones* (Pers.) Wint. *Lectotype* 910.264-944.

PUCCINIA.

A. Teleuto present, suitable type material lacking.

2. *P. Pruni spinosae* = *Tranzschelia pruni-spinosae* (Pers.) Diet.

10. *P. Potentillae* = *Phragmidium potentillae* (Pers.) Karst.

B. Teleuto present, suitable type material present.

1. *P. Anemones* = *Tranzschelia anemones* (Pers.) Nannf. *Lectotype* 910.264-943.

3. *P. Menthae* = *Puccinia menthae* Pers. *Lectotype* 910.264-170, on *Mentha* sp.

4. *P. Valantiae* = *P. celakovskyana* Bub. *Lectotype* 910.264-1. — It is quite clear, as well from the material in Persoon's herbarium, as from his descriptions in *Syn. Meth. Fung.* and in *Observationes Mycologicae*, 2 p. 25, 1799, that *P. valantiae* Pers. is not the microform on *Galium* passing under this name, but that it corresponds to *P. celakovskyana* Bub. The latter rust I think ought to be incorporated in *P. punctata* Link s.l. (cp. also H. S. Jackson, *Mem. Torrey Bot. Club*, 18 p. 8, 1931), but this question I find it best to hold open for the moment. It would certainly be highly desirable, if possible, to avoid exchanging the well-known name *P. punctata* for *P. valantiae*. The latter name is commonly but erroneously used for the above-mentioned microform, the valid name of which is perhaps *P. heterochroa* Rob. ex Desm., *Ann. Sci. Nat.*, Ser. 3, 14 p. 108, 1850, on *Galium cruciata* and *vernum*. However, Desmazieres cites *Puccinia Galii verni* Ces. in Rabh., *Herb. viv.*, No. 1092 (edited 1846) as a synonym, and if not a nomen nudum, this name has priority. Of the older synonyms of "*P. valantiae*" cited in P. & H. Sydow, *Monogr. Ured.*, 1 p. 217, 1904, the following ones are not tenable: *P. stellatarum* Duby (1830) referring

to *P. punctata* and *P. crucianellae* Desm., *P. galii-cruciatae* Duby (1830) to *P. celakovskyana* (*P. galii-cruciati* Johnst. (1831) is a homonym), and *P. clavuligera* *a. galiorum* Wallr. (1831) to *P. punctata*.

5. *P. polygoni amphibii* = *P. polygoni-amphibii* Pers. *Lectotype* 910.264-114.

6. *P. polygoni aviculariae* = *Uromyces polygoni-aviculariae* (Pers.) Karst. *Lectotype* 910.263-25.

7. *P. Circaeae* = *P. circaeae* Pers. *Lectotype* 910.264-397.

8. *P. graminis* = *P. graminis* Pers. *Lectotype* 910.263-499, on gramineous culms.

9. *P. Juniperi* = *Gymnosporangium fuscum* DC. — *G. juniperi* Link is another rust species.

11 α . *P. mucronata* *a. Rosae* = *Phragmidium mucronatum* (Pers.) Schlecht. *Lectotype* 910.263-17, on *Rosa* sp. (cult.).

11 β . *P. mucronata* *\beta. Rubi*, considered = *Phr. rubi* (Pers.) Wint, (*i. e.* *Phr. bulbosum* (Str.) Schlecht.), but Persoon's supposed original material contains not only *Phr. bulbosum*, but also *Phr. rubi-idaei* (DC.) Karst.

Conclusion.

In the present paper are established lectotypes for the following valid species:

Coleosporium tussilaginis (Pers.) Lév., on *Tussilago farfara*.

Phragmidium mucronatum (Pers.) Schlecht., on *Rosa* sp. (cult.).

Puccinia circaeae Pers., on *Circaea intermedia*.

— *graminis* Pers., on an indeterminate gramineous host.

— *menthae* Pers., on *Mentha* sp.

— *polygoni-amphibii* Pers., on *Polygonum amphibium*.

— *valantiae* Pers. (syn. *P. celakovskyana* Bub.), on *Galium cruciata*. — *P. valantiae* auct. = *P. punctata* Link.

Uromyces appendiculatus (Pers.) Ung., on *Phaseolus vulgaris*.

— *betae* (Pers.) Tul., on *Beta vulgaris*.

— *polygoni-aviculariae* (Pers.) Karst., on *Polygonum aviculare*.

— *scutellatus* (Pers.) Lév., on *Euphorbia cyparissias*.

— *viciae-fabae* (Pers.) Otth, on *Vicia faba*.

Urocystis anemones (Pers.) Wint., on *Anemone nemorosa*.

The following species are validly published, but Persoon's names cannot be used, because when placed in the correct genus the names of the new combinations were already occupied by other species:

Puccinia Juniperi = *Gymnosporangium fuscum* DC. (not *G. juniperi* Link).

Uredo bullata = *Puccinia conii* Fuck. (not *P. bullata* Link = *P. ribis* DC.).

— *Dianthi* = *Uromyces dianthi* Niessl.

— *linearis* *a. frumenti* = *Puccinia coronata* Corda (not *P. linearis* Röhl. = *P. graminis* Pers.).

— *populina* = *Melampsora larici-populina* Kleb. (not *M. populina* Lév. = *M. populnea* (Pers.) Karst.).

For the following valid species suitable type material is lacking:

- Puccinia Potentillae* = *Phragmidium potentillae* (Pers.) Karst.
— *Pruni spinosae* = *Tranzschelia pruni-spinosae* (Pers.) Diet.
Uredo Caricis = *Cintractia caricis* (Pers.) Magn. s. l.
— *segetum* α. *Hordei* = *Ustilago segetum* (Pers.) Ditm. (syn. *U hordei* (Pers.) Lagh.).
— *Tragopogi pratensis* = *Ustilago tragopogi-pratensis* (Pers.) Rouss.