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STUDIES ON YAKUTIAN FUNGI. IV *ERYSIPHACEAE* LÉV.

This is the first report on the distribution of powdery mildews in Subarctic Yakutia. Data on the powdery mildew fungi of Central and South Yakutia were published in the paper by K. A. Benois and E. M. Karpova-Benois (Бенуа, Карпова-Бенуа, 1973). The present report is based on material collected by the author during the expedition from July 27 to September 12, 1972 in Northern and Central Yakutia.

A short description of the natural conditions and localities of the area was presented in the first paper of this series.*

The nomenclature of fungi in this work is the same as used by L. Junell (1966, 1967a, 1967b). The synonyms used by K. A. Benois and E. M. Karpova-Benois are indicated behind the species names. Most of the host plants have been determined by V. Perfilyeva (Institute of Biology, Yakutian Branch, Siberian Division of the Academy of Sciences of the USSR), to whom the author wishes to express a debt of gratitude. The collected specimens are preserved in the Herbarium of the Tallinn Botanical Garden.

Of the 29 species of powdery mildews collected during the expedition 10 species have been found in the Woodland Tundra Zone (*Erysiphe asperifoliorum*, *E. graminis*, *E. valerianae*, *Podosphaera major*, *Sphaerotheca alchemillae*, *S. alpina*, *S. drabae*, *S. erigerontis-canadensis*, *S. melampyri* and *S. xanthii*). However, in the Tundra and Woodland Tundra zones near North-Western Yakutia, on the Taimyr Peninsula, 13 species of powdery mildews have been found (Карис, Пылдмаа, 1974). *Erysiphe artemisiae*, *E. cichoracearum*, *E. ranunculi* and *Sphaerotheca astragali* are the species lacking in the Woodland Tundra Zone of Yakutia. *Sphaerotheca xanthii* is lacking on the Taimyr Peninsula but present in the Woodland Tundra Zone in Yakutia.

In the Northern Taiga Zone there were collected 20 species of powdery mildew fungi. These are species all found also in the Tundra or Woodland Tundra Zone of Yakutia or Taimyr Peninsula. In the Verchojansk Frost Pole area in the Northern Taiga Zone 9 species of powdery mildews have been found: *Erysiphe artemisiae*, *E. asperifoliorum*, *E. cichoracearum*, *E. graminis*, *E. valerianae*, *Podosphaera major*, *Sphaerotheca alchemillae*, *S. erigerontis-canadensis* and *S. melampyri*. Near the Ojm'akon Frost Pole 8 species of powdery mildews have been found: *Erysiphe artemisiae*, *E. galii*, *E. valerianae*, *Sphaerotheca alchemillae*, *S. astragali*, *S. erigerontis-canadensis*, *S. ferruginea* and *Uncinula adunca*. Three species, viz. *Erysiphe galii*, *Sphaerotheca ferruginea* and *Uncinula adunca* have their northernmost localities in the Northern Taiga

* Eesti NSV TA Toimet., Biol., 1975, 24, 217—227.

Zone. It is also a zone where a new species was found by the author (*Microsphaera rosae* sp. nov.).

In the Central Taiga Zone 25 species of powdery mildews have been found; of these, 8 species (*Erysiphe aquilegiae*, *E. galeopsidis*, *E. heraclei*, *Phyllactinia guttata*, *Podosphaera clandestina*, *Sphaerotheca delphinii*, *S. fuliginea* and *S. pannosa*) are distributed only in this area.

In Southern Yakutia there were found 9 species not mentioned in the northern localities (*Erysiphe thesii*, *E. ulmariae*, *E. urticae*, *Microsphaera baeumleri*, *M. diffusa*, *Podosphaera aucupariae*, *Sphaerotheca fugax*, *S. plantaginis* and *S. polemonii*) (Бенуа, Карпова-Бенуа, 1973).

Up to the present time, 38 species of powdery mildew fungi parasiting on 164 host plants have been discovered in Yakutia.

ERYSIPHE AQUILEGIAE [DC.] Mérat, Nouv. fl. env. Paris, ed. 2
1: 132. 1821. — *E. communis* (Wallr.) Link f. *aquilegiae* Westendorp.

Specimens examined: Jakutsk*, Botanical Garden, on *Aquilegia coerulea* James, *A. ottonis* Orph. hosp. nov., *A. sibirica* Lam. and *A. vulgaris* L., 8 IX 72.

Reported by K. A. Benoï and E. M. Karpova-Benoï on *A. parviflora* Ldb. in South Yakutia and on *Caltha palustris* L. in Central Yakutia (Бенуа, Карпова-Бенуа, 1973: 118).

ERYSIPHE ARTEMISIAE Grev., Fl. Edin. 459. 1824. — *E. cichoracearum*
DC. f. *artemisiae* Fuck.

Specimens examined: Jakutsk: Tuimada Valley, on *Artemisia bargusinensis* Spr. hosp. nov., 8 IX 72, Botanical Garden, on *A. dracunculus* L., 8 IX 72, Zuzur-Muran Hill, on *A. dracunculus* L., 10 IX 72, Zigansk, on *A. leucophylla* Turcz. hosp. nov., 5 VIII 72; Verchojansk, on *A. tanacetifolia* L., 13 VIII 72; Krest Tomptor near Ojm'akon, on *A. tanacetifolia* L., 1 IX 72; Zuzur-Muran Hill, on *A. tanacetifolia* L., and *A. vulgaris* L., 10 IX 72.

Reported on *A. commutata* Bess., *A. dracunculus* L., *A. laciniata* Willd., *A. macrantha* Ldb., *A. tanacetifolia* L., *A. vulgaris* L. and *Artemisia* sp. in Central and South Yakutia (Бенуа, Карпова-Бенуа, 1973: 112—113).

ERYSIPHE ASPERIFOLIORUM Grev., Fl. Edin. 461. 1824. — *E. horridula* Lévl. (f. *lappulae* Jacz. and f. *echii-myosotidis* Blumer).

Specimens examined: Verchojansk, on *Lappula echinata* Gilib., 13 VIII 72; Doruochi near Saskylach, on *Myosotis suaveolens* Waldst. & Kit. hosp. nov., 2 VIII 72; Jakutsk, Botanical Garden, on *M. suaveolens*, 9 IX 72.

According to K. Benoï and E. Karpova-Benoï, this species was found on *Lappula anisacantha* (Turcz.) Gürke, *L. echinata* Gilib., *L. heterocantha* (L.) Gürke and *Myosotis silvatica* Hoffm. in South Yakutia (Бенуа, Карпова-Бенуа, 1973: 104).

ERYSIPHE CICHORACEARUM [DC.] Mérat, Nouv. fl. env. Paris, ed. 2
1: 132. 1821. — *E. cichoracearum* DC. (f. *lini* Jacz., f. *achilleae* Jacz., f. *asteris* Jacz., f. *eu-hieracium* Blumer, f. *saussureae* Jacz., f. *scorzoneriae* Jacz. and f. *tanacetii* Jacz.).

* Geographical names are given according to the Political-administrative Map of the Union of Soviet Socialist Republics (Moscow, 1976).

Specimens examined: Zyr'anka, on *Achillea alpina* L. hosp. nov., 23 VIII 72 and 30 VIII 72; Verchojansk, on *A. millefolium* L. ssp. *sibirica*, 13 VIII 72; Jakutsk, Botanical Garden, on *A. millefolium* ssp. *sibirica*, 9 IX 72, on *Aster alpinus* L., 8 IX 72; Zyr'anka on *A. sibiricus* L., 23 VIII 72; Srednekolym'sk, on *A. sibiricus*, 25 VIII 72; Jakutsk: Botanical Garden, on *A. sibiricus*, 9 IX 72, on *Aster* sp., 8 IX 72, on *Galatella dahurica* DC. hosp. nov., 9 IX 72, Zuzur-Muran Hill, on *Inula britannica* L., 10 IX 72, Botanical Garden, on *Matricaria* sp., 9 IX 72, Tuimada Valley, on *Ptarmica cartilaginea* Ldb. and *Saussurea amara* DC., 8 IX 72, Zuzur-Muran Hill, on *Scorzonera radiata* Fisch., 10 IX 72, Botanical Garden, on *Tanacetum bipinnatum* Sch. hosp. nov., 9 IX 72; Zigansk, on *Tanacetum boreale* Fisch. ex DC. hosp. nov., 6 VIII 72; Zyr'anka, on *T. boreale*, 23 VIII 72; Srednekolym'sk, on *T. boreale*, 25 VIII 72; Jakutsk, Botanical Garden, on *T. vulgare*, 8 IX 72.

According to K. A. Benois and E. M. Karpova-Benois the species was found in Central Yakutia on *Achillea millefolium* L. var. *setacea* Wet. & Kit., *Aster sibiricus* L., *Hieracium umbellatum* L., *Linum sibiricum* DC., *Saussurea amara* DC., *Scorzonera austriaca* Willd., and in South-West Yakutia on *Tanacetum vulgare* L. (Бенуа, Карпова-Бенуа, 1973: 110—115).

ERYSIPHE GALEOPSISIDIS [DC.] Mérat, Nouv. fl. env. Paris, ed. 2 1: 134. 1821. — *E. labiatarum* Chev. (f. *lamii* (Dietrich) Jacz., f. *nepetae* Jacz. and f. *phlomidis* Jacz.).

Specimens examined: Jakutsk, Botanical Garden, on *Leonurus* sp., 8 IX 72, on *Phlomis tuberosa* L., 9 IX 72, Zuzur-Muran Hill, on *P. tuberosa* L., 10 IX 72.

This species was found also in Central Yakutia on *Lamium album* L., in South-East Yakutia on *Nepeta lavandulacea* L. and *Phlomis tuberosa* L. (Бенуа, Карпова-Бенуа, 1973: 106—107).

ERYSIPHE GALII Blumer, Beitr. Krypt.-Fl. Schweiz 7: 283. 1933. — *E. cichoracearum* DC. f. *galii* Jacz.

Specimens examined: Krest Tomptor near Ojm'akon, on *Galium verum* L., 1 IX 72; Jakutsk: Botanical Garden, on *G. verum* L., 9 IX 72, Zuzur-Muran Hill, on *G. verum*, 10 IX 72; Zyr'anka, on *Galium* sp., 30 VIII 72.

This species was also found on *G. verum* in Central and South-East Yakutia (Бенуа, Карпова-Бенуа, 1973: 111).

ERYSIPHE GRAMINIS [DC.] Mérat, Nouv. fl. env. Paris, ed. 2 1: 133. 1821. — *E. graminis* DC. (f. *atropidis* Ch. Benois, f. *hordei spontanei* Jacz. and f. *poae* Marchal).

Specimens examined: Jakutsk, Botanical Garden, on *Agropyron repens* (L.) Beauv., 9 IX 72, on *Alopecurus ventricosus* Pers. hosp. nov., 9 IX 72; Srednekolym'sk, on *Beckmannia syzigachne* (Stend.) Fernald, 26 VIII 72; Jakutsk, Tuimada Valley, on *B. syzigachne*, 8 IX 72; Čerskij, on *Deschampsia sucatschewii* (Popl.) Roshev. hosp. nov., 16 VIII 72; Pochodsk, on *D. sucatschewii* (Popl.) Roshev., 18 VIII 72, and on *Poa alpigena* (Fries) Lindm. ssp. *viviparum*, 20 VIII 72; Jakutsk, Botanical Garden, on *P. alpina* L., 9 IX 72, on *P. angustifolia* L., 9 IX 72, on *P. arctica* R. Br., 9 IX 72, on *P. bulbosa* L., 9 IX 72; Saskylakh, on *P. pratensis* L., 1 VIII 72; Verchojansk, on *P. pratensis*, 13 VIII 72; Pochodsk, on

P. pratensis, 19 VIII 72; Zyr'anika, on *P. pratensis*, 23 VIII 72; Sredne-kolymsk, on *P. pratensis*, 25 VIII 72; Jakutsk, Botanical Garden, on *P. pratensis*, 8 IX 72, on *P. sibirica* Roshev. hosp. nov., 9 IX 72, on *Puccinellia tenuiflora* (Griseb.) Scribn. & Merr. hosp. nov., 8 IX 72; Zigansk, on *Roegneria transbaicalensis* Nevski hosp. nov., 5 VIII 72.

According to K. A. Benoï and E. M. Karpova-Benoï, this species was found also in Central and South-East Yakutia on *Atropis distans* (L.) Griseb., on *Hordeum secalinum* Schr. and on *Poa pratensis* (Бенуа, Карпова-Бенуа, 1973: 104—106).

ERYSIPHE HERACLEI [DC.] St.-Am., Fl. Agen.: 615. 1821. — *E. umbelliferarum* DB. (f. *anthrisci* Jacz., f. *peucedani* Jacz., f. *seseli* Jacz. and f. *bupleuri* Ch. Benoï).

Specimens examined: Jakutsk, Tuimada Valley, on *Cnidium dahuricum* (Jacq.) Turcz. hosp. nov., 10 IX 72; Jakutsk, Botanical Garden, on *Cnidium dubium* Thell. hosp. nov., 11 IX 72.

This species is reported also by K. A. Benoï and E. M. Karpova-Benoï in Central Yakutia on *Anthriscus sylvestris* (L.) Hoffm., on *Bupleurum sibiricum* Vest., on *Libanotis sibirica* C. A. Mey. and on *Peucedanum vaginatum* Ldb. (Бенуа, Карпова-Бенуа, 1973: 107—109).

ERYSIPHE PISI [DC.] St.-Am., Fl. Agen.: 614. 1821. — *E. communis* (Wallr.) Link (f. *medicaginis-falcatae* Hammarl. and f. *viciae* Jacz.).

Specimens examined: Jakutsk, Zuzur-Muran Hill, on *Vicia amoena* Fisch., 10 IX 72; Zigansk, on *V. cracca* L., 5 VIII 72.

This species was found also on *Medicago falcata* L., *Vicia amoena* Fisch., *V. cracca* L., *V. unijuga* A. Br. and *Vicia* sp. in South and South-West Yakutia (Бенуа, Карпова-Бенуа, 1973: 123—126).

ERYSIPHE RANUNCULI Grev., Fl. Edin.: 461. 1824. — *E. communis* (Wallr.) Link (f. *aconiti* Jacz., f. *clematidis* Jacz., f. *ranunculi* Rabenh. and f. *thalictri* Hammarl.).

Specimens examined: Jakutsk, Botanical Garden, on *Aconitum barbatum* Pass. hosp. nov., 9 IX 72, on *A. kusnezoffii* Rihb. hosp. nov., 8 IX 72, on *A. volubile* Pall. ex Koelle, 9 IX 72, on *Atragene sibirica* L., 8 IX 72; Srednekolymsk, on *Delphinium cheilanthum* Fisch. ex DC., 25 VIII 72; Jakutsk, Botanical Garden, on *D. elatum* L., 9 IX 72; Srednekolymsk, on *Ranunculus repens* L., 26 VIII 72; Zyr'anika, on *R. repens*, 30 VIII 72; Jakutsk, Tuimada Valley, on *R. repens* L., 8 IX 72, Botanical Garden, on *Thalictrum minus* L., 9 IX 72, on *T. simplex* L., 9 IX 72.

According to K. A. Benoï and E. M. Karpova-Benoï, this species was found in Central and Southern Yakutia on *Aconitum volubile*, *Atragene sibirica*, *A. ochotensis* Pall., *Ranunculus repens*, *Thalictrum minus* and on *T. simplex* (Бенуа, Карпова-Бенуа, 1973: 117—120).

ERYSIPHE THESII L. Junell, Svensk Bot. Tidskr. 61: 216. 1967. — *E. communis* (Wallr.) Link f. *thesii* Jacz.

This species is reported by K. A. Benoï and E. M. Karpova-Benoï in Central and South-East Yakutia on *Thesium longifolium* Turcz. and *T. refractum* C. A. Mey. (Бенуа, Карпова-Бенуа, 1973: 116—117).

ERYSIPHE TRIFOLII Grev., Fl. Edin.: 459. 1824. — *E. communis* (Wallr.) Link (f. *lathyri* Rabenh. and f. *trifolii* Rabenh.).

Specimens examined: Zigansk, on *Hedysarum alpinum* L., 5 VIII 72, on *H. arcticum* B. Fedtsch., 6 VIII 72, on *H. vicioides* Turcz. hosp. nov., 5 VIII 72; Jakutsk, Zuzur-Muran Hill, on *Lathyrus humilis* Fisch., 10 IX 72; Zyr'anka, on *L. pilosus* Cham., 23 VIII 72; Jakutsk: Tuimada Valley, on *L. pilosus*, 8 IX 72; Botanical Garden, on *L. pilosus*, 9 IX 72, on *Melilotus albus* Desr., 8 IX 72, on *M. suaveolens* Ldb., 8 IX 72; Tuimada Valley, on *Onobrychis sibirica* Turcz. hosp. nov., 8 IX 72, Botanical Garden, on *Trifolium lupinaster* L. 9 IX 72.

This species is reported by K. A. Benois and E. M. Karpova-Benois in Central and South Yakutia on *Lathyrus humilis*, *L. palustris* L., *L. pilosus* and on *Trifolium lupinaster* (Бенуа, Карпова-Бенуа, 1973: 121—124).

ERYSIPHE ULMARIAE Desm., Ann. Sci. Nat., Bot. III, 6: 66. 1846. — *E. communis* (Wallr.) Link f. *ulmariae* Dietrich.

This species is reported by K. A. Benois and E. M. Karpova-Benois in the region of the Aldan River on *Filipendula palmata* (Pall.) Maxim. (Бенуа, Карпова-Бенуа, 1973: 121).

ERYSIPHE URTICAE [Wallr.] Blumer, Beitr. Krypt.-Fl. Schweiz 7: 224, 1933. — *E. communis* (Wallr.) Link f. *urticae* Rabenh.

Reported by K. A. Benois and E. M. Karpova-Benois on *Urtica cannabina* L. in South-West Yakutia (Бенуа, Карпова-Бенуа, 1973: 116).

ERYSIPHE VALERIANAE (Jacz.) Blumer, Beitr. Krypt.-Fl. Schweiz 7: 264, 1933. — *E. cichoracearum* DC. f. *valerianae* Jacz.

Specimens examined: Jakutsk, Botanical Garden, on *Patrinia sibirica* (L.) Juss. hosp. nov., 9 IX 72; Saskylach, on *Valeriana capitata* Pall., 1 VIII 72; Doruochi near Saskylach, on *V. capitata*, 2 VIII 72; Verchojansk, on *V. capitata*, 11 VIII 72 and 14 VIII 72; Pochodsk, on *V. capitata*, 17 VIII 72 and 20 VIII 72; Srednekolym'sk, on *V. capitata*, 25 VIII 72; Zyr'anka, on *V. capitata*, 30 VIII 72; Krest Tomptor near Ojm'akon, on *V. capitata*, 2 IX 72; Jakutsk, Botanical Garden, on *V. officinalis* L. 9 IX 72.

Reported also by K. A. Benois and E. M. Karpova-Benois on *V. capitata* and on *V. officinalis* in South-East Yakutia (Бенуа, Карпова-Бенуа, 1973: 111).

MICROSPHAERA BAEUMLERI P. Magn., Ber. Deutsch. bot. Ges. 17: 148. 1899. — *Trichocladia Bäumlerei* (Magn.) Neger.

This species is reported by K. A. Benois and E. M. Karpova-Benois on *Vicia multicaulis* Ldb. and on *V. venosa* (Willd.) Maxim. in South-West Yakutia (Бенуа, Карпова-Бенуа, 1973: 127).

MICROSPHAERA BETULAE P. Magn., Ber. Deutsch. bot. Ges. 16: 67. 1898. — *M. betulae* Magnus.

Specimens examined: Zigansk, on *Betula platyphylla* Sukacz., 5 VIII 72; Jakutsk: Zuzur-Muran Hill, on *B. platyphylla*, 10 IX 72, Botanical Garden, on *B. platyphylla*, 11 IX 72.

This species was also found in Central Yakutia on *B. pubescens* Ehrh. and on *B. platyphylla* (Бенуа, Карпова-Бенуа, 1973: 128).

MICROSPHAERA DIFFUSA Cooke & Peck — *Trichocladia diffusa* Jacz. f. *thermopsidis* Jacz.

This species was found by K. A. Benois and E. M. Karpova-Benois in Southern Yakutia on *Thermopsis lanceolata* R. Br. (Бенуа, Карпова-Бенуа, 1973: 126).

MICROSPHAERA PENICILLATA (Wallr. ex Fr.) Lév., Ann. Sci. Nat., Bot. III 15: 155, 381. 1811. — *M. penicillata* Lév. f. *alni* Jacz.

Specimens examined: Zigansk, on *Alnus fruticosa* Rupr., 5 VIII 72; Zyr'anika, on *A. fruticosa*, 23 VIII 72; Srednekolym'sk, on *A. fruticosa*, 25 VIII 72; Jakutsk, Botanical Garden, on *A. fruticosa*, 11 IX 72.

This species is also reported by K. A. Benois and E. M. Karpova-Benois in the Aldan basin on *A. fruticosa* (Бенуа, Карпова-Бенуа, 1973: 129).

MICROSPHAERA ROSAE Karis sp. nova.

Mycelium amphigenum in foliis. Cleistocarpium sparsis, 103—132 μ m in diametro, atro-brunneis. Appendices 10—15, Hyalinae vel basi brunneae, usque ad 150 longes, ad extremitates 3-dichotomae, ramis terminalibus rectis. Ascis 6—10 in cleistocarpiis, ellipsoideis, 56—79 \times 33—54 μ m, 8 sporis. Sporis ellipsoideis, 15,4—23,8 \times 9,8—14 μ m.

Typus: URSS, Yakutia, prope urbem Srednekolym'sk, in foliis *Rosa acicularis* Lindl., 26 VIII 72 leg. H. Karis, in herb. Horti Botanici Tallinensi conservatur.

Mycelium thin, on both surfaces of leaves. Perithecia scattered, 103—132 μ m in diam., brown. Appendages 10—15, hyaline or brown at the base, up to 150 μ m long, 3 times dichotomously branched, their tips not recurved. Ascis 6—10, ellipsoidal, 56—79 \times 33—54 μ m, usually with 8 spores. Ascospores ellipsoidal, 15.4—23.8 \times 9.8—14 μ m.

Specimens examined: Srednekolym'sk, on leaves of *Rosa acicularis* Lindl., 26 VIII 72.

PHYLLACTINIA GUTTATA (Wallr. ex Fr.) Lév., Ann. Sci. Nat., Bot. III 15: 144. 1851. — *Ph. suffulta* Sacc. f. *betulae* Thuemen.

Specimens examined: Jakutsk, Botanical Garden, on *Alnus fruticosa* Rupr., 11 IX 72, on *Betula platyphylla* Sucacz., 11 IX 72.

This species was found also in South-West Yakutia on *B. platyphylla* (Бенуа, Карпова-Бенуа, 1973: 140).

PODOSPHAERA AUCUPARIAE Erikss., F. par. scand. 233. 1886. — *P. oxyacanthae* DB. f. *sorbi* Jacz.

According to K. A. Benois and E. M. Karpova-Benois, this species was found in Central Yakutia in the Lena basin on *Sorbus sibirica* Hedl. (Бенуа, Карпова-Бенуа, 1973: 102).

PODOSPHAERA CLANDESTINA (Wallr. ex Fr.) Lév., Ann. Sci. Nat., Bot. III 15: 136. 1851. — *P. oxyacanthae* DB. (f. *crataegi* Jacz. and f. *spiraeae* Jacz.).

Specimens examined: Jakutsk: Botanical Garden, on *Crataegus maximowiczii* Schneid., 8 IX 72, Zuzur-Muran Hill, on *Spiraea media* Schmidt, 10 IX 72, Botanical Garden, on *S. salicifolia* L., 8 IX 72.

Reported also by K. A. Benois and E. M. Karpova-Benois in Central Yakutia on *Crataegus sanguinea* Pall. and on *Spiraea salicifolia* (Бенуа, Карпова-Бенуа, 1973: 102—103).

PODOSPHAERA MAJOR (Juel) Blumer, Beitr. Krypt.-Fl. Schweiz 7: 143. 1933. — *P. myrtilina* Kunze f. *uliginosa* Jacz.

Specimens examined: Zigansk, on *Vaccinium uliginosum* L., 6 VIII 72; Verchojansk, on *V. uliginosum*, 12 VIII 72; Pochodsk, on *V. uliginosum*, 20 VIII 72; Zyr'anka, on *V. uliginosum* L., 23 VIII 72.

This species was found also in Central and Southern Yakutia on *V. uliginosum* (Бенуа, Карпова-Бенуа, 1973: 101).

SPHAEROTHECA ALCHEMILLAE (Grev.) L. Junell, Trans. Brit. Mycol. Soc. 48: 547. 1965. — *S. macularis* (Wallr.) Magn. em. Jacz. (f. *comari* Jacz. f. *potentillae* Jacz. and f. *spiraeacearum* Wallr.).

Specimens examined: Pochodsk, on *Comarum palustre* L., 19 VIII 72; Srednekolym'sk, on *C. palustre*, 26 VIII 72; Zyr'anka, on *C. palustre*, 30 VIII 72; Jakutsk, Botanical Garden, on *Dasiphora fruticosa* Rydb., 8 IX 72; Jakutsk, on *Potentilla anserina* L., 6 IX 72; Krest Tomptor near Ojm'akon, on *P. arenosa* (Turcs.) Juz. hosp. nov., 1 IX 72; Jakutsk, Tumanda Valley, on *P. bifurca* L., 8 IX 72; Saskylach, on *P. stipularis* L., 1 VIII 72; Verchojansk, on *P. stipularis*, 12 and 13 VIII 72; Krest Tomptor near Ojm'akon, on *P. stipularis*, 3 IX 72; Jakutsk, Tuimada Valley, on *P. viscosa* J. Don., 8 IX 72.

This species is also reported by K. A. Benois and E. M. Karpova-Benois in Central and South-East Yakutia on *Comarum palustre*, *Potentilla anserina*, *P. bifurca*, *P. stipularis*, *P. tanacetifolia* Willd., *P. viscosa* L. *Spiraea chamaedryfolia* L. and *S. media* L. (Бенуа, Карпова-Бенуа, 1973: 90—94).

SPHAEROTHECA ALPINA Blumer, Beitr. Krypt.-Fl. Schweiz 7: 116. 1933.

Specimens examined: Saskylach, on *Saxifraga punctata* L., 1 VIII 72; Doruochi near Saskylach, on *S. punctata*, 2 VIII 72.

SPHAEROTHECA ASTRAGALI L. Junell, Svensk Bot. Tidskr. 60: 376. 1966.

Specimens examined: Jakutsk, Botanical Garden, on *Astragalus danicus* Retz., 8 IX 72; Krest Tomptor near Ojm'akon, on *A. inopinatus* Boriss. hosp. nov., 3 IX 72; Zigansk, on *A. oroboides* Horn., 25 VIII 72; Krest Tomptor near Ojm'akon, on *A. oroboides*, 3 IX 72; Srednekolym'sk, on *A. schelichowii* Turcz. hosp. nov., 27 VIII 72; Krest Tomptor near Ojm'akon, on *Astragalus* sp., 2 IX 72.

SPHAEROTHECA DELPHINII (Karst.) Blumer, Beitr. Krypt.-Fl. Schweiz 7: 129. 1933.

Specimens examined: Jakutsk, Botanical Garden, on *Trollius asiaticus* L. hosp. nov., 9 IX 72, on *T. sibiricus* Schipcz. hosp. nov., 9 IX 72.

SPHAEROTHECA DRABAE Juel, Bot. Not. 1890: 9. 1890.

Specimens examined: Srednekolym'sk, on *Descurainia sophoides* (Fisch.) Schulz hosp. nov., 25 VIII 72; Saskylach, on *Parrya nudicaulis* (L.) Rgl., 1 VIII 72; Pochodsk, on *P. nudicaulis*, 17 VIII 72.

SPHAEROTHECA ERIGERONTIS-CANADENSIS (Lév.) L. Junell, Svensk Bot. Tidskr. **60**: 387. 1966. — *S. fuliginea* Pollacci (f. *asteris* Ch. Benoist, f. *crepidis* Jacz. and f. *taraxaci* Potebnia).

Specimens examined: Jakutsk, Botanical Garden, on *Crepis tectorum* L., 10 IX 72; Verchojansk, on *Erigeron acre* L., 11 VIII 72; Olen'ok, *Taraxacum officinale* coll., 28 VIII 72; Doruochi near Saskylach, on *T. officinale*, 2 VIII 72; Zigansk, on *T. officinale*, 5 VIII 72; Verchojansk, on *T. officinale*, 11 and 13 VIII 72; Zyr'anika, on *T. officinale*, 23 VIII 72; Srednekolym'sk, on *T. officinale*, 25 VIII 72; Krest Tomptor near Ojm'akon, on *T. officinale*, 1 IX 72; Jakutsk, Tuimada Valley, on *T. officinale*, 8 IX 72.

According to K. A. Benoist and E. M. Karpova-Benoist, this species is distributed in Central and South-East Yakutia on *Aster sibiricus* L., *Crepis tectorum*, *Taraxacum ceratophorum* DC., *T. dealbatum* Hand.-Maz. and on *Taraxacum* sp. (Бенуа, Карпова-Бенуа, 1973: 97—100).

SPHAEROTHECA FERRUGINEA (Schlecht. ex Fr.) L. Junell, Trans. Brit. Mycol. Soc. **48**: 547. 1965. — *S. macularis* (Wallr.) Magn. em. Jacz. f. *sanguisorbae* Rabenh.

Specimens examined: Olen'ok, on *Sanguisorba officinalis* L., 26 and 27 VIII 72; Zigansk, on *S. officinalis*, 6 VIII 72; Srednekolym'sk, on *S. officinalis*, 25 VIII 72; Krest Tomptor near Ojm'akon, on *S. officinalis*, 1 IX 72; Jakutsk, Botanical Garden, on *S. officinalis*, 8 IX 72.

This species was found also in South Yakutia on *S. officinalis* (Бенуа, Карпова-Бенуа, 1973: 93).

SPHAEROTHECA FUGAX Penz. & Sacc., Atti r. Ist. Ven. sci. **6**: 586, 1884. — *S. macularis* (Wallr.) Magn. em. Jacz. f. *geranii* Potebnia.

Reported by K. A. Benoist and E. M. Karpova-Benoist on *Geranium erianthum* DC. and on *G. pratense* L. in Central and South-East Yakutia (Бенуа, Карпова-Бенуа, 1973: 94).

SPHAEROTHECA FULIGINEA (Schlecht. Fr.) Poll., Atti Ist. Bot. Univ. Pavia II: 9. 1905. — *S. fuliginea* Poll. f. *veronicae* Jacz.

Specimens examined: Jakutsk, Tuimada Valley, on *Veronica longifolia* L., 8 IX 72.

According to K. A. Benoist and E. M. Karpova-Benoist, this species was found in Central and South-West Yakutia on *V. longifolia* L. (Бенуа, Карпова-Бенуа, 1973: 96).

SPHAEROTHECA MELAMPYRI L. Junell, Svensk Bot. Tidskr. **60**: 380. 1966. — *S. fuliginea* Poll. f. *euphrasiae-officinalis* Dietrich.

Specimens examined: Olen'ok, on *Castilleja pallida* (L.) Kunth var. *rubra*, 13 VIII 72; Srednekolym'sk, on *C. pallida*, 25 VIII 72; Zigansk, on *Euphrasia frigida* Pugsl. hosp. nov., 6 VIII 72; Doruochi near Saskylach, on *Pedicularis capitata* Adams, 2 VIII 72; Saskylach, on *P. oederi* Vahl, 1 VIII 72; Doruochi near Saskylach, on *P. oederi*, 2 VIII 72; Srednekolym'sk, on *P. sceptrum-carolinum* L., 25 VIII 72.

This species was also found in Central Yakutia on *Euphrasia tatarica* Fisch. (Бенуа, Карпова-Бенуа, 1973: 97).

SPHAEROTHECA PANNOSA (Wallr. ex Fr.) Lév., Ann. Sci. Nat., Bot. III **15**: 138. 1851. — *S. pannosa* Lév. var. *rosae* Woronichin.

Specimens examined: Jakutsk, Botanical Garden, on *Rosa rugosa* Thunb., 8 IX 72, on *Rosa* sp., 8 IX 72.

Reported by K. A. Benoï and E. M. Karпова-Benoï in South Yakutia only on *Rosa acicularis* Lindl. (Бенуа, Карпова-Бенуа, 1973: 90).

SPHAEROTHECA PLANTAGINIS (Cast.) L. Junell, Svensk Bot. Tidskr. 60: 382. 1966. — *S. fuliginea* Poll. f. *plantaginis* Duby.

Reported on *Plantago media* L. in South-West Yakutia (Бенуа, Карпова-Бенуа, 1973: 97).

SPHAEROTHECA POLEMONII L. Junell, Symb. Bot. Upsal., XIX: 82. 1967. — *S. fuliginea* Poll. f. *polemonii* Jacz.

This species was found on *Polemonium coeruleum* L. and on *P. pulchellum* Bge. in South Yakutia (Бенуа, Карпова-Бенуа, 1973: 95).

SPHAEROTHECA XANTHII (Cast.) L. Junell, Svensk Bot. Tidskr. 60: 382. 1966. — *S. fuliginea* Poll. (f. *senecionis* Jacz. and f. *asteris* Ch. Benoï).

Specimens examined: Doruochi near Saskylach, on *Arnica angustifolia* DC., 2 VIII 72; Zigansk, on *Senecio jacobaea* L., 5 VIII 72; Jakutsk, Tuimada Valley, on *Senecio* sp., 8 IX 72.

This species was found also in Central and South Yakutia on *Aster sibiricus* L., *Senecio asiaticus* Schischk. & Serg., *S. erucifolius* L., *S. jacobae* and on *S. resedifolius* Less. (Бенуа, Карпова-Бенуа, 1973: 98—99).

UNCINULA ADUNCA (Wallr. ex Fr.) Lév., Ann. Sci. Nat., Bot. III 15: 151. 1851. — *U. salicis* Winter f. *salicis*.

Specimens examined: Srednekolym'sk, on *Salix glauca* L., 25 VIII 72; Zigansk, on *S. hastata* L., 5 and 6 VIII 72; Srednekolym'sk, on *S. hastata*, 25 VIII 72; Ust'-Nera, on *S. hastata* leg. E. Parmasto, 28 VIII 72; Krest Tomptor near Ojm'akon, on *S. hastata*, 2 IX 72; Jakutsk; Zuzur-Muran Hill, on *S. pirolifolia* Ldb., 10 IX 72, Tuimada Valley, on *S. xerophila* Flod., 8 IX 72, Zuzur-Muran Hill, on *S. xerophila*, 10 IX 72, Tuimada Valley, on *Salix* sp., 8 IX 72.

In South and Central Yakutia this species is reported on *Salix dasyclados* Wimm., *S. depressa* Fr., *S. pirolifolia*, *S. livida* Wahlb., *S. livida* Wahlb. × *S. glauca* L., *S. viridula* Anderss. × *S. gmelinii* Pall. and on *Salix* sp. (Бенуа, Карпова-Бенуа, 1973: 123—130).

Conidial states of unknown position.

We have found conidial states indistinguishable from the conidial states of other species, as the hosts have more than one powdery mildew species known elsewhere.

Specimens examined: Pochodsk, on *Oxytropis alpicola* Turcz. hosp. nov., 17 VIII 72; Olen'ok, on *O. czekanovskii* Jurz. hosp. nov., 29 VIII 72.

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UURIMUSI JAKUUTIA SEENESTIKUST. IV.

Jahukastelised (*Erysiphaceae* Lév.)

27. juulist 12. septembrini 1972 toimunud ekspeditsioonil tehti Jakuutia ANSV põhja-, ida- ja keskosas kindlaks 29 jahukasteliste sugukonda kuuluvat liiki 114 peremeestaimel. Neist üht liiki — *Microsphaera rosae* sp. nov. — pole seni kirjeldatud. Leiti ka 30 uut peremeestaimet.

Selgus, et Jakuutia põhjaosa metsatundras leidub 10, põhjataigas 20, Verhojanski külmapooluse piirkonnas 9 ja Oimjakoni külmapooluse läheduses 8 liiki jahukastelisi. Kesктаига piirkonnas tehti kindlaks 25 jahukastelist, kusjuures neist 8 esineb ainult selles piirkonnas, levimata kaugemale põhja poole.

Seni on Jakuutias kindlaks tehtud 38 jahukasteseene liiki, mis parasiteerivad 164 peremeestaimel.

Harju KAPIC

ИССЛЕДОВАНИЕ ГРИБОВ ЯКУТИИ. IV.

Мучнисто-росяные грибы. Семейство *Erysiphaceae* Lév.

В ходе экспедиции в Северную, Восточную и Центральную Якутию с 27 июля по 12 сентября 1972 г. было обнаружено 29 видов мучнисто-росяных грибов, паразитирующих на 114 видах растений. Один из них — *Microsphaera rosae* sp. nov. — новый для науки. Кроме того, найдено 30 новых для науки видов растений, питающих мучнисто-росяные грибы. Выяснилось, что в лесотундре Северной Якутии распространено 10, в северной тайге 20, в районе Верхоянского полюса холода 9 и в окрестностях Оймяконского полюса холода 8 видов мучнисто-росяных грибов. В районе центральной тайги обнаружено 25 видов мучнисто-росяных грибов, причем 8 из них найдены только в данном районе. До сих пор в Якутии обнаружено 38 видов этих грибов, паразитирующих на 164 видах растений.