LICHEN ASSOCIATIONS FROM THE INUNDATION AREAS OF TISZA IN HUNGARY AND JUGOSLAVIA

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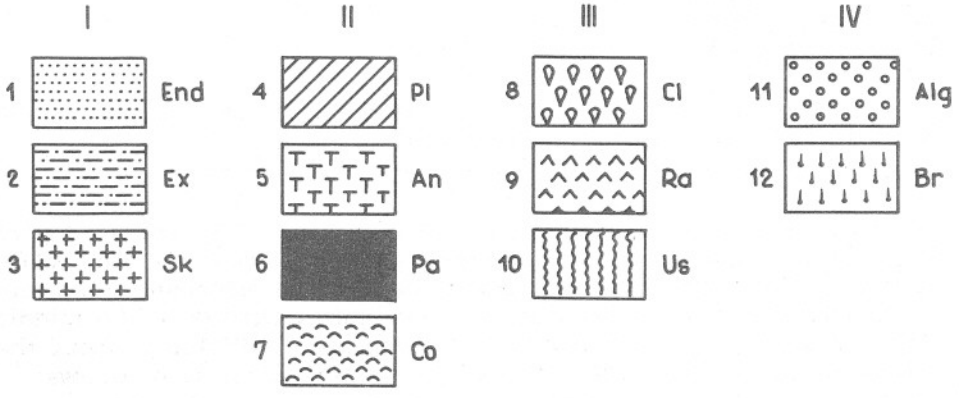
(Received December 12. 1964.)

Lichen associations observed till in the inundation areas of Tisza in Hungary and Jugoslavia are, according to their substrata: (1) epilithic, (2) ground-dwelling, (3) epiphytic, (4) epixylous communities.

The possible development of the different coenoses is determined well by substratum itself. The frequent occurrence of thoroughly different coenoses on the same susbstratum may be explained by local circumstances, by the macro and microclimatic content of the biotope, effect of biotopic factors, and competition relations. The joint effect of these factors makes possible the development of dominance relations, the occurrence of some species with high covering value, other species being pressed among the accessory members.

In my present paper I am dealing with lichen associations occurring on anti-inundation buildings on the flood area of Tisza, on dams and inside them, in mirror of synoecologic factors.

The epilithic lichen associations occurring along the upper (I), middle (II), and lower (III) reaches of Tisza are contained in the following classification on basis of O. K l e m e n t ' s arrangement (1955):



Classe: Epipetretea lichenosa Klem. 1955

Order: Rhizocarpetalia Klem. 1950

Alliance: Acarosporion fuscatae Klem. 1950

		I	II	III
Ass.	1. *Aspicilietum cinereae* Frey 1922		C	
	Alliance: Parmelion saxatilis			
Ass.	2. *Parmelietum molliusculae* Gams 1927		A	
Ass.	3. *Parmelietum conspersae crisicum* (Klem. 1953) Gallé 1966	A	A	
	Order: Xeroverrucarietalia Hadač 1944			
	Alliance: Caloplacion pyraceae Klem. 1955			
Ass.	4. *Aspicilietum calcareae* (Dr 1925) Klem. 1955		C	
Ass.	5. *Verrucarietum nigrescentis* (Kaiser 1926) Gallé 1930	S	S	S
	Alliance: Caloplacion decipientis Klem. 1955			
Ass.	6. *Caloplacetum murorum* (Dr 1925) Kaiser 1926	C	A, B, C	B, C
Ass.	7. *Caloplacetum citrinae* (Gallé 1935) Beschel 1950		B, C	C
Ass.	8. *Lecanoretum albomarginatae* (Kaiser 1926) Gallé 1962	S	A	S
Ass.	9. *Physcietum teretiusculae* Hilitz. 1927.		B	
	Alliance: Collemion rupestris Klem. 1955			
Ass.	10. *Placynthietum nigri* (Dr 1925) Klem. 1935 Klem. 1955		C	
	Classe: Epigaeetalia lichenosa Klem. 1955			
	Alliance: Toninion coeruleonigricantis Hadač 1958			
Ass.	11. *Endocarpetum pusilli* Gallé 1964	L		L

(Adnotation: C = calx, B = concrete, A = andesite, S = other silicate formation, brick surface, L = loess, yellow soil.)

In the following part of my paper I give a short characterisation of the epilithic lichen communities, describing their composition, the oecologic factor. The round diagrams placed besides the associations indicate the biological spectra of associations. The figures written in the middle of the diagrams show the number of coenological recordings about the association in question. The marks of the ways of life are as follows:

1. **Aspicilietum cinereae** Frey, 1922.
Characteristic species:

Ex	*Aspicilia*	*cinerea*	2—5	V
Ex	—	*gibbosa*	+—3	III
Ex	—	*caesiocinerea*	+—1	III
Ex	*Lecanora*	*rupicola*	+—1	III

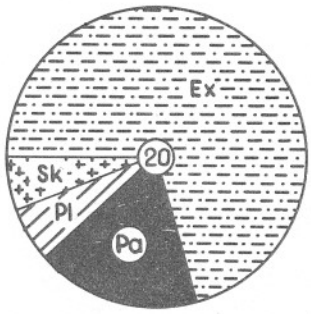


Fig.1

The species combination is formed, apart from the described ones, by *Acaraspora, Candelariella, Diploschistes,* other *Parmelia* and *Rhizocarpon* species.

Oecological characterisation: highly photophilous, xerophytic communities which are fond of silicate rocks.

Occurence along Tisza and tributaries: II. Tiszafüred, bridge abutment: andesite, Klárafalva, Deszk, Ferencszállás dam of Maros: andesite.

2. **Parmelietum molliusculae** GAMS, 1937.
Characteristic species:

Pa	*Parmelia*	*molliuscula*	3—4	V
Pa	—	*prolixa*	1—2	IV
Pa	—	*saxatilis*	+—2	IV
Pa	—	*fuliginosa*	+—1	I

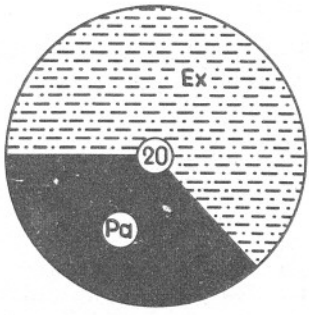


Fig.2

Apart from the described ones, there occur also different species of *Rhizocarpon, Acarospora, Aspicilia, Lecanoma, Diploschistes* and *Candelariella.*

Characterisation: photophilous, xerophytic and acidophilous association. It endures also a strong rise in temperature.

Occurrence: I.: Tokaj, quarry. It occurs on steep andesite rocks exposed to precipitation, rainfall. The occurrence does not fall immediately on the inundation ares of Tisza: being, however, near the river bed, it is under the oecological influence of factors produced by the river.

3. **Parmelietum conspersae crisicum** (Klem., 1953) Gallé, 1966.
Characteristic species:

Pa	*Parmelia conspersa*	1—4	V
Pa	— *glomellifera*	1—3	IV
Pa	— *isidiata*	+—1	III

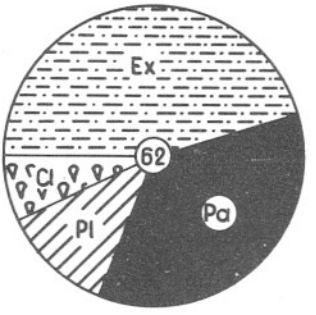


Fig.3

Apart from the recited ones, several species of *Parmelia, Lecidea, Aspicilia, Lecanora, Acarospora,* epilith *Physcia, Candelariella, Caloplaca, Verrucaria* form the characteristic species combination. There is characteristic the occurrence of *Parmelia isidiata* from the isidious *Parmelia* species, and that of *Cladonia* species on wet, rather shady rock surfaces, too, with lesser covering value.

Oecological characterisation: photophilous acidophilous, hygrophytic association enduring even high temperature, and being nitrotolerant, as well.

Occurrence: I.: Tokaj, quarry: andesite. II.: Tiszafüred, bridge abutment; andesite (Cf.: Gallé, 1966—I: 271, and 1966—II: 33—39.)

4. **Aspicilietum calcareae** (Du Rietz 1925) Klem 1965.
Characteristic species:

Ex	*Aspicilia calcarea*	+—4	V
Pl	*Lecanora subcircinata*	+—2	III
Pl	*Caloplaca* (Blast.) *teicholyta*	+—2	II
Ex	*Sarcogyne pruinosa*	+—1	III

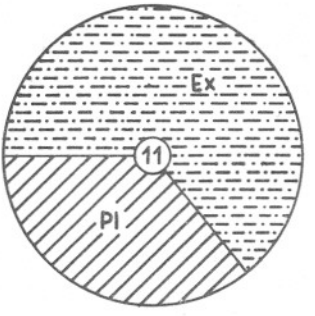


Fig.4

Oecological characterization: photo- and thermophilous, nitrotolerant association, being fond of lime and enduring aridity.

Occurrence: II.: Mindszent, Kurca-mouth: limestone. (Cf.: Gallé 1966, I.: 273).

5. **Verrucarietum nigrescentis** (K a i s e r 1926) G a l l é 1930.
C h a r a c t e r i s t i c s p e c i e s :

Ex	*Verrucaria nigrescens*	+—4	V
End	*Staurothele catalepta*	+—1	IV
End	*Verrucaria muralis*	+—3	IV
End	— *calciseda*	+—2	III

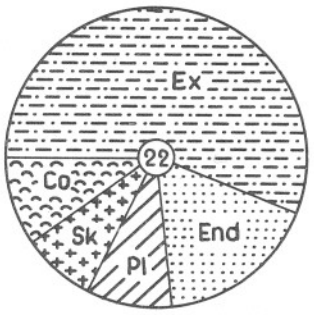


Fig.5

Pioneer ensemble on every kind of limestone rock or substratum of lime content.

O c c u r r e n c e : II.: Dongér, Tiszazug: concrete; Tiszafüred: limestone. Csongrád: cement and brick. Tiszabura, Tiszaroff, Tiszasüly: brick. — III.: Szeged; Zenta, Óbecse: brick and cement (Cf. Gallé, 1960:20; 1966—I. 272.).

6. **Caloplacetum murorum** (D R 1925) K a i s e r 1926.
C h a r a c t e r i s t i c s p e c i e s :

Pl	*Caloplaca murorum*	1—4	V
Pl	*Lecanora albescens*	+—3	III
Ex	*Lecania erysibe*	+—1	II
Pl	*Caloplaca decipiens*	+—4	IV
Ex	*Lecanora dispersa*	+—3	IV

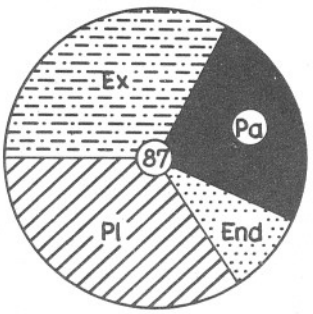


Fig.6

O e c o l o g i c a l c h a r a c t e r i s a t i o n : photophilous and nitrotolerant association, enduring aridity and hgh temperature. Its covering degres in high. The substratum is often covered by the vellow dominant and grey subdominant species.

O c c u r r e n c e : On limestone, lime mortar, cement and concrete buildings, dams covered with brick allong the whole Tisza: i. e. it is equally frequent on I—II—III sectors (Cf. G a l l é, 1960: 21. sub *Caloplacetum decipientis;* 1966—I:274).

7. **Caloplacetum citrinae** (Gallé 1935) Beschel 1950.
Characteristic species:

SK	*Caloplaca citrina*		3—5	V
Pl	—	*decipiens*	1—2	II
Pl	—	*murorum*	+—1	II
Pa	*Physcia orbicularis*	*cycloselis*	+—2	I
Pa	—	*calcicola*	+	I

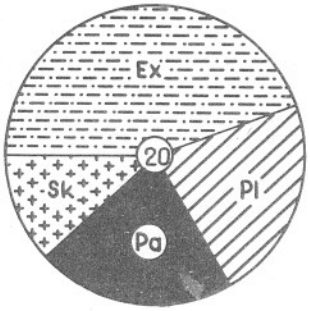


Fig.7

Oecological characterization: higbly nitro-and even urophilous, photophilous, xerophytic association, occurring in the lower mortar of stone buildings, stone walls above the ground. It is a lichen association forming even covers, covering large surfaces, being visible from a great distance owing to its yellow colour.

Occurrence: II.: Mindszent, bank of Tisza: lime stone; Szentes, Kurca-mouth, main channel at Dongér, Újszeged, bank of Tisza: concrete. III.: Zenta, quay: cementmortar (Cf. Gallé, 1966:275.).

8. **Lecanoretum albomarginatae** (Kaîser 1926) Gallé 1962.
Characteristic species:

Pl	*Lecanora (Squam.) albomarginata*		+—5	V
Pl	—	*murorum*	+—4	III
Pl	—	*albescens*	+—4	III
Pl	*Caloplaca (Gasp.) decipiens*		+—3	III
Pl	—	*muralis*	+—1	I

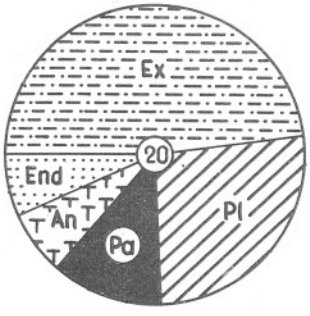


Fig.8

Apart from the recited ones, *Lecanora, Verrucaria, Caloplaca, Candelariella,* epilith *Physcia* species form the species combination.

Oecologic characterization: it is a photophilous, xerophytic association, occurring in andesite, on brick surface on concrete buildings. It endures well dustiness, as well, dwelling willingly on dam rims, ramps, fill slopes lying on a higher place.

Occurrence: it occurs in sectors of Tisza I—II—III equally: on andesite, brick, and concrete surfaces (Cf. Gallé, 1962:180; 1966—I:276).

9. **Physcietum teretiusculae** Hilitz 1927.
Characteristic species:

Pa	*Physcia teretiuscula*		+—3	V
Pl	*Caloplaca decipiens*		+—1	II
Pa	*Physcia sciastra*		+—1	I
Pa	—	*nigricans*	+—1	I
Pa	—	*caesia*	+—1	I
Pa	—	*vainioi*	+—1	I

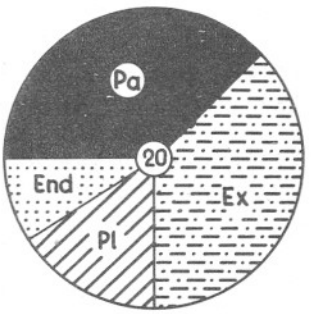


Fig.9

Oecological characterization: photo- and xerophytic, highly nitrotolerant and calciphilous association.
Occurrence: II.: Tiszapalkonya, bridge ramp: cement.

10. **Placynthietum nigri** (DR 1925) Klem. 1955.
Characteristic species:

Co	*Placynthium nigrum*		2—5	V
Co	*Collema rupestre*		1—2	III
Ex	*Protoblastenia rupestris*		+—1	III

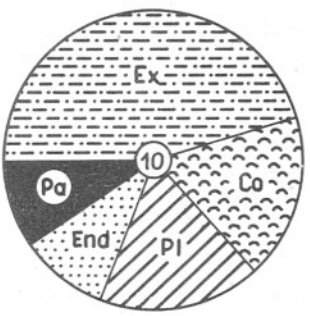


Fig.10

The species combination is formed, apart from the above mentioned ones, by *Verrucaria, Caloplaca, Aspicilia* and the epilithic *Physcia* species.
Oecological characterization: It is photophilous, xerophytic, on basic substratum.
Occurrence: II.: Deszk, bank of Maros: on rocks of lime content.
Only one of the coenoses dwelling on the ground occurs in the inundation area of Tisza. It is the following loessophilous association.

11. **Endocarpetum pusilli** Gallé 1964
Characteristic species:

Pl	***Endocarpon pusillum***	+—2	IV
Pl	— *pallidum*	+—1	IV
Pl	— *sorediatum*	+—1	II
Pl	*Lecidea (Psora) decipiens*	+—1	II
Ex	*Lecanora crenulata argillicola*	+—4	V

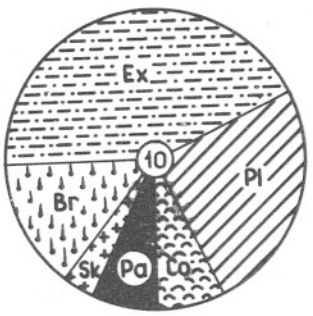


Fig.11

There occur, apart from the enumerated ones, also calciphilous *Calopcala, Candelariella, Collema, Leptogium, Xanthoria* and *Physcia* species, with lower D and K values.

Oecological characterization: it is a photophilous xerophytic lichen association, preferring a moderate rise in temperature and periodical moistening. Its claim to light is 2000×2500 lux.

Occurrence: II.: Kopaszhegy in Tokaj: on loess wall (Cf. Gallé, 1964:82; 1966:278).

After having described and characterized the epilithic and ground-dwelling lichen coenoses, I am coming to describing the epiphytic and crustaceous communities. At their systematization I have followed the classification published in Barkman's standard work (1958), as follows:

Classe: Epiphytetea lichenosa Klem. 1955.

Order: Leprarietalia Barkm. 1958.
Alliance: Calicion hyperelly Hadač 1944 em. Barkm. 1958.
Ass. 12. Leprarietum candelaris (Mattick 1938) Barkm. 1958.

Order: Lecanoretalia variae Barkm. 1958.
Alliance: Lecanorion variae Barkm. 1958.
Ass. 13. Candelarietum concoloris (Gallé 1935) Felf. 1941.
Ass. 14. Lecanoretum allophanae Duvign 1942.
Ass. 15. Lecanoretum symmictae Klem. 1953.
Ass. 16. Lecanoretum carpineae continentale (Gallé 1930) Barkm. 1958.

Order: Arthonietalia radiatae Barkm. 1958.
Alliance: Graphidion scriptae Ochsn. 1928 em. Barkm. 1958.
Ass. 17. Arthonietum dispersae Gallé 1935.

Order: Physcietalia ascendentis Mattick 1951 em. Barkm. 1958.
Alliance: Buellion canescentis Barkm. 1958.
Ass. 18. Buellietum punctiformis Barkm. 1958.
Alliance: Xanthorion parietinae Ochsn. 1928 em. Barkm. 1958.
Ass. 19. Xanthorietum candelariae (Gams 1927) Barkm. 1958.
Ass. 20. Physcietum ascendentis Frey et Ochsn. 1926.
Ass. 21. Parmelietum acetabuli Ochsn. 1928.
Ass. 22. Parmelietum caperatae Felf. 1941.

Order: Parmelietalia physodo-tubulosae Barkm. 1958.
Alliance: Parmelion saxatilis Bark. 1958.
Ass. 23. Parmelietum furfuraceae Hilitz. sens. Ochsn. 1928.
Subass. protococcetosum viridis Barkm. 1958.

The detailed description of the single coenoses is given in the above succession.

12. **Leprarietum candelaris** (Mattick 1938) Barkm. 1958.
Characteristic species:

Sk	*Lepraria candelaris*	3—4	V
Ex	*Lecanora subfuscata*	+—1	I
Ex	— *allophana*	+—1	I
Ex	*Lecidea glomerulosa*	+—1	III
Ex	— *parasema*	+—1	II

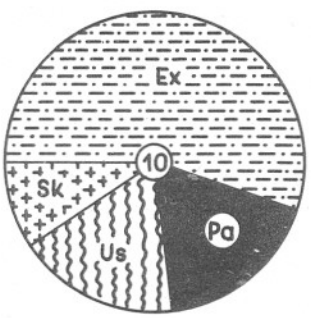


Fig. 12

There belong to the species combination also some *Ramalina, Parmelia, Xanthoria* and *Caloplaca* species, with smaller dominance values.

Oecological characterization:
It is a neutrophilous or a little acidophilous lichen association, occuring on the northern or northwestern, resp. northeastern sides of less illuminated *Quercus* trunks standing in a diffuse light, with cracked bark, which is conspicuous by its vellow hue. The character species associates with croustaceous species of short stature. The character species are often mixed also with smaller thalli of foliaceous lichens belonging to the association *Physcietum ascendentis.*

Occurrence: II.: Tiszád, inundation area: *Quercus.* — Szikra, wood of stumps: *Quercus.*

13. **Candelarietum concoloris** (Gallé 1935) Felf. 1941.
Characteristic species:

Sk	*Candelaria concolor*	3—4	V
Sk	*Xanthoria candelaria*	1—2	II
Pa	— *parietina*	+—1	IV
Pa	*Physcia aipolia*	+—1	I
Pa	— *orbicularis*	+—1	I
Pa	— *pulverulenta*	+—1	I
Pa	*Parmelia exasperatula*	+—3	III

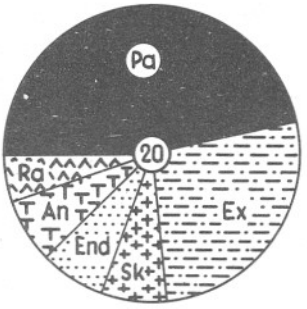


Fig. 13

Apart from the enumerated species, *Parmelia fulignosa, Lecanora subfuscata* occur in the associations of localities along Tisza.

Oecological characterization:
Photophilous, less xerophytic association appearing on trunks of tres with smooth bark or on smooth surfaces of bark fragments of trees, with cracked bark. It is not fond ot the organic nitrogenous decomposition products.

Distribution: I.: Kisar, inundation area: *Prunus.* II.: Szikra, wood of stumps: *Quercus.* III.: Zenta, bank of Tisza: *Quercus.*

14. **Lecanoretum allophanae** Duvign. 1942.
Characteristic species:

Ex	*Lecanora allophana*	2—4	V
Ex	— *subrugosa*	+—2	IV
Ex	— *varia*	+—1	II
Ex	— *carpinea*	+—1	I
Ex	*Candelariella vitellina*	+—2	II

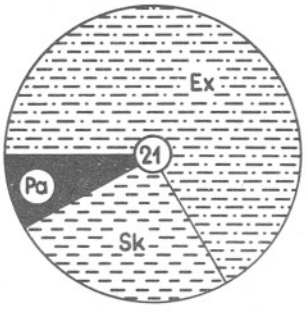


Fig. 14

There occur, in the association apart from the above mentioned ones, also species characteristic of *Physcietum,* namely *Physcia ascendens, Ph. orbicularis, Ph. stellaris granulata,* anyhow with smaller D value.
Oecological characterisation:
I observed the association on tree-trunks *(Juglans, Fraxinus),* a little

cracked or with smooth bark, on two occassions on hoarding of the quays in Csongrád and Tápé (!). It is a highly photophilous lichen association contaîning also nitrophilous species and being inclined to form complexes with association of the order *Physcietalia ascendentis.*

Distribution: II.: Tiszafüred, bank of Tisza, and Apátfalva, bank of Maros: *Juglans.* Martfű, bank of Tisza: *Fraxinus:* Csongrád and Tápé, bank of Tisza: on hoardings.

15. **Lecanoretum symmictae** Klem. 1953.
Characteristic species:

Ex	*Lecanora symmicta*	+	I
Ex	— *hageni*	+—2	V
Ex	— *subfuscata*	+—1	IV
Ex	— *umbrina*	+	I
Ex	— *varia*	+—1	IV
Ex	*Lecidea parasema*	+—1	III
Ex	*Rinodina pyrina*	+—1	I

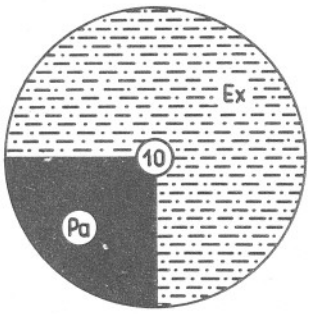


Fig.15

Apart from the enumerated species, in the examined area only a few *Parmelia* species associate with species characteristic of coenosis. These are, however, of small thallus, not well developed.

Oecological characterisation:
The association occurs on board surfaces boardings standing in a vertical position, on hoardings and lattice fences. It is moderately photophilous, thus occurring also in northwestern and northeastern exposition. It is formed generally by lichen species of short stature, of insignificant thallus.

Distribution: It occurs but fragmentarily on board buildings, hoardings in the upper (I) and middle (II) reaches of Tisza.

Notice: The localities were illuminated well. The *Lecanora symmicta,* that otherwise occurs but rarely on board surfaces along Tisza, either doesn't participate in the association or but in shape of sterile thallus-spots. In these cases the *Lecanora hageni* takes over the role of dominant species. In my opinion it would be right to separate the variant *Lecanoretum symmictae var. lecanorosum hageni* of such composition inside the association.

16. **Lecanoretum carpineae continentale** (Gallé 1930) Barkm. 1958.
Characteristic species:

Ex	*Lecanora carpinea*	+—4	V
Ex	*Caloplaca cerina*	+—1	IV
Ex	*Bacidia rubella*	+—1	I
Ex	*Lecanora allophana*	+—4	V
Ex	*Buellia punctiformis*	+—2	II
Ex	*Candelariella vitellina*	+—1	II
Ex	*Rinodina pyrina*	+—1	I
Sk	*Candelaria concolor*	+—1	I
Sk	*Phlyctis argena*	+—1	I
Ex	*Lecidea elaeochroma*	+—2	V
Sk	*Pertusaria globulifera*	+—2	II

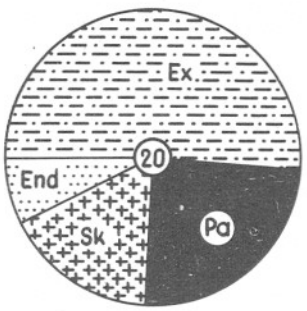


Fig. 16

There appear in the species mobination, apart from the abovementioned species, also some foliaceous lichens of smaller value (species *Parmelia* and *Physcia),* from the fruticose lichens the *Evernia prunastri,* and from the members of the order *Arthonietalia* the *Arthonia radiata.*

Oecological characterisation:

It is a neutrophilous, only less nitrotolerant association, preferring diffused light, and being inconstantly hygrophytic. It prefers the trunk of younger folliaceous trees with a smooth or but less gnarled bark.

Distribution: I.: Tiszabercel, Tokaj, inundation area: *Juglans, Robinia.* — II.: Tiszadob, bank of Dead Tisza: *Gleditschia.* Szikra, wood of stumps: *Quercus.* Mindszent, Kurcamouth: *Fraxinus.* Vidraér, towards Labodár: *Fraxinus.* Klárafalva, Ferencszállás, Kiszombor: bank of Maros, *Prunus.* — III.: Zenta, bank of Tisza: on trunks of *Morus* and *Alnus* (Cf. Gallé, 1930:935; 1935:263, 1960:22).

17. **Arthonietum dispersae** Gallé 1935.
Characteristic species:

End	*Arthonia dispersa*	+—2	V
End	— *radiata*	+—2	III
Sk	*Candelaria concolor*	+—1	II
End	*Polyblastiopsis fallaciosa*	+—1	I

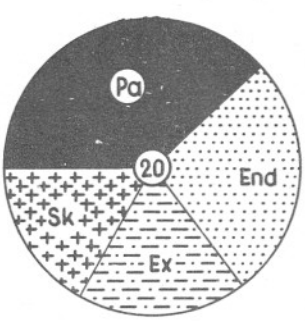


Fig. 17

The species combination is formed, apart from the enumerated species, also by *Lecidea, Lecanora, Parmelia, Xanthoria, Physcia* species.

Oecological characterisation:

It is a photophilous, xerophytic association, claiming intermittent moisture, tolerating hardly dustiness, presence of nitrogen.

Distribution: II.: Tiszadob: *Tilia.* Felgyő, besides Vidreér, towards Labodár: *Fraxinus.* Mártély, bank of Tisza: *Gleditschia.* Apátfalva, Deszk, bank of Maros: *Ailanthus.* Klárafalva, bank of Maros: *Prunus.* — III.: Zenta, bank of Tisza: *Betula* (Cf. Gallé, 1935:263—264; 160:21).

18. **Buellietum punctiformis** Barkm. 1958.

Ex	*Buellia punctiformis*	+—4	V
Ex	*Lecanora chlarotera*	+—1	II
Ex	*Candelariella vitellina*	+	I
Alg	*Protococcus viridis*	+—1	I

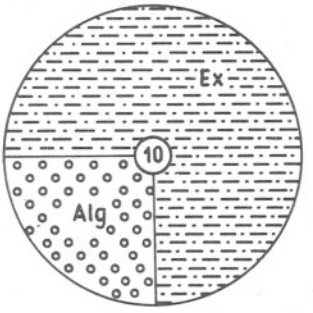


Fig.18

Oecological characterisation:

It is a lichen association consisting of photophilous, crustaceous, xerophytic species, occurring on isolated trunks of *Acer* and *Pinus,* resp. *Picea.* It tolerates but little the presence of nitrogenous decomposition producta. It forms a thin, hardly recognizable covering on the lower, wet parts of trinks, often making a complex with the green-alga *Protococcus viridis.*

Distribution: III.: Zenta, bank of Tisza: *Picea* and *Pinus* trunks. Zenta, Kereszteserdő: *Picea* and *Acer* trunks. It appears on trunks but in fragments and small degree of covering.

19. **Xanthorietum candelariae** (Gams 1927) Barkm. 1958.

Characteristic species:

Sk	*Xanthoria candelaria*	1—4	V
Pa	*Physcia orbicularis*	1—2	V
An	— *ascendens*	+—3	IV
Pa	*Parmelia labra*	+—3	IV
Pa	— *fuliginosa*	+—2	II
Pa	*Physcia grisea*	+—1	I
Pa	*Xanthoria parietina*	+—1	I
Ex	*Buellia punctiformis*	+	II

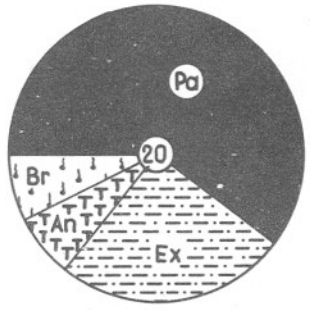


Fig.19

20. **Physcietum ascendentis** Frey et Ochsn. 1926.
Characteristic species:

An	*Physcia*	*ascendens*	1—5	V
An	—	*tenella*	1—3	IV
Pa	—	*stellaris*	1—3	IV
Pa	—	*pulverulenta*	1—3	IV
Pa	—	*grisea*	1—3	IV
Pa	—	*aipolia*	+—2	II

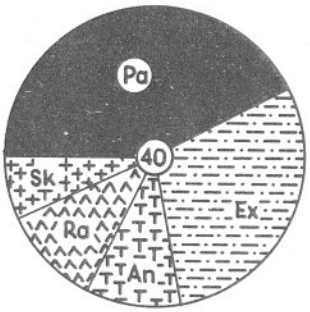


Fig. 20

The characteristic species combination is formed, apart from the enumerated ones, also by several crustaceous, foliaceous, and fruticose lichen species. Its variations, observed also in the inundation areas of Tisza, are *a) parmeliosum glabrae* Barkm. —*b) xanthoriosum substellaris* (Stein) Barkm. — *c) physciosum griseae* Barkm. — *d) physciosum leptaleae* Klem.

Oecological characterisation:

It is a photophilous, xerophytic lichen association, with a large oecological amplitude, tolerating eve distiness and presence of nitrogen-compounds.

Distribution: It is certainly the association of the examined area and of the Great Hungarian Plain that occurs the most frequently, in more variations. It is frequent on the trunks of any foliaceous trees set along sectors I—II—III of Tisza and, in fragments, even on board buildings and lattice fances (Cf. Gallé, 1960:25—25; 28 sub *Xanthorietum parietinae).*

21. **Parmelietum acetabuli** Ochsn. 1928.
Characteristic species:

Pa	*Parmelia*	*acetabulum*	+—2	V
Pa	—	*scortea*	+—2	IV
An	*Anaptychia*	*ciliaris*	1—3	IV
Pa	*Parmelia*	*quercina*	+—1	I

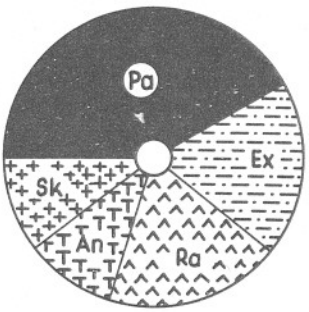


Fig. 21

There occur in this association, apart from the enumerated ones, also *Physcia, Candelaria, Xanthoria, Evernia, Lecanora, Lecidea, Ramalina*

and *Buellia* species among the character species of alliance, order, and classe.

Oecological characterisation:

It is moderately xerophytic, leking seither a strong irradiation nor dustiness.

Distribution: I.: Tokaj, bank of Tisza: *Populus alba.* II.: Vidraér, Labodár: *Fraxinus.* Szentes and Mindszent, inundation area of Tisza: *Fraxinus* (Cf. Gallé, 1960:26—27).

22. **Parmelietum caperatae** Felf. 1941.

Characteristic species:

Pa	*Parmelia*	*caperata*	1—4	V
Pa	—	*dubia*	+—1	V
Pa	—	*scortea*	+—3	IV
Pa	—	*acetabulum*	+—1	II
Pa	—	*fuliginosa*	1—2	II

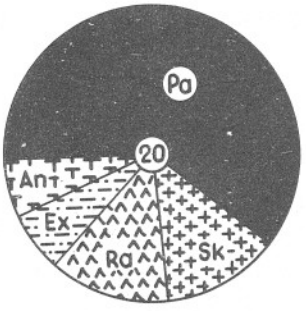


Fig. 22

There occur in the association also: *Candelaria, Physcia, Anaptychia, Ramalina, Lecidea, Buellia* and *Phlyctis* species.

Oecological characterisation:

It is a photophilous, less acidophilous, resp. neutrophilous association, moderately hygrophytic.

Distribution: I.: Tiszabecs, Kisar, Tivadar: on trunks of *Prunus* and *Fraxinus.* — II. Tiszadob, Pusztataksony, wood in Deszk: on trunks of *Prunus, Quercus,* and *Tilia* (Ff. Gallé, 1960:25).

23. **Parmelietum furfuraceae** Hilitz, sensu Ochsn. 1925.

Subass. protococcetosum viridis Barkm. 1958.

Characteristic species:

Ra	*Parmelia*	*furfuracea*	3—4	V
Us	*Usnea*	*hirta*	+—2	IV
Alg	*Protococcus*	*viridis*	+—1	I
Pa	*Parmelia*	*sulcata*	1—4	V
Pa	—	*physodes*	1—3	IV
Ra	*Ramalina*	*farinacea*	+—2	II

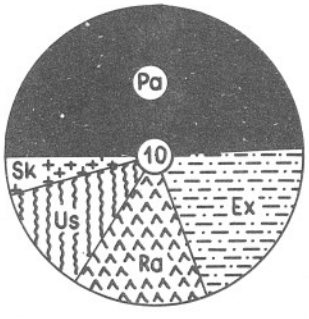


Fig. 23

Apart from the enumerated ones, also other *Parmelia species,* a few Lecanora and *Lecidea* species, and *Pertusaria amara* appear with a lower degree of covering. In localities of southern site there are always missing the *Cetraria* species and also the *Mycoblastus sanguinarius* mentioned by Klement (1. c. 161).

Oecological characterization:

The association occurs on the outermost trees of *Fraxinetum* set in the inundation areas of Tisza; it is an acidophilous, nitrophobous association, preferring diffused light. The subassociation appears in a better development on the trunks of trees which are wetter and less shaded.

Distribution: II.: Újszeged, bank of Tisza: on hoardings (in fragments). — III.: Adorján, bank of Tisza: on trunks of Fraxinus.

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