

## LICHENS OF THE ARBORETUM AT TISZAKÜRT AND HER SURROUNDINGS

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(Received December 28, 1966)

The elaboration of the lichen flora and lichen coenoses of Tiszakürt and her surroundings took place in the course of the systematic Tisza examination in the summer of 1966. The examined area can be divided into two parts, viz. the grove-woods of the inundation area and the near-by constructive works to control the floods, resp. the arboretum.

### Lichens of the mixed willow wood in the inundation area

The left bank of the Tisza, facing south-east, is bordered at the height of Tiszakürt, as well, by the association *Populion albae: Populeto-Salicetum*. Their dominant trees are: *Salix alba*, *S. fragilis*, *Populus alba*, *P. canadensis*, *P. nigra*, *P. tremula* here and there with some specimens of *Quercus robur* and *Fraxinus pennsylvanica*. On the trunks of these trees a synusium of *Xanthoria parietina*, *Physcia orbicularis*, *Ph. grisea*, *Lecanora carpinea*, *Lecidea elaeochroma* and *L. glomerulosa* appears in fragments. The members of synusium take the parts of tree-trunks above the inundation level and the thicker lower branches. The lichen thalli are little developed, are not closed to form a homogeneous cover of trunks, their apothecia are poorly developed and often even missing, thus a number of thalli are sterile. On the trunks zoogenous and anthropogenous effects can be observed. Beside the wood a roadway is leading, in its part near the dam there is frequent grazing, the animals again and again rub against the tree trunks preventing thus the formation of a more luxuriant lichen cover on them.

### Lichens of the anti-inundation cement buildings

On the concrete surface of the water sluices, on surfaces both of horizontal and vertical positions, the characteristic lichen coenoses are the calciphilous *Caloplacetum murorum* and *Lecanoretum albomarginatae*, some of whose members appear even on the cement and brick surfaces of the small bridges of the arboretum.

Both lichen associations are mostly xerophytic, consisting of mainly crustaceous species of high thermotolerant. Their thalli are small as well as their apothecia. The typical tonality of the association *Caloplacetum murorum* is yellowish while the *Lecanoretum albomarginatae* is rather greyish.

On the horizontal concrete cover-plate of a covered sluice basin a particularly well-developed lichen association *Lecanoretum albomarginatae* could be observed. On 20 test surfaces of the cover-plate, each 400 sq. cm, samplings have been taken. Their summary result is contained in the Table below:

### *Lecanoretum albomarginatae* (Kaiser) Gallé

	Character species	D	C/20
Pl	<i>Lecanora</i> ( <i>Squam.</i> ) <i>albomarginata</i>	+—2	V
Pl	— — <i>muralis</i>	+—2	III
Pl	<i>Lecanora albescens</i>	+—1	III
Alliance character species			
Pl	<i>Caloplaca</i> ( <i>Gasp.</i> ) <i>decipiens</i>	+—1	III
Pl	— — <i>murorum</i>	+—1	I
Pl	— — <i>teicholyta</i>	+—1	I
Order character species			
Ex	<i>Lecanora crenulata</i>	+—1	IV
End	<i>Staurothele catalepta</i>	+—1	IV
Ex	<i>Lecanora dispersa</i>	+	III
Ex	<i>Verrucaria nigrescens</i>	+—1	II
Ex	<i>Caloplaca pyracea</i>	+—1	I
Class character species			
Ex	<i>Candelariella aurella</i>	+—1	IV
Ex	— — <i>vitellina</i>	+—3	V
Pa	<i>Physcia vainioi</i>	+—2	II
Attending species			

Pa *Physcia orbicularis*, Pa *Ph. sciastra*, An *Ph. ascendens*, An *Ph. tenella*, Pa *Xanthoria parietina*, Pa *Xanthoria lobulata*, Ex *Candelariella xanthostigma*, Ex *Candel. athallina*, Ex *Lecania erysibe*.

### Lichens and mosses from the arboretum

A list of 53 species of *Gymnospermatophyta* and 288 species of *Angiospermatophyta* has been compiled by Ing. J. Papp (1965: 48—54), together with data concerning the trunk size of the older trees of nearly a hundred years of age. In his description he analyzes the importance of the arboretum, planted successfully in a lowland environment, emphasizes its good conditions, the principles of its augmentation, and

notices: „Bei Durchsicht der Liste wird es ersichtlich, dass hier die Vertreter der entlegensten Gebiete von Korea bis Kanada, von dem Himalaja-Gebirge bis Mexico in diesem Arboretum aufzufinden sind.”

The tree trunks are, owing to the climatic factors of the country, of xerophilous and mezophilous character (Felföldy, 1941). The former ones are almost without any lichen-moss cover, wearing at most single, mainly crustaceous lichen species, not associated in coenoses (*Lecanora carpinea*, *L. pallida*, *Lecidea olivacea*, *L. glomerulosa*, *Buellia punctata*). The basic part of mesophilous trunks enjoys some shelter by grass from running dry, being, therefore, less hygrophilous. Accordingly, that of trunks is settled by mosses (Musci) and by some lichens foliaceous (*Parmelia sulcata*, *P. dubia*, *Physcia grisea*). The most frequent of mosses are: *Pylaisia polyantha* (Hedw.) B. S. G., *Brachythecium salebrosum* (Web. et Mohr.) B. S. G., *Oxyrrhynchium swartzii* (Turn.) Warnst., *Leskea polycarpa* (Hedw.), *Camptothecium lutescens* (Hedw.) B. S. G., and — sporadically — *Rhynchostegium megapolitanum* (Web. et Mohr.) B. S. G. I mention here that there occur in the grass of the arboretum, in a mixture, *Brachythecium salebrosum*, *Camptothecium lutescens*, *Rhynchostegium megapolitanum*, *Brachythecium glareosum* (Spruc.) B. S. G., and on its wet soil *Barbula unguiculata* Hedw. moss species. (For their kind determination thanks are due to Director Dr. Barna Györfy, Budapest) The boles of tree trunks of mesophilous character are settled by xerophilous lichen species, as well. There are among them, apart from the above mentioned species, also some foliaceous lichen species (*Xanthoria parietina*, *X. fallax*, *Physcia orbicularis* var. *virella*, *Ph. ascendens*). The lichen association fragments, and synusia present in the arboretum on isolated stems, occur on mesophilous trunks.

The epiphytic lichen species, observed in the park at Tizsakürt, are summed up arranged in species groups in the following Table: p. 24.

From the lichen taxons, contained in the Table, the most interesting ones are doubtless the *Buellia schaeereri* De Not., present on the *Taxodium distichum*, and the *Chaenotheca hispidula* (Ach.) A. Zahlbr. f. *acicularis* (Sm.) Nád. v. (determ. F. Főriss, Miskolc), living en masse on the *Metasequoia* and developing small, stalked apothecia. The latter lichen species was first found in the course of the ten years long Tizsa examination.

The enumerated lichen species don't form well-developed coenoses in the arboretum at Tizsakürt. There appear association fragments on the isolated trunks and synusia consisting of the species on the tree groups of closed stock. From the associations first of all the *Physcietum ascendens* Ochs. n. is worth while being mentioned, with species: *Physcia ascendens*, *Ph. stellaris*, *Ph. orbicularis*, *Ph. grisea*, *Ph. leptalea*; *Xanthoria parietina*, *Lecidea olivacea*; *Buellia punctata*, *Lecanora carpinea*, *Rinodina pyrina*, *Evernia prunastri*, *Parmelia sulcata*. This association-fragment occurs mainly on the basic part of the trunks of *Aesculus hippocastanum*, *Juglans nigra*, *Populus tremula* and *Quercus robur*.

On the basic part of the *Aesculus hippocastanum*, *Fraxinus excelsior*, *Platanus acerifolia*, older *Populus alba*, *Robinia pseudacacia* trunks the *Physcietum ascendens physciosum griseae* Barkm. variant appears,

## PRESENCE OF EPIPHYTIC LICHEN SPECIES AND MOSSES

Epiphytic lichen and moss species, and their variations	O n t h e s t e m o f																																		
	Gymnospermae									A n g i o s p e r m a e																									
	Juniperus sabina	Metasequoia glyptostroboides	Picea pungens	Pinus nigra	— silvestris	— strobus	Pseudotsuga menziesii	Taxodium distichum	Acer campestre	— platanoides	Aesculus hippocastanum	— pavia	Allanithus altissima	Betula alba	Castanea sativa	Celtis occidentalis	Fraxinus excelsior	Juglans nigra	Platanus acerifolia	Populus alba	— tremula	Prunus cerasifera	— domestica	Quercus cerris	robur	rubra	Robinia pseudoacacia	Salix alba	— babylonica	Sophora japonica	Tilia cordata	— tomentosa			
<b>a) Lichenes</b>																																			
Buellia punctata																																			
— — f. depauperata	+																																		
— — var. chloropolia				△		△																													
— schaereri																																			
Chaenotheca hispidula f. acicularis		●																																	
Evernia prunastri																																			
Lecanora carpinea									△	+	△																								
— pallida													+																						
Lecidea glomerulosa																																			
— olivacea			+	+																															
Parmelia dubia																																			
— sulcata																																			
Physcia ascendens																																			
— grisea																																			
— — var. farrea																																			
— — var. furfuracea																																			
— leptalea																																			
— orbicularis var. virella																																			
— stellaris f. tuberculata																																			
Rinodina pyrina																																			
Xanthoria fallax																																			
— parietina																																			
— — var. chlorina																																			
<b>b.) Bryophyta</b>																																			
Brachythecium salebrosum																																			
Camptothecium lutescens																																			
Leskea polycarpa																																			
Oxyrrhynchium swartzii																																			
Pyloisla polyantha	△	△																																	
Rhynchostegium megapolitanum																																			

Signs used: ● = frequent, △ = sporadically present, + = rare

with the differential species *Physcia grisea* and — more rarely — *Evernia prunastri*. The other variant, the *Physcietum ascendens physciosum leptaleae* Klem., occurs, with the differential species *Physcia leptalea*, on the *Juglans nigra*, *Populus alba* and *P. tremula*, as well on the basic part of the *Salix babylonica* trunks.

Isolated trees of smooth trunk are characterized by the fragment of the lichen coenosis *Lecanoretum carpineae continentale* (Gallé) Barkm. whose character species, observed in the areal of the arbo-

return, are: *Lecanora carpinea*, *L. pallida*; *Lecidea parasema*, *L. olivacea*; *Buellia punctata*, *Rinodina pyrina*. It is remarkable how poorly the *Lecanora carpinea*, indicated as a character species of the association, grows in this lowland locality. Its apothecia are small, often closed, and even the number of these rudimentary apothecia is low. This phenomenon can be explained with the circumstances of moisture on the xerophilous trunks, unfavourable for the lichen, and with the rather high degree of getting covered with dust. The value of exhalation, measured with Piche's instrument, has been 12,1 cubic cm in twelve hours. The apothecia of *Lecanora carpinea* have been observed becoming rudimentary round the great cities of contaminated air. In the arboretum this factor is not present, therefore this phenomenon is to be attributed to above mentioned circumstances.

In the closed substance, in park-parts grown woodlike, a synusium *Lecanora carpinea* — *Lecidea olivacea* has been observed in the *Fraxineto-Quercetum*. The small crustaceous lichen species of the level community don't cover closed the surface of tree trunks but they appear scattered, more or less far from one another, touching one another but here and there. The diameter of the single thalli is 2—3 cm. The apothecia are but little developed in this part of the park, as well.

It is interesting to observe on these trunks the appearance of the so-called sterile spots. It is namely a frequent phenomenon that the thalli of the lichens belonging to different species don't take the place of rind surfaces where before some previous thalli of lichens or thalli of fungi lived. On these spots there aren't formed any lichen thalli. This phenomenon may be explained so that the active chemical agents of the thalli or previous thalli of the different species behave like antibiotics towards the lichen belonging to other species. This fact enables them, too, to ensure for themselves the rind surfaces already occupied.

In other localities it may be observed, as well, that where the thalli of the crustaceous lichens touch one another there appear, influenced by the differing chemical construction of the thallus, lighter and darker stripes and, under such circumstances, the appearance of the thalluses, taking place beside one another, is map-like. In other cases, on the other hand, this phenomenon may be explained with the colour contrast of the previous thalli, getting visible from beneath the thallus after it had developed. From the epilithic thalli the map-like surfaces by the Rhizocarpones are like this.

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