

# LICHENS OF THE CHICAGO REGION

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## INTRODUCTION

As of today, there have been 183 lichenized fungi reported, more or less reliably, in the literature from the twenty-two county Chicago region.<sup>1</sup> No fewer than 107 additional species, included herein, have yet to make their way into the literature, bringing the total to 290. Of these, we have documented more than 85% with confirmed herbarium records, nearly 90% of which were collected within the last 25 years; most of those have been vouchered since 1984. This flora includes 369 species inasmuch as we have included a number of lichens that we know from nearby counties.

It is well known that many lichens<sup>2</sup> are susceptible to air pollution, an environmental degradation that is so pervasive it is expected that, in many regions of the country, some lichens have been wholly eliminated by that agent alone. As early as 1898, Calkins & Huett (31)<sup>3</sup> noted that "lichens avoid cities, the smoke and gas being fatal to them." Some of the early reports of lichens from Cook, Du Page, La Salle, and Will counties in Illinois beggar the imagination given the conditions seen presently. Even as recently as 1958, the broad-lobed thalli of *Ramalina subampliata* evidently were collected routinely in central Illinois. They have not been seen alive since.

Calkins (1)<sup>3</sup> published *The Lichen Flora Of Chicago and Vicinity* through the Chicago Academy of Sciences in 1896. Essentially, his definition of "Chicago and vicinity" included Cook, Du Page, and northern Will counties in Illinois, and a portion of Lake County, Indiana. His flora included a complete bibliography, brief descriptions, and comments on local distribution and habitat. He indicated, for example, that *Ramalina americana* actually was found "throughout our territory" and that *Parmotrema perforatum* and *Punctelia subrudecta* were common. These species have not been recorded from those three counties in the modern era. One hundred years ago, Calkins noted that:

Localities in and around Chicago formerly rich in lichenose vegetation are now destitute of it. The species were and are mostly corticolous, with a few on rocks, where exposed, and even on the boulders of our prairies. But the

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<sup>1</sup>The Chicago region, described by Swink & Wilhelm (37), consists of three counties in southeastern Wisconsin: KENOSHA, RACINE, and WALWORTH; eleven in northeastern Illinois: BOONE, COOK, DE KALB, DU PAGE, GRUNDY, KANE, KANKAKEE, KENDALL, LAKE, McHENRY, and WILL; seven in northwestern Indiana: JASPER, LAKE, LA PORTE, NEWTON, PORTER, ST. JOSEPH, and STARKE; and BERRIEN County, Michigan.

<sup>2</sup>According to Richard C. Harris, of the New York Botanical Garden, noted mycological scholar and purveyor of lichenological truth, "lichen" was once supposed to "lick up" the moisture from the rocks on which it grew. Thus lichen is from *leichein*, Greek for *to lick*.

<sup>3</sup>Calkins's 1896 work on the lichen flora of the Chicago region is referenced numerous times throughout the text, so all references to Calkins default to Calkins (1) unless otherwise stated. References to Calkins & Huett hereafter refer to their 1898 flora of La Salle County, Illinois.

tidal waves of civilization have changed the conditions under which lichens grow, and to find them abundantly we must seek the country where the air on which they feed is pure and the substrates suitable.

If there truly was a time when *Ramalina americana* was regarded as common in the Chicago area, one scarcely can imagine what species constituted this once rich, preindustrial lichen flora. Even in the polluted industrial conditions at the turn of the century, Calkins described nineteen species as common or abundant in the Chicago region. Only two of these are common today: *Endocarpon pusillum* and *Physcia stellaris*. Three of the seven species we consider common today evidently were unknown to Calkins: *Caloplaca feracissima*, *Lecanora dispersa*, and *Phaeophyscia rubropulchra*. The first two are now ubiquitous on weathered concrete, flagstone, and pavement; *Phaeophyscia rubropulchra* is regularly encountered at the bases of trees in shaded areas. The coefficient of similarity<sup>4</sup> between species considered common in 1896 and those considered common today is 0.15. *Caloplaca ferruginea*, *Lecanora hybocarpa*, *Parmotrema perforatum*, and *Pertusaria macounii*, each listed as common by Calkins, have not been seen in recent years, even in the expanded twenty-two county region. Such comparisons and conclusions, however, must be made with circumspection. For example, Calkins-era specimens with these names usually are referable to some other species, often inconsistently. A Calkins Cook County specimen of *Caloplaca ferruginea* is referable to *C. cerina*, a species that is rare in the region as a whole.

The lichen flora has changed markedly since Calkins's era, and the change no doubt began as early as settlement. Not only have species been lost, but also it appears that species have been added, at least since Calkins's day. Calkins, for his four-county region, reported 125 names, which translate today into 106 recognized taxa; we now know of an additional 118 species, bringing the total to 224. We have yet to document 49 of those reported by Calkins with a modern record. The overall coefficient of similarity between the two floras is 0.5.

Wilhelm & Lampa (47) noted that only 40% of the present-day macrolichen flora of Du Page County was reported by Calkins. Some of that discrepancy is accounted for by recent changes in species concepts. Nearly 25% of the Du Page County species were not recognized in 1896. The presence of the remaining 35% of the current flora is less readily explained. While it is probable that both Calkins and current researchers have overlooked some species, it is also likely that other factors are involved. The air is freer of sulfur dioxide and certain other pollutants now than it was during the period of heavy smokestack industry, and lichen habitat characteristics in the region have also changed dramatically over the last century. Wilhelm & Lampa (47) proposed that:

The Tall-Grass Prairie biome of the Midwest, once replete with regular prairie fires and largely treeless except for scattered stands of open-grown oaks and hickories, has now a nearly continuous inhabitancy by many different kinds of trees, both native and introduced. This corticolous span now bridges the northern forests with those to the south and east. It is possible that such a change in the distribution of corticolous substrates has allowed at least less modal lichen species an opportunity to extend their ranges. It is doubtful, for example, whether *Flavopunctelia soledica* was native this far south, or that *Pyxine subcinerea* grew this far north prior to settlement.

There are yet other problems associated with our attempts to understand changes in the lichen flora of the Chicago region. Without examining each specimen, it is virtually impossible, for example, to be confident that Calkins's reports of *Arthonia lecideella* are referable to *A. caesia*, though every early specimen we have seen from Illinois is what we today call *A. caesia*. What species did Calkins call *Collema nigrescens*? Was he consistent in his use of the name *Pyrenula gemmata*? What lichen or lichens did he call

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<sup>4</sup> The coefficient of similarity was obtained with the formula  $2C/(A+B)^2$ , where C = list of species in common, A = list of species considered common by Calkins, and B = list of species considered common today.

*Parmelia tiliacea*? Specimens that Calkins called *Cladonia pyxidata* are usually referable to either *C. grayi*, *C. chlorophaea*, or *C. cryptochlorophaea*, but we have not seen all of his specimens. Early reports of *Sagedia laureri*, *Segestria laureri*, *Thelocarpon epilithellum*, and *T. majusculum* are all referable to *T. laureri*. *Lecanora argentata* and *L. populicola* were reported in the last century, but there have been recent revisionary works on *Lecanora* by Imshaug & Brodo (48), and since Calkins did not cite specimens, one cannot be sure that the specimens upon which these earlier reports were based have not been referred elsewhere by modern taxonomists.

Occasionally label data have caused confusion, as in the case of *Letharia columbiana* (Nutt.) J. W. Thomson. There is a Higginson label on a specimen in the herbarium of the Field Museum that reads "Chicago, Illinois." Attached is a handwritten bit of paper that appears to say "Chicago = legit." There is no apparent reason to believe that this species ever grew in Chicago, but the label is rendered somewhat credible by the fact that several Higginson specimens at the Field Museum have similar labels with various locations typed upon them, so "Chicago, Illinois" evidently was not the collector's address, which is believed sometimes to be the case.

#### SYNOPSIS OF CHICAGO REGION LICHENS

The lichenized fungi of the Chicago region are all ascomycetes. According to Harris (65), the Ascomycotina include two major lichenized groups without formal taxonomic standing: "Pyrenolichens" and "Discolichens." There are a few lichens for which ascomata have never been seen; these are referred to necessarily as the "sterile" lichens. The following is a synopsis of Chicago region orders and families distilled loosely from Harris (65).

**"Pyrenolichens":** *Ascoma typically a spherical or depressed-globose "pyrenocarp," wherein is contained the hymenium, exposed only through a small pore or opening; lichen substances absent, the chemistry restricted to lichexanthone and anthraquinones.*

- 1. Paraphyses gelatinized or lacking. . . . . VERRUCARIALES: VERRUCARIACEAE
- 1. Paraphyses evident and usually filamentous.
  - 2. Paraphyses unbranched or nearly so. . . . . STRIGULALES: STRIGULACEAE
  - 2. Paraphyses branched and interconnected.
    - 3. Paraphyses thick and closely branched; spores thin-walled. . . . . DOTHIDEALES:
      - Ascomata 2–several, united in clusters. . . . . MYCOPORACEAE
      - Ascomata solitary.
        - Thallus dark brown or black. . . . . LICHENOTHELIACEAE
        - Thallus not dark brown or black.
          - Paraphyses not paraplectenchymatous. . . . . PLEOMASSARIACEAE
          - Paraphyses paraplectenchymatous. . . . . ARTHOPYRENIACEAE
    - 3. Paraphyses slender and loosely branched; spores mostly thick-walled. MELANOMMATALES:
      - Spores without a thickened endospore, 2(4)-celled. . . . . MONOBLASTIACEAE
      - Spores with a thickened endospore, (2)4-celled to muriform.
        - Paraphyses little-branched and anastomosed; spores brown, gray, or colorless. . . . . PYRENULACEAE
        - Paraphyses conspicuously reticulate-branched and anastomosed; spores typically colorless. . . . .

**Mazaedial Lichens:** *Ascomata commonly stalked, typically with asci disintegrating and leaving a loose mass of spores; photobiont commonly absent. . . . . CALICIALES:*

- Spores forming a dry black spore mass. . . . . CALICIACEAE
- Spores remaining uniseriate. . . . . MYCOCALICIACEAE

**"Discolichens":** *Ascomata typically round to elongate, undivided or branched; hymenium exposed at maturity; production of lichen substances often complex.*

1. Hymenium not or only weakly amyloid, or if strongly so then exciple absent; ascus not or only weakly amyloid; thallus crustose.
2. Spores simple; photobiont not *Trentepohlia*. . . . . LEOTIALES: TRAPELIACEAE
2. Spores 1–several celled or muriform; photobiont usually *Trentepohlia*.
3. Asci globose or broadly pyriform. . . . . ARTHONIALES:
  - Thallus bright yellow. . . . . CHRYSOTHRICHACEAE
  - Thallus not bright yellow. . . . . ARTHONIACEAE
3. Asci elongate.
  4. Ascomata neither lirelliform nor opening by a pore.
    - Ascomata pale yellow to orange; asci without an amyloid ring. . . . .
    - . . . . . GYALECTALES: GYALECTACEAE
    - Ascomata nigrescent; asci with a small amyloid ring in the tip. . . . .
    - . . . . . OPEGRAPHIDALES: OPEGRAPHIDACEAE
  4. Ascomata lirelliform or opening by a pore. . . . . GRAPHIDALES:
    - Ascomata typically opening by a pore. . . . . THELOTREMATAACEAE
    - Ascomata mostly elongated. . . . . GRAPHIDACEAE
1. Hymenium strongly amyloid; ascus with a strongly amyloid sheath; thallus crustose or not.
  5. Spores polaribilocular. . . . . TELOSCHISTALES: TELOSCHISTACEAE
  5. Spores not polaribilocular.
    6. Spores more than 50  $\mu$  long, the walls multilayered; ascomata in warts or poroid verrucae. . . . .
    - . . . . . PERTUSARIALES: PERTUSARIACEAE
    6. Spores typically less than 50  $\mu$  long, the walls never multilayered.
      7. Thallus brown or black, both crustose and with blue-green photobionts. . . . . LICHINALES:
        - Thallus differentiated into layers. . . . . HEPPIACEAE
        - Thallus undifferentiated into layers. . . . . LICHINACEAE
      7. Thallus variously colored, but not both crustose and with blue-green photobionts.
        8. Photobiont typically blue-green; thallus large and foliose, cyphellate, or with a dense tomentum below. . . . . PELTIGERALES: PELTIGERACEAE
        8. Photobiont typically green; thallus foliose or not, never cyphellate, tomentose or not. . . . .
        - . . . . . LECANORALES:
          - Photobiont blue-green. . . . . COLLEMATAACEAE
          - Photobiont green.
            - Thallus fruticose or foliose.
              - Primary thallus squamulose, or primary squamules absent and thallus of much branched podetia. . . . .
              - . . . . . CLADONIAACEAE
              - Primary thallus crustose, foliose, or fruticose, never truly podetiate.
                - Thallus fruticose, of ecorticate pseudopodetia. . . . . STEREOCAULACEAE
                - Thallus not fruticose, or if so then fully corticate.
                  - Spores simple, colorless. . . . . PARMELIACEAE
                  - Spores 2–4 celled, brown. . . . . PYXINACEAE
            - Thallus crustose or squamulose.
              - Asci with numerous tiny unicellular spores; thallus saxicolous. . . . . ACAROSPORACEAE
              - Asci with 32 or fewer spores; thallus saxicolous or not.
                - Apothecia with algae in the margins or the hypothecium.
                  - Spores brown. . . . . PYXINACEAE
                  - Spores hyaline. . . . . LECANORACEAE
                - Apothecia without algae in the margins or hypothecium.
                  - Tholus weakly amyloid.
                    - Tholus lacking a darker tube; spores septate to muriform. . . . . RHIZOCARPACEAE
                    - Tholus with an indistinct, but present, darker tube; spores simple to septate.
                      - Spores 15  $\mu$  or more long. . . . . PORPIDIACEAE
                      - Spores less than 15  $\mu$  long. . . . . LECIDEACEAE
                  - Tholus strongly amyloid.
                    - Tholus with a dark amyloid ring. . . . . MICAREACEAE

Tholus solid or with a pale axial mass.	
Axial mass small, conical. . . . .	BACIDIACEAE
Axial mass broad, cylindrical. . . . .	LECANORACEAE

### PHOTOBIONTS

With respect to the taxonomy of lichenized fungi, little attention has accrued to the photobiont, inasmuch as lichen taxa are organized prevailingly around the morphology of the ascoma, spores, and thallus. Most lichens that have amyloid hymenia are associated with *Trebouxia* species; most of those with nonamyloid hymenia are lichenized with species of *Trentepohlia*. Both genera are Chlorophycean algae. For lichens in general, Ahmadjian (73) has recognized 17 Chlorophycean genera, 1 Xanthophycean genus, and 8 genera of cyanobacteria (blue-green "algae"). Frequently, the identification of algae associated with lichenized fungi is difficult, because the morphologies of algal species, although fairly distinct when cultured on agar, are frequently modified significantly when in association with a lichenized fungus. For instance, cells of filamentous genera frequently become solitary, and sometimes the chromatophore takes on quite a different aspect. In many apothecial or algal layer sections, several genera of algae other than the known photobiont can be observed, but a physical association with the fungal hyphae is difficult to verify. The following is a key to the photobiont genera known from lichens of the Chicago region. We have gleaned it from Ahmadjian's descriptions.

#### Photobiont blue-green.

Cells in gelatinous clusters. . . . .	<i>Gleocapsa</i>
Cells end-to-end in filaments or chains.	
Cells spherical, in beadlike chains. . . . .	<i>Nostoc</i>
Cells cylindrical, in filaments.	
Filaments mostly 2–4 cells thick. . . . .	<i>Stigonema</i>
Filaments 1 cell thick.	
Heterocysts basal, branches tending to attenuate from base to apex. . . . .	<i>Dichothrix</i>
Heterocysts within the filaments, branches not much attenuate. . . . .	<i>Scytonema</i>

#### Photobiont green.

Larger cells more than 16 $\mu$ long.	
Droplets of orange red pigment usually apparent in the chromatophore; cells irregularly cylindric to ovoid. . . . .	<i>Trentepohlia</i>
Reddish pigments absent; cells spherical to oval. . . . .	<i>Trebouxia</i>
Larger cells up to 16 $\mu$ long (chlorococcoid).	
Cells elongate, sausage-shaped. . . . .	<i>Stichococcus</i>
Cells spherical to ovoid.	
Cells mostly 2–4 in packets. . . . .	<i>Protococcus</i>
Cells solitary or in short filaments.	
Cells rarely more than 5 $\mu$ long. . . . .	<i>Hyalococcus</i>
Cells mostly more than 5 $\mu$ long.	
Chromatophore irregularly folded. . . . .	<i>Myrmecia</i>
Chromatophore lining the cell wall, cup-shaped or platelike.	
Chromatophore lining most of the inner cell wall. . . . .	<i>Chlorella</i>
Large portions of the inner cell wall exposed.	
Chromatophore cup-shaped. . . . .	<i>Coccomyxa</i>
Chromatophore platelike or bowl-like. . . . .	<i>Pseudochlorella</i>

### THE CHICAGO REGION FLORA

With the exception of about 35 species (12%) that can be described as frequent or common, most of our lichens can be said to be uncommon or rare. Some of these uncommon species might be wholly adventive in the region. It is known that certain common species, such as *Caloplaca feracissima*, are found locally almost exclusively on weathered concrete and flagstone, and that others, such as *Caloplaca microphyllina* and *Amandinea punctata*, have exploited weathered fence posts and old wood. They are probably far more

common in the Chicago region today than in presettlement times, but to declare them allochthonous is risky, given the quality of our baseline information. Until more is known about the native ranges of our species, we have largely resisted the temptation to speculate on which species are native and which are not. At this writing, only seven species have been documented by a modern record from all twenty-two counties: *Arthonia caesia*, *Candelaria concolor*, *Lecanora dispersa*, *Phaeophyscia rubropulchra*, *Physcia millegrana*, *P. stellaris*, and *Punctelia rudecta*.

What follows is a working draft of a flora of the lichens known from the twenty-two county Chicago region as defined by Swink & Wilhelm (37). The flora begins with an artificial key to the genera. That is followed by an alphabetical catalog of the genera and their species; keys to the species immediately follow the genus entry. For each genus, the family is listed, along with the usual photobiont; a brief description of the spores is also provided. The nomenclature approximates that given in Egan (41) and his updates, which appear in *The Bryologist*. Author names are those recommended by Brummitt & Powell (81).

For each species, there is a list of counties from which the lichen is known. Counties rendered in ALL CAPS are those that have a voucher specimen at the Morton Arboretum (MOR). Counties rendered in lower case letters are referred to only in the literature. Counties from which specimens have been cited in the literature are codified by numerical suffixes indexed in the "Literature Cited" section. In the instances where Calkins (1) did not mention a county location, but described a lichen's distribution as "common throughout our area" or something to that effect, we have taken the liberty of assuming that he at least had seen the plant in Cook County; I therefore have translated the statement to render the code "Cook-1." The codes "F", "ILL", "INDU", "MICH", "MIN", and "US" represent herbaria where we have seen specimens. "F" stands for the Field Museum of Natural History in Chicago; "ILL" stands for the University of Illinois; "INDU" stands for the herbarium at the Indiana Dunes National Lakeshore science office; "MICH" stands for the University of Michigan Herbarium at Ann Arbor; "MIN" stands for the herbarium at the University of Minnesota, St. Paul; "US" stands for the United States National Herbarium.

The symbol *LE* stands for Calkins's bound volumes of *Lichenes Exsiccati* at ILL. The NY code refers to the New York Botanical Garden, wherein there is another set of Calkins's *exsiccati*, which Richard Harris examined in 1992 during his review of an early version of this flora. All NY designations represent determinations by Harris. It would seem that the numbers on the set at the New York Botanical Garden do not correspond to those of the set at the University of Illinois.

In addition to the 291 valid lichen names applied to greater Chicago region lichens, there are about 300 synonyms, misapplied names, and orthographic errors that we have, perhaps too cavalierly, subsumed under a more valid name or closely allied taxon. In some instances, these names may be misidentifications or legitimate older names that are known now to have narrower distributions. In other instances they may be related species or names relevant to taxonomic problems that are discussed. All of these names appear in the "Index of Synonyms and Misapplied Names" section and are indexed to the species under which they are discussed.

Lichens known to us from districts near the Chicago region are included here in order to make this flora more widely usable to botanists in the lower central Midwestern states. There are 81 species in this category, bringing the total number of lichens included in this flora to 370; they are presented in ***bold italics***. We have not generally included species confined to the unglaciated districts of southern Illinois or those from the boreal districts of Wisconsin or Michigan.

For each taxon, we have attempted to provide an etymology. Such information on lichen names is scant in the literature. Rarely do lichenologists explain the origin of epithets when they name a species. Yet, very often the epithet is descriptive of the lichen, and knowing the linguistic roots can be interesting as well as

informative. Occasionally, notable lichenologists have been honored in a lichen name, but if no one notes who the person was, the honor is empty. In some cases, the epithet might even seem nonsensical, or its origin ambiguous. To wit, for quite a while we had blithely assumed that in *Cladonia rei*, the epithet was some recondite derivation of the Latin noun *res, rei*, a word of such complexity that it used to give the senior author fits in Latin translation. Necessarily, our interpretations of epithet origin are sometimes fanciful, derived from a certain experience with the lichen and a limited knowledge of Greek and Latin. Except for obvious cases where the meaning seems certain, we must assure the reader that we have had no more access to the mind of the namer than readily available sources can provide. The etymological remarks are offered with the idea in mind that fellow lichenologists will offer suggestions or emendations.

The photobiont genus given for each lichen genus is based largely upon Ahmadjian (73), rather than on our own observations. More than one genus of photobiont may be noted for a lichen genus. This does not mean that this is the case for all species in the genus or that it is routinely applicable for Chicago region species. Neither does it mean that there are no other gonidia involved. In time, as research proceeds, the information on photobionts is likely to be expanded greatly.

## KEY TO THE GENERA

Thallus subcrustose with marginal lobes to foliose, squamulose, umbilicate, or fruticose, usually with a well defined lower cortex. . . . . Group I  
 Thallus crustose, tightly adnate or enmeshed with the substrate, without defined lobes, podetia, or a lower cortex. . . . .  
 . . . . . Group II

### Group I

1. Thallus gelatinous when wet, dark brown to black or dark slate gray; medulla absent.
  2. Thallus subcrustose, without distinct lobes; prothallus blue green and evident at the margins. . . . . PLACYNTHIUM
  2. Thallus appearing foliose or fruticose, without a blue green prothallus.
    3. Thallus attached to the substrate at several locations; photobiont *Nostoc*.
      - Thallus lacking an organized cortex, the hyphae interwoven; upper surfaces dull, usually olivaceous to black. . . . . COLLEMA
      - Thallus with a layer of more or less isodiametric cortical cells; upper surfaces usually smooth to sub-lustrous, slate gray to brown. . . . . LEPTOGIUM
    3. Thallus pulvinate or umbilicate, usually attached at only a central point; photobiont *Gleocapsa*.
      - Thallus fruticose, the lobes long and straplike; usually pruinose. . . . . THYREA
      - Thallus more or less umbilicate, the lobes about as long as broad; usually epruinose. . . . . GONOHYMENIA
1. Thallus not gelatinous, variously colored; medulla evident.
  4. Thallus fruticose, podetiate, or of adnate to suberect squamules.
    5. Thallus of adnate squamules.
      6. Thallus saxicolous or ascoma a perithecium or both.
        7. Ascoma an apothecium; squamules white-rimmed. . . . . PSORA
        7. Ascoma a perithecium; squamules not white-rimmed.
          - Spores nonseptate. . . . . CATAPYRENIUM
          - Spores muriform, with horizontal and longitudinal septa. . . . . ENDOCARPON
      6. Thallus terricolous or corticolous; ascoma an apothecium, or ascoma absent.
        8. Squamules brownish to olivaceous, neither pink nor sorediate; photobiont blue-green. . . . . HEPPIA
        8. Squamules pinkish, brownish, or sorediate; photobiont green.
          - Thallus esorediate, terricolous. . . . . PSORA
          - Thallus sorediate, corticolous. . . . . HYPOCENOMYCE
    5. Thallus various, but not of adnate squamules.
      9. Thallus crustose, the small cylindrical podetia arising from smooth, aggregated, crustose granules. . . . .  
 . . . . . PYCNOTHELIA
      9. Thallus not crustose.
        10. Thallus in part or entirely of ascending squamules.
          - Squamules brown on both surfaces; perithecia present. . . . . DERMATOCARPON
          - Squamules greenish or grayish above, white below; perithecia absent. . . . . CLADONIA

10. Thallus without squamules.
11. Thallus brown, at least on one surface.  
 Thallus terricolous, flattened and involute-margined, P-..... CETRARIA  
 Thallus corticolous, terete, P+ red (fumarprotocetraric acid). .... BRYORIA
11. Thallus not brown.
12. Thallus of flattened lobes or branches.  
 Thallus K+ deep purple..... TELOSCHISTES  
 Thallus K-..... RAMALINA
12. Thallus of uniformly or irregularly rounded branches.
13. Stalks or branches of thallus hollow.  
 Podetia with a fibrous, dull surface. .... CLADINA  
 Podetia with a corticate, smooth, lustrous surface. .... CLADONIA
13. Stalks or branches of thallus with a central medullar core, not hollow.
14. Thallus whitish gray, bushy-branched, the branches decorticate in some areas, otherwise covered with tiny corticate granules or squamules..... STEREOCAULON
14. Thallus yellow green, neither bushy-branched nor beset with a granular cortex.  
 Fibrils evident; branches smoothly terete. .... USNEA  
 Fibrils absent; branches irregularly wrinkled. .... EVERNIA
4. Thallus adnate to loosely appressed, but distinctly foliose or umbilicate.
15. Thallus orange, yellow, yellowish green, or yellowish gray.
16. Cortex K+ deep purple.  
 Thallus placodioid and effigurate to subcrustose, all portions tightly adnate, saxicolous..... CALOPLACA  
 Thallus foliose to subcrustose, but at least the lobe tips elevated or loosely adnate, corticolous or saxicolous  
 .... XANTHORIA
16. Cortex K- or K+ yellow.
17. Thallus esorediate.
18. Larger lobes more than 1 mm wide..... XANTHOPARMELIA
18. Lobes less than 1 mm wide.
19. Apothecial disc bright yellow..... CANDELARIA
19. Apothecial disc brown or black.  
 Apothecial disc brown; spores colorless..... LECANORA  
 Apothecial disc black; spores brown. .... DIMELAENA
17. Thallus sorediate.
20. Thallus bright lemon yellow or yellow green; lobes small, less than 1 mm wide..... CANDELARIA
20. Thallus yellow green; lobes more than 1 mm wide.
21. Medulla C+ red..... FLAVOPUNCTELIA
21. Medulla C-.  
 Lobes less than 2 mm wide, linear. .... PARMELIOPSIS  
 Lobes mostly more than 3 mm wide, rounded. .... FLAVOPARMELIA
15. Thallus without yellowish tints.
22. Thallus brown or brownish gray (rarely pale gray and umbilicate); cortex K-.
23. Lower cortex covered by a dense tomentum or matted appressed hairs.  
 Tomentum in tufts; medulla C+ rose; apothecia common, round, laminal..... LOBARIA  
 Tomentum tightly woven and appressed; medulla C-; apothecia infrequent, elongate, marginal or terminal  
 .... PELTIGERA
23. Lower cortex smooth or sparsely to densely rhizinate, but not concealed by a dense tomentum.
24. Lobe surfaces abundantly pruinose; soralia marginal. .... PHYSCONIA
24. Lobe surfaces smooth, or if pruinose, then esorediate.
25. Thallus margins and rims of apothecia dissected into isidioid lobules..... ANAPTYCHIA
25. Thallus without isidioid lobules.
26. Lobes erect or suffruticose, or thallus umbilicate.  
 Thallus foliose; perithecia absent. .... TUCKERMANNOPSIS  
 Thallus umbilicate with imbedded perithecia. .... DERMATOCARPON
26. Lobes appressed.
27. Medulla C+ red..... MELANELIA
27. Medulla C-.
28. Rhizines absent; lobes discrete or appearing to flow together, tightly adnate. ....



- ..... HYPERPHYSCIA
28. Rhizines present; lobes discrete, loosely appressed but not tightly adnate.  
 Thallus light to dark tan, with numerous imbedded black dots (perithecia)..... CATAPYRENIUM  
 Thallus brownish gray to dark gray; perithecia absent..... PHAEOPHYSCIA
22. Thallus mineral gray, whitish gray, or greenish gray, never umbilicate; cortex K+ yellow or K-.
29. Either the upper cortex with small white pores or the medulla C+ red, or both..... PUNCTELIA
29. Upper cortex without white pores; medulla C-.
30. Lower cortex white, light tan, or absent.
31. Thallus isidiate, or lower surface fibrous, or both.  
 Cortex K+ pale yellow..... HETERODERMIA  
 Cortex K+ deep yellow..... IMSHAUGIA
31. Thallus without isidia, the lower surface corticate.
32. Soredia in marginal soralia; medulla K+ yellow..... HETERODERMIA
32. Soredia absent or laminal, or if marginal, then medulla and cortex K-.
33. Cortex K-..... PHYSCIELLA
33. Cortex K+ yellow.
34. Larger lobes 3 mm or more across; lower cortex tan..... PUNCTELIA
34. Lobes less than 3 mm across; lower cortex white.  
 Thallus margins long-ciliate..... HETERODERMIA  
 Thallus margins eciliate..... PHYSCIA
30. Lower cortex brown or black (occasionally pale near the margins).
35. Medulla distinctly tinted orange or salmon..... PYXINE
35. Medulla white or pale yellow.
36. Medulla K-.
37. Thallus sorediate; lobes hollow..... HYPOGYMNIA
37. Thallus esorediate; lobes solid.  
 Medulla KC-; lower cortex with a thick tomentum; lobes appearing inflated..... ANZIA  
 Medulla KC+ rose; lobes flat, merely rhizinate..... HYPOTRACHYNA
36. Medulla K+ yellow or red.
38. Lobes broad, usually 4 mm or more wide, typically with a rhizine-free zone near the margins; medulla K+ red.  
 Upper cortex reticulate-cracked or maculate..... RIMELIA  
 Upper cortex without cracks or maculae..... PARMOTREMA
38. Lobes narrower; rhizines typically distributed throughout on the lower surface; medulla K+ yellow or red.  
 Upper cortex with distinct white markings, particularly toward the tips..... PARMELIA  
 Upper cortex without white markings..... MYELOCHROA

## Group II

1. Ascoma a perithecium, the spores released through a small pore.
2. Thallus saxicolous or terricolous.
3. Spores abundantly muriform.
  - Thallus areolate to, more typically, squamulose; spores 2 per ascus. . . . . ENDOCARPON
  - Thallus areolate, continuous; spores 8 per ascus. . . . . STAUROTHELE
3. Spores either without septa, or with only transverse septa (rarely somewhat muriform in *Thelidium*).
4. Spores nonseptate.
  - Thallus crustose. . . . . VERRUCARIA
  - Thallus squamulose. . . . . CATAPYRENIUM
4. Spores septate.
  - Spores all exceeding 20  $\mu$  long, 1–3 septate; photobionts green. . . . . THELIDIUM
  - Spores all less than 20  $\mu$  long, 1-septate; photobionts blue-green. . . . . PYRENOCOLLEMA
2. Thallus corticolous.
5. Thallus of thick, brown, rounded squamules. . . . . CATAPYRENIUM
5. Thallus not of thick, rounded squamules.
6. Spore walls notably thickened.
  - 7. Spores brown, 3-septate or occasionally 4–7 septate or even imperfectly muriform. . . . . PYRENULA
  - 7. Spores 7–9 septate, or colorless and 3-septate.
    - Ascomata in discrete clusters, embedded in a pseudostroma. . . . . TRYPETHELIUM
    - Ascomata not in discrete clusters, not embedded in a pseudostroma. . . . . LITHOTHELIUM
6. Spores walls not notably thickened.
8. Spores becoming brown.
  - 9. Spores abundantly muriform. . . . . MYCOPORUM
  - 9. Spores merely septate.
    - Spores 1-septate. . . . . KIRSCHSTEINIOTHELIA
    - Spores 3–6 septate. . . . . EOPYRENULA
8. Spores persistently hyaline.
  - 10. Paraphyses unbranched. . . . . STRIGULA
  - 10. Paraphyses loosely to densely branched.
    - 11. Spores muriform, with both transverse and longitudinal septa.
      - Ascomata black,  $\text{HNO}_3^-$ , to 0.3 mm in diameter. . . . . JULELLA
      - Ascomata blue green,  $\text{HNO}_3^+$  reddish, the larger ones more than 0.3 mm across. . . . . MYCOGLAENA
    - 11. Spores not muriform, with transverse septa only.
      - 12. Thallus restricted to *Betula* and *Populus*; spores much elongate, nearly or quite as long as the asci. . . . . LEPTORHAPHIS
      - 12. Thallus of a diversity of corticolous substrates; spores oblong to oval, much shorter than the asci.
        - 13. Spores up to 20  $\mu$  long.
          - Septum of spores eccentric, the cells notably unequal in volume; asci more than 3 times as long as wide. . . . . DITREMIS
          - Septum of spores not eccentric, the cells about equal; asci less than three times as long as wide . . . . . SANTESSONIOLICHEN
        - 13. Larger spores more than 20  $\mu$  long.
          - Spores more than 31  $\mu$  long and 12  $\mu$  wide. . . . . ACROCORDIA
          - Spores less than 31  $\mu$  long and 12  $\mu$  wide. . . . . ARTHOPYRENIA
1. Ascoma an exposed apothecium, without a pored enclosure, or if more or less enclosed then immersed in thalloid warts or powdery soralia, or ascomata absent (ascomata flasklike in the bright yellow genus *Thelocarpon*).
14. Apothecia chronically absent.
  - 15. Thallus K+ deep purple.
    - Thallus thickly leprose, egg yolk yellow. . . . . LEPROPLACA
    - Thallus not leprose, esorediate or with diffuse, yellow soredia. . . . . CALOPLACA
  - 15. Thallus K– or K+ yellow or red.
  - 16. Thallus sorediate throughout, without corticate tissues.
    - 17. Thallus bright yellow.
      - Soredia granular, in delimited, often scattered soralia. . . . . CANDELARIELLA
      - Soredia fine, diffuse, unorganized into soralia. . . . . CHRYSOTHRIX
    - 17. Thallus granules without yellowish tints.

- Usnic acid present. . . . . LECANORA  
 Usnic acid absent. . . . . LEPRARIA
16. Thallus not sorediate throughout.
18. Thallus black throughout; photobionts usually blue-green.
19. Thallus arenicolous.  
     Thallus smooth to warty; spores polaribilocular. . . . . CALOPLACA  
     Thallus of minute isidioid granules. . . . . PLACYNTHIELLA
19. Thallus saxicolous.
20. Thallus well developed, with a distinctly blue green prothallus evident at the margins. . . . .  
     . . . . . PLACYNTHIUM
20. Thallus effuse, granular, without an evident prothallus.  
     *Gleocapsa* evident. . . . . PSOROTICHIA  
     *Gleocapsa* absent. . . . . LICHENOTHELIA
18. Thallus not black throughout; photobionts green.
21. Thallus C-.
22. Thallus without yellowish tints.  
     Thallus corticolous. . . . . PLACYNTHIELLA  
     Thallus saxicolous. . . . . LECIDEA
22. Thallus yellow or with yellowish tints.  
     Thallus yellow, of notable corticate granules or granular soredia. . . . . CANDELARIELLA  
     Thallus yellowish green, the soredia in discrete soralia. . . . . LECIDEA
21. Thallus C+.
23. Thallus UV+ yellow (lichexanthone). . . . . OCHROLECHIA
23. Thallus UV-.
24. Thallus esorediate. . . . . PLACYNTHIELLA
24. Thallus sorediate.  
     Soredia erupting from verrucae or cortical warts. . . . . TRAPELIOPSIS  
     Soredia not erupting from verrucae. . . . . TRAPELIA
14. Apothecia present.
25. Apothecia irregular to elongate; thallus rudimentary, often little more than a discoloring of the substrate around the apothecia.
26. Spores muriform, with 2–5 longitudinal septa. . . . . ARTHOTHELIUM
26. Spores merely septate, with 3–11 transverse septa only.
27. Exciple undeveloped; asci subglobose. . . . . ARTHONIA
27. Exciple well developed; asci elongate.  
     Spores with cylindrical cells; apothecia more or less circular to oblong; hymenium IKI+; spores IKI+ blue to orange. . . . . OPEGRAPHA  
     Spores with lenticular cells; apothecia irregular, often branched or elongating; hymenium IKI-; spores usually IKI+ bluish black. . . . . GRAPHIS
25. Apothecia mostly regular, rounded, or absent; thallus rudimentary to well developed.
28. Thallus and apothecia black throughout; spores simple to 1–3 septate.
29. Thallus arenicolous or fungicolous.  
     Apothecia stalked. . . . . PHAEOCALICIUM  
     Apothecia sessile. . . . . PLACYNTHIELLA
29. Thallus saxicolous.  
     Thallus well defined, with a distinctly blue green prothallus evident at the margins. . . . .  
     . . . . . PLACYNTHIUM  
     Thallus effuse, granular, without an evident prothallus. . . . . PSOROTICHIA
28. Thallus and apothecia variously colored, but not black throughout, or thallus absent; spores various.
30. Exciple thalloid, with an algal component.
31. Spores septate, muriform, or polaribilocular.
32. Spores either muriform or with 20 or more transverse septa.  
     Spores muriform, with 1–3 longitudinal septa. . . . . DIPLOSCHISTES  
     Spores without longitudinal septa. . . . . CONOTREMA
32. Spores 1–3 septate or polaribilocular.
33. Spores polaribilocular; apothecia or thallus or both often K+ deep purple (look also for tiny black dots in the hymenium and see *Caloplaca flavovirescens*). . . . . CALOPLACA
33. Spores merely septate; apothecia and thallus K- or K+ yellow or red.

34. Spores hyaline.  
 Apothecia yellow or yellowish. . . . . CANDELARIELLA  
 Apothecia black, brown, or whitish pruinose. . . . . LECANIA
34. Spores gray or brown.  
 35. Asci disintegrating, not evident with mature spores. . . . . CYPHELIUM  
 35. Asci evident.  
 Spore walls thin and evenly developed, the lumina cylindrical. . . . . AMANDINEA  
 Spore walls unevenly thickened, the lumina often angled. . . . . RINODINA
31. Spores nonseptate.  
 36. Apothecia immersed in thalloid warts or in heaps of powdery soredia; spores very large.  
 Thallus areolate; discs black, pruinose, the ostiole white-bordered and often opening wide. . . . .  
 . . . . . ASPICILIA  
 Thallus continuous; ascomata not as above. . . . . PERTUSARIA
36. Apothecia adnate or immersed, but not as above; spores of various sizes.  
 37. Thallus or apothecia or both yellow.  
 Thallus usually evident, at least around the disc-shaped apothecia; spores up to 32 per ascus. . . . .  
 . . . . . CANDELARIELLA  
 Thallus absent; apothecia globose, opening by a tiny pore; spores numerous. THELOCARPON
37. Neither the thallus nor the apothecia yellow.  
 38. Spores numerous, asci always bearing more than 32 spores. . . . . ACAROSPORA  
 38. Spores few to 16 per ascus, rarely a few asci with more than 16.  
 39. Spore walls thick. . . . . PERTUSARIA  
 39. Spore walls thin.  
 40. Apothecia adnate, the discs orange, some of them 2 mm or more across; thallus saxicolous,  
 of scattered to aggregated, smooth, convex areoles. . . . . RHIZOPLACA  
 40. Apothecia and thalli various, but not as above.  
 41. Thallus or apothecia corticolous, or if saxicolous, then with spores less than 14  $\mu$  long. . . . .  
 . . . . . LECANORA  
 41. Thallus or apothecia saxicolous and the spores more than 14  $\mu$  long.  
 Apothecial disc flat or concave, the surface at or below the surface of the thallus. . . . .  
 . . . . . ASPICILIA  
 Apothecial disc distinctly adnate, the surface elevated well above the surface of the  
 thallus. . . . . TRAPELIA
30. Exciple without algae, or exciple absent.  
 42. Spores minute and numerous, more than 16 per ascus.  
 43. Thallus corticolous.  
 Spores simple, more than 32 per ascus. . . . . BIATORELLA  
 Spores septate, 16-32 per ascus. . . . . AMANDINEA
43. Thallus saxicolous.  
 Disc notably beset with carbonaceous ridges and lumps. . . . . POLYSPORINA  
 Disc nearly or quite without carbonaceous intrusions. . . . . SARCOGYNE
42. Spores few to 16 per ascus.  
 44. Spores septate.  
 45. Spores brown, or muriform, or both.  
 46. Spores muriform. . . . . RHIZOCARPON  
 46. Spores not muriform.  
 47. Spores 3-several septate. . . . . OPEGRAPHA  
 47. Spores 1-septate.  
 Thallus absent or very thin; conidia curved-filiform. . . . . AMANDINEA<sup>5</sup>  
 Thallus thin to thick, but well developed; conidia short-ellipsoid. . . . . BUELLIA
45. Spores hyaline, never muriform.  
 48. Paraphyses indistinct or absent. . . . . ARTHONIA  
 48. Paraphyses evident, distinct or intertwined.  
 49. Spores 2-celled.  
 50. Paraphyses intertwined and anastomosed. . . . . MICAREA

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<sup>5</sup>The pycnidia are concolorous with the thallus, greenish when wet, and appear as small scattered lumps.

50. Paraphyses distinct.  
 Apothecia dark, the paraphyses nigrescent at the tip. . . . . CATILLARIA  
 Apothecia pale, flesh-colored, the paraphyses hyaline. . . . . DIMERELLA
49. Spores 4- to many-celled.
51. Thallus terricolous or muscicolous.  
 Spores acicular, less than 4  $\mu$  wide, more than 30  $\mu$  long. . . . . BACIDIA  
 Spores fusiform, more than 4  $\mu$  wide, up to 30  $\mu$  long. . . . . MYCOBILIMBIA
51. Thallus saxicolous or corticolous.
52. Ascomata with elevated rims and deeply sunken hymenia. . . . . CONOTREMA
52. Ascomata with exposed, surficial hymenia.
53. Spores more than 5  $\mu$  wide. . . . . MYCOBILIMBIA
53. Spores to 5  $\mu$  wide.
54. Spores more than 35  $\mu$  long. . . . . BACIDIA
54. Spores less than 35  $\mu$  long.  
 Thallus corticolous or saxicolous, spores notably coiled in the ascus. . . . .  
 . . . . . SCOLIOSPORUM  
 Thallus saxicolous, spores parallel in the ascus. . . . . BACIDIA
44. Spores nonseptate, though sometimes with 2 large polar vacuoles.
55. Thallus C+ pink, gyrophoric acid present.
56. Thallus saxicolous. . . . . TRAPELIA
56. Thallus terricolous or lignicolous.  
 Thallus greenish gray or grayish, soredia erupting from verrucae. . . . . TRAPELIOPSIS  
 Thallus dark brown or blackish, without verrucae and cortical tissues. . . . . PLACYNTHIELLA
55. Thallus C-, gyrophoric acid absent.
57. Thallus granules often more than 0.5 mm across, diffuse, greenish to brown when dry and greener when wet, or thallus terricolous, or both. . . . . PLACYNTHIELLA
57. Thallus not granular, or granules up to 0.5 mm across, dense, dark brown to black when wet, never terricolous.
58. Apothecia orange, K+ purple. . . . . PROTOBLASTENIA
58. Apothecia neither orange nor K+ purple.
59. Thallus KC+ orange; apothecia to 0.25 mm across; spores more than 5  $\mu$  wide. . . . .  
 . . . . . PYRRHOSPORA
59. Thallus KC-; apothecia and spores various.
60. Larger spores more than 5.5  $\mu$  wide, many more than 10  $\mu$  long; apothecia usually more than 0.4 mm across, immersed to adnate.  
 Thallus saxicolous; axial portion of tholus dark blue in IKI. . . . . PORPIDIA  
 Thallus corticolous; axial portion of tholus not darker blue than the domed portion. . . . .  
 . . . . . LECIDELLA
60. Spores less than 5  $\mu$  wide, rarely more than 10  $\mu$  long; apothecia various.
61. Thallus saxicolous; apothecia black. . . . . MICAREA
61. Thallus corticolous or lignicolous; apothecia flesh-colored to nigrescent.  
 Apothecia flesh-colored to darkening, usually irregular in shape, with a difficult-to-define margin, the larger discs often more than 0.4 mm across. . . . . LECANORA  
 Apothecia pale to nigrescent, the margin at first pale, then disappearing as the disc darkens, less than 0.4 mm across. . . . . LECIDEA

**ACAROSPORA** A. Massal. (ACAROSPORACEAE. Photobiont: chlorococcoid. Gr. *akari*, mite + *spora*, seed, evoking the image of the numerous, tiny, mitelike spores. This genus bewilders me; do not presume that the names used below actually apply to your specimen. Spores minute, numerous, simple)

- Thallus yellow or yellow green. . . . . A. schleicheri  
 Thallus without yellowish tints.  
 Apothecia small, to 0.5 mm, with greenish pruina. . . . . A. immersa  
 Apothecia usually larger, epruinose or with white pruina.  
 Substrate HCl+; apothecia usually greater than 0.8 mm across.  
 Spores fewer than 100 per ascus, more than 6  $\mu$  long. . . . . A. oligospora

Spores more than 100 per ascus, less than 6  $\mu$  long.

Thallus deep brown, without pruina. . . . . *A. veronensis*

At least portions of the thallus white pruinose.

Discs becoming more than 0.3 mm across, circular, and commonly filling the frequently discrete areoles until they strongly resemble *Lecanora* with a thin pale rim and reddish disc. . . . . *A. strigata*

Discs rarely exceeding 0.3 mm across, commonly more or less angular, and usually only partially filling aggregated areoles, so that the appearance is decidedly *Acarospora*, or perhaps more like a smallish form of *Aspicilia*. . . . .

. . . . . *A. strigata*

Substrate HCl–; apothecia to 0.8 mm across.

Gyrophoric acid present (most reliably determined through TLC). . . . . *A. fuscata*

Gyrophoric acid absent.

Apothecia sessile, their rims elevated above the thallus. . . . . *A. badiofusca*

Apothecia immersed, the rims not evident.

Thallus deep brown, epruinose. . . . . *A. americana*

Thallus light gray to pale brown, closely white pruinose throughout. . . . . *A. cinereoalba*

***Acarospora americana*** H. Magn. (of America) This species is known locally only from igneous erratics on kames. DU PAGE, KANE-38-ILL (type specimen, 1895 Fink, MIN), McHENRY

***Acarospora badiofusca*** (Nyl.) Th. Fr. (*L. badius*, chestnut-colored + *fuscus*, brown; from the color of the thallus) The only Chicago region specimen was from a basaltic boulder near a wetland pocket at the Waish Kee Shaw Reservation. KENDALL

***Acarospora cinereoalba*** (Fink) H. Magn. (*L. cinereus*, ash-colored + *albus*, white; from the pruinose thallus) Magnusson (38) described the habitat of this species as "granitic rocks with *Acarospora americana*." Perhaps indistinct from *A. strigata*, which see, we are including this species solely on the basis of the report by Magnusson, a monographer of the genus; we do not know how to distinguish them, other than substrate. Kane-38-MICH

***Acarospora fuscata*** (Nyl.) Arnold (*L. fuscatus*, brownish; from the color of the thallus) Our only record for this species was from an igneous boulder at the Bong State Recreation Area. [gyrophoric acid] KENOSHA

***Acarospora glaucocarpa*** (Ach.) Körb. (Gr. *glaukos*, silvery + *karpos*, fruit; from the frosted white pruinose thallus) Our only local record for this species is from a calcareous pebble on a hill prairie at the Lake in the Hills fen. Both this species and *A. strigata* have brown, expanded, cohering paraphyses tips in the epithecium. McHENRY

***Acarospora immersa*** Fink (*L. immersus*, immersed; from the apothecia immersed in the thallus) The Porter County specimen was collected at Howes Prairie, on HCl+ rock in open oak woodland. Porter-35-MIN

***Acarospora oligospora*** (Nyl.) Arnold (Gr. *oligos*, few, small + *spora*, seed; from the relatively few number of spores) This rare species is known locally only from a calcareous hill prairie in McHenry County, where it grows on gravel with *Verrucaria calkinsiana* and *V. nigrescens*, the gravels nested in soils inhabited by *Catapyrenium lachneum*, *Heppia adglutinata*, and *Psora decipiens*. McHENRY

***Acarospora schleicheri*** (Ach.) A. Massal. (after Johann Christoph Schleicher, 1768–1834, German-born Swiss botanist) The only record for this species in the Chicago region is as an associate of *A. americana*, the Fink, 1895, specimen from Kane County. It was taken from what appears to have been a granitic erratic. [ $\pm$  gyrophoric acid] Kane-ILL

***Acarospora strigata*** (Nyl.) Jatta (*L. striga*, swath, windrow, bristly; + *-atus*, adjective ending; perhaps from the white pruina evocative of an unshaven face) The Grundy County specimen was from an HCl– boulder along a country road west of Aux Sable; the Kenosha and De Kalb county collections are from weathered concrete, and the Will County specimen is from dolomite. This lichen is most common on HCl+ rock. It may be confused with *A. cervina* A. Massal. var. *glaucocarpa* (Wahlenb.) Körb., which has very large apothecia, commonly more than 1.5 mm, that nearly fill the areole. The Grundy County specimen would key to *A. cinereoalba*, because it is from HCl– rock, but it is morphologically indistinct from what we are calling *A. strigata*. DE KALB, GRUNDY, KENOSHA, WILL

**Acarospora veronensis** A. Massal. (after Verona, Italy, wherein resided several Italian lichenologists at the Verona Lyceum) Our only local specimens are from weathered concrete. Armstrong (26) reported a "brown *Acarospora*" from carbonate rock; if it was an *Acarospora*, it may be referable to this species. *Acarospora fuscata* is brown, but it inhabits noncarbonate rock and is distinctive in containing gyrophoric acid. DE KALB, KENOSHA

**ACROCORDIA** A. Massal. (MONOBLASTIACEAE. Photobiont: *Trentepohlia*. Gr. *akrochor-don*, a wart; from the relatively large perithecia evocative of warts or blisters. Spores large, 8, hyaline, 1-septate)

**Acrocordia megalospora** (Fink) R. C. Harris (Gr. *me-gas*, large, great + *spora*, seed; from the large spores) = *Arthopyrenia finkii* Zahlbr. According to Harris (14), this species ranges throughout Illinois and the Chicago region, though we have yet to secure a specimen locally. It evidently prefers elms and white oaks.

**AMANDINEA** Choisy *ex* Scheid. & H. Mayrh. (PYXINACEAE. Photobiont: chlorococoid. Origin unknown to us. Spores 8-32, brown, 1-septate)

Asci polysporous. . . . . A. polyspora  
 Asci octosporous.  
 Ascumata with a lecidine rim colored like the disc. . . . . A. punctata  
 At least the young ascumata with a gray lecanorine rim.  
 Apothecia soon losing their thalline margin, then manifesting an obvious proper margin. . . . . A. milliaria  
 Apothecia with a thick and persistent thalline margin, the proper margin absent. . . . . A. dakotensis

**Amandinea dakotensis** (H. Magn.) P. May & Sheard (after the state of North Dakota) Although this lichen is common south of our region, particularly on *Carya*, our only contemporary local record is from Jasper County, where it was collected on a fallen branch along Carpenter Creek. There is a Calkins specimen (#167, NY) of this species from Cook County, which he called *B. alboatra*. COOK-NY, JASPER

**Amandinea milliaria** (Tuck.) P. May & Sheard (L. *mille*, a thousand + *-arius*, belonging to; from the numerous, minute apothecia) This species, as we understand it, is rare in the lower Midwest, the nearest record to the Chicago region being Winnebago County, Illinois, where it was collected on *Prunus serotina*. This species appears to us to be quite like *A. dakotensis* with respect to color of the hypothecium and size and shape of spores, or perhaps we have never really seen *A. milliaria*.

**Amandinea polyspora** (Willey) E. Lay & P. May (Gr. *poly*, many + *spora*, seed; from the many-spored asci) Frequent to common just to the west and south of the Chicago region, where it grows on twigs and branches of open-grown trees. Our only record of this lichen locally is from *Malus pumila*. COOK

**Amandinea punctata** (Hoffm.) Coppins & Scheid. (L. *punctatus*, bespeckled, dotted; perhaps from the appearance of numerous tiny black apothecia) = *Buellia schaeereri* and *B. parasema* (in part) of Calkins, who reported it from Cook and Grundy counties, noting that it grew on weathered rails and once on an old stump. He does not mention *Buellia punctata*. The fact that Imshaug (39) cited specimens from Cook and Grundy counties suggests strongly that Calkins's reports are referable here. *Amandinea punctata* is characteristic of fence posts and rails, where it often grows with *Caloplaca microphyllina* and *Physcia millegrana*. There is one specimen from the base of *Quercus macrocarpa* and another from *Salix fragilis*. COOK-1-39-NY, DE KALB, DU PAGE, GRUNDY-1-39, KENDALL, LAKE IL, LAKE IN, McHENRY, NEWTON, PORTER-INDU, STARKE, WILL-10

**ANAPTYCHIA** Körb. (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *ana*-throughout + *ptychia*, fold or layer; probably from the interwoven hyphae of the algal and medullary layers of the upper cortex. Spores 8, brown, 1-septate)

**Anaptychia palmulata** (Michx.) Vain. (*L. palma*, the palm of the hand + *-ulatus*, diminutive adjective ending; from the small fingerlike lobules) Includes Thomson's (5) report of *Physcia pulverulenta* (Schreb.) Hampe from Wauconda [1908, Wright (BSAL)]. Hale (6) restricts *P. pulverulenta* [now known as *Physconia distorta* (With.) J. R. Laundon] to the western United States. He refers all the eastern material to *Anaptychia "palmatula"* (Michx.) Vain. Thomson referred the Lake County, Illinois, specimen to the forma *pulverulenta*, and the St. Joseph County specimen to the forma *venusta* (Ach.) Sandst. Some early reports of this species are referable to *Physconia detersa*, which see, so it is possible or even probable that these reports are referable to *A. palmulata* as well. In southern Illinois and Missouri, where this species is occasional, it grows on shaded sandstone and at the bases of old-growth trees in natural areas. [zeorin, ± atranorin] Lake IL-5, St. Joseph-5

**ANZIA** Stizenb. (PARMELIACEAE. Photobiont: *Trebouxia*. After Martino Anzi, 1812–1883, an Italian cryptogamist. Spores numerous, minute, hyaline, simple)

**Anzia colpodes** (Ach.) Stizenb. (Gr. *kolpos*, bosom, breast, womb + *-ode*, like, resembling; only Acharius knows for sure, but the small, sessile, brown apothecia may have reminded him of nipples) = *Parmelia colopodes* of Calkins, who reported it from "oaks near Lemont." In the Missouri Ozarks, this species is usually found on *Quercus velutina* in natural areas. [atranorin, divaricatic acid] Cook-1

**ARTHONIA** Ach. (ARTHONIAEAE. Photobiont: *Trentepohlia* or protococcoid. Perhaps from Gr. *arthron*, a joint + *onos*, diminutive; after the tiny, irregularly rayed, jointed-looking apothecia of some species. Spores 8, hyaline or brownish, 1–several septate)

Spores 2-celled..... *A. dispersa*

Spores 3–4(5) celled.

Apothecia to 0.8 mm across, round or nearly so.

Thallus greenish yellow or greenish blue..... *A. caesia*

Thallus ashy white or evanescent..... *A. diffusa*

Apothecia to 1.5 mm across, irregular, elongated to stellately branched.

Apothecia notably pruinose, surrounded by a ring of bright red pigment..... *A. tumidula*

Apothecia not or only weakly pruinose, without red pigment.

Apothecia reddish brown to nigrescent; thallus white..... *A. pyrroliza*

Apothecia dark brown to black; thallus whitish to sordid or greenish gray..... *A. radiata*

**Arthonia caesia** (Flotow ex Körb.) Körb. (*L. caesius*, bluish gray; from the pruinose apothecia) This is a very distinctive lichen, characterized by a protococcoid photobiont and a sub-leprose, yellowish green thallus bespeckled with whitish or bluish frosted apothecia. We are using this name because it is the one to which our material keys in Brodo (33), Harris (36), Skorepa (17), and Wetmore (45). The name is used neither by Fink (29) nor Nearing (46). Calkins's report of *A. lecideella* Nyl. almost certainly should be referred here. He described it as: "*Thallus green, uneven, effuse; apothecia abundant, small, round, plain, pruinose. Spores oblong-ovoid. On hickories and Crataegus throughout our territory.*" There are two specimens (F) collected by Calkins in Cook County labeled *A. lecideella* that are identical to the material referred to here as *A. caesia*; a specimen at ILL (Calkins LE-504) named *A. lecideella* is also referable here. This species is common on a wide variety of corticolous substrates, particularly *Carya ovata*, *Populus deltoides*, *Quercus alba*, *Q. velutina*, *Tilia americana*, and the smooth bark of young saplings. It is occasional on old wood. Most of the thalli in the metropolitan Chicago area lack apothecia, which are most evident in the more remote rural areas. [usnic acid] BERRIEN-35-52, BOONE, COOK-F-NY, DE KALB, DU PAGE, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, LA PORTE-35, McHENRY-NY, NEWTON, PORTER-35, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL



**Arthonia diffusa** Nyl. (*L. diffusus*, spread out, extensive; for reasons known only to Nylander) There is a Calkins specimen of this species at the Field Museum from "Illinois, on oaks"; presumably this is from the Chicago region. In his book he listed hickories and maples as the substrates. There is another Calkins specimen (#307) from "Illinois," also presumably the Chicago region, which has 2–4 celled spores 15–22  $\mu$  long and 6–10  $\mu$  wide, distinct paraphyses, round black apothecia that are somewhat pruinose, and a rather thick thallus. It has been annotated as *A. polymorpha* Ach. The Racine County specimen is from a ravine near Crestview, where it grew on *Acer saccharum*. This ravine is characterized by boreal elements such as *Betula papyrifera*, *Juniperus communis* var. *depressa*, *Populus balsamifera*, and *Shepherdia canadensis*. RACINE, Will-1

**Arthonia dispersa** (Schröd.) Nyl. (*L. dispersus*, scattered; perhaps for its general distribution) The Berrien County specimen was collected on *Tilia americana* at Warren Dunes State Park. Berrien-35-52-MIN

**Arthonia pyrroliza** Nyl. (Gr. *pyrrhos*, purplish + *L. -iza*, finch; perhaps the dark red apothecia reminded Nylander of the color of the purple finch) Calkins described his specimen as "*Thallus white, thin; apothecia reddish, slender, much divided, ramose.*" There is such a specimen from La Salle County (F); its spores, about 15  $\mu$  long, are 4-celled, with one of the end cells notably enlarged. Fink (29) doubts Illinois reports, but the La Salle County specimen fits well enough his own description for this plant. Calkins noted that it was rare on oaks in Will County. Will-1

**Arthonia radiata** (Pers.) Ach. (*L. radiatus*, rayed; from the branched apothecia) The Walworth county specimen was collected on *Tilia americana*, the Berrien on *Quercus rubra*. The Kendall and Racine county specimens were from *Carya ovata*. Calkins reported having found it "on oaks near Elgin and elsewhere." BERRIEN-35-52-MIN, Cook-1-F, KENDALL, RACINE, WALWORTH

**Arthonia tumidula** (Ach.) Ach. (*L. tumidus*, swollen + *-ulus*, with a tendency toward; from the tendency of the apothecia to become convex) = *A. gregaria* (Weigel) Körb. There is a Calkins specimen (F) from "Illinois" that, presumably, is the Chicago region. It is similar to *A. pyrroliza* and *A. radiata*, but the apothecia are notably pruinose and dark reddish brown; the spores are 4-celled and about 12  $\mu$  long. There are two Hall specimens (F) from downstate that are similar, though the older spores are tinted gray or brown.

**ARTHOPYRENIA** A. Massal. (ARTHOPYRENIACEAE. Photobiont: *Trentepohlia* or absent. Perhaps from Gr. *arthron*, a joint + *pyren*, kernel; presumably after the kernel-like perithecia, in a lichen that otherwise resembles a thallus of *Arthonia*. Spores typically 8, hyaline, septate)

**Arthopyrenia cinchonae** (Ach.) Müll. Arg. (from the host of the type collection, *Cinchona officinalis*) Our only record of this species is a specimen at US (#6623) that was said by Calkins, who collected it in 1890, to have grown in "Illinois, Kane County, Elgin." He had called it *Pyrenula glabrata*. This is otherwise a species of the southeastern states and the Atlantic coast up to New Jersey. One cannot help but suspect the validity of the label data. Kane-US

**ARTHOTHELIUM** A. Massal. (ARTHONIACEAE. Photobiont: *Trentepohlia*, or some protococcoid. Perhaps from Gr. *arthron*, a joint + *thele*, nipple; after the apothecia, which superficially resemble pyrenocarps, but are actually like those of *Arthonia*. Spores 8, hyaline or brownish, muriform)

Spores 1-septate longitudinally. . . . . A. hallii

Spores 2–5 septate longitudinally.

Apothecia to 0.25 mm across, or elongated to 1 mm or more; photobiont protococcoid. . . . . A. taediosum

Apothecia mostly larger, to 1.5 mm across, irregular; photobiont *Trentepohlia*. . . . . A. spectabile

**Arthothelium hallii** (Tuck.) Zahlbr. (after Elihu Hall, 1822–1882, American botanist from Athens, Illinois, and one of the organizers of the Illinois Natural History Society at Bloomington) This species is occasional on trees in central Illinois, but has yet to be documented from the Chicago region.

**Arthothelium spectabile** A. Massal. (*L. spectabilis*, remarkable, visible; probably from the fact that its apothecia are much larger than those of its relatives) = *Arthonia spectabilis* of Calkins, who noted that it grew on "maples at Glencoe, Riverside and elsewhere." Cook-1-F-NY

**Arthothelium taediosum** (Nyl.) Müll. Arg. (*L. taediosus*, boring; perhaps from its tiny apothecia, which appear inconsequential) = *Arthonia taediosa* of Calkins, who reported it from "maples in the Des Plaines valley; also found on oaks." This species is associated with a protococcoid photobiont. Cook-1-F

**ASPICILIA** A. Massal. (LECANORACEAE. Photobiont: chlorococcoid. *L. aspicilia*, "eyes of the viper"; probably from the round, lidless "eyes" or apothecia. Spores 2–8, hyaline, simple)

Thallus K+ yellow or red.

Thallus K+ yellow turning red, norstictic acid. . . . . A. cinerea

Thallus K+ persistent yellow, stictic acid. . . . . A. laevata

Thallus K–.

Thallus areolate or not, but without heavily pruinose thalline rims around sunken apothecia; on HCl– rock. . . . . A. caesiocinerea

Thallus areolate, many areoles with deeply seated apothecia surrounded by heavily pruinose thalline rims; on dolomite.

Thallus white or pale greenish white or gray, the areoles more or less contiguous; spores 8. . . . . A. calcarea

Thallus grayish, the areoles discontinuous or scattered; spores 4–6. . . . . A. contorta

**Aspicilia caesiocinerea** (Nyl. ex Malbr.) Arnold (*L. caesius*, bluish gray + *cinereus*, ash-colored; from the color of the thallus) Rare locally, this species is not uncommon just to the west of the Chicago region, where it occurs on sandstone in Lee and Ogle counties. It was collected recently on a granite boulder in the Palos Hills of southern Cook County. We also have a record from granite in nearby Putnam County, Illinois. [aspicilin] COOK

**Aspicilia calcarea** (L.) Mudd (*L. calcarius*, pertaining to or of lime; from the carbonate-rich substrate) = *Lecanora calcarea* of Calkins, who reported this species from "calcareous rocks at Joliet." [aspicilin] Will-1

**Aspicilia cinerea** (L.) Körb. (*L. cinereus*, ash-colored; from the color of the thallus) This species occurs frequently just west of the Chicago region, where it is known from granitic boulders at Nachusa Grasslands in Lee County and at the Harlem Hills Prairie in Winnebago County. Our only local record is from a large granitic boulder on the Des Plaines Fish and Wildlife Area near Wilmington. [norstictic acid, ± atranorin] WILL

**Aspicilia contorta** (Hoffm.) Kremp. (*L. contortus*, full of twists and turns; perhaps from the irregular, centrally elevated and marginally depressed areoles) = *Lecanora contorta* (Hoffm.) J. Steiner; *L. calcarea* var. *contorta* of Calkins. Our only specimens of this species are from dolomitic outcrops in dry prairie. [aspicilin] BOONE, Kane-12, WILL-1-NY

**Aspicilia laevata** (Ach.) Arnold (*L. laevis*, smooth + *-atus*, provided with; from the smooth cortex) This species occurs just southwest of the Chicago region, where it is known from a granite boulder in an open pasture near Sheridan. [stictic acid, ± norstictic acid, ± some terpenoid]

**BACIDIA** De Not. (BACIDIACEAE. Photobiont: green. *L. bacidium*, little rod; from the elongate spores. Spores narrowly elliptic to acicular, 8, hyaline, 3–several septate)

Thallus terricolous, saxicolous, or muscicolous.

Thallus terricolous or muscicolous. . . . . B. bagliettoana

Thallus saxicolous.

Spores short-fusiform. . . . . B. granosa

Spores acicular. . . . . B. egenula

Thallus corticolous; spores more than 30 µ long, less than 4 µ wide.

Apothecia epruinose in age, with the exciple and hypothecium deep pink to red brown in KOH.

- Discs red to blackish red; hypothecium in water yellowish or orange to brownish; young apothecia sometimes lightly pruinose. . . . . *B. polychroa*  
 Discs jet black; hypothecium in water brown to red brown; apothecia epruinose. . . . . *B. schweinitzii*  
 Apothecia commonly pruinose, at least along the margins, the exciple and hypothecium hyaline to yellowish in KOH.  
 Thallus rimose; apothecia pruinose throughout. . . . . *B. suffusa*  
 Thallus isidioid-granose; apothecia epruinose or with marginal pruina only. . . . . *B. rubella*

***Bacidia bagliettoana*** (A. Massal. & De Not. in A. Massal.) Jatta (after Francesco Baglietto, 1826–1916, Italian physician and lichenologist) = *Bacidia muscorum* (Sw.) Mudd. Muscicolous or terricolous; our only modern record is from soil over dolomite with *Catapyrenium lachneum*. Kane-12, WILL

***Bacidia egenula*** (Nyl.) Arnold (L. *egenus*, needy or destitute + *-ulus*, diminutive; perhaps from a perception that it appears depauperate, as tiny black dots, often on small rocks) Occasional on calcareous and noncalcareous rocks, this species has been misidentified routinely in North America as *Bacidia inundata* (Fr.) Körb. or *Biatora inundata* Fr. It differs in having a K+ green epithecium. Richard C. Harris has been struggling with the taxonomic disposition of this lichen, and recently has concluded that our material probably is *B. egenula*, a European species. He would be willing to call it *Bacidina egenula* (Nyl.) Vězda, inasmuch as its algae (gonidia) are in goniocysts. Whatever its name, it is a frequent species of dolomitic outcrops, glacial erratics, flagstone, and concrete; there is one specimen from rusty metal. Calkins wrote that it was "in all our territory on detached rocks or stones along streams," and that the thalli were "best shown on sandstones." BOONE, COOK-1, DU PAGE, LAKE IL, LAKE IN, PORTER, STARKE, WILL

***Bacidia granosa*** (Tuck.) Zahlbr. (L. *granosus*, full of seeds; from the granulose thallus) This species is infrequent on dolomitic outcrops and HCl+ boulders. A similar species, *B. cupreorosella* (Nyl.) A. Schneid., grows on limestone farther south; it has a hyaline hypothecium, while the hypothecium of *B. granosa* is dark. This species has been called *B. trachona* (Ach.) Lettau by many North American authors. According to Richard Harris (pers. comm.), that is a European species, and our material is referable here. Also, be alert for *Micarea peliocarpa* (Anzi) Coppins and R. Sant. It is similar to *B. cupreorosella*, in that the hypothecium is hyaline, but the apothecial sections react C+ red (gyrophoric acid), and the hymenium is greenish or olive. BOONE, COOK, DU PAGE, GRUNDY, KANKAKEE, WILL

***Bacidia polychroa*** (Th. Fr.) Körb. (Gr. *poly*, many + *chroa*, superficial color; probably from the apothecia that may vary from pale to reddish or blackish) = *B. fuscorubella* (Hoffm.) Bausch; *Biatora fuscorubella* of Calkins. Calkins stated that this species grew on substrates similar to those of *Bacidia rubella*, which see. Actually, all of the Calkins material we have seen that he called *B. rubella* is referable to *B. polychroa*. Cook-1

***Bacidia rubella*** (Hoffm.) A. Massal. (L. *rubeo*, to be red, *-ellus*, diminutive; from the tiny reddish apothecia) = *Biatora rubella* of Calkins; *Bacidia luteola* (Schrad.) Mudd. Calkins reported that "This widely diffused species occurs in our county on hickories and oaks. It is variable, and a number of varieties, fourteen or more, have been created species." Cook-1-F

***Bacidia schweinitzii*** (Tuck.) A. Schneid. (after Ludwig David von Schweinitz, 1780–1834, the German botanist) Known from all around the Chicago region, this species of shaded corticolous habitats has yet to be discovered locally.

***Bacidia suffusa*** (Fr.) A. Schneid. (L. *suffundere*, to pour into or under; perhaps from apothecia suffused with pruina) = *Biatora suffusa* Fr. In southern Illinois, this species is rare on *Carya* and *Liquidambar*. Calkins noted it from *Carya*. COOK-1-F, Will-1

**BIATORELLA** De Not. (ACAROSPORACEAE. Photobiont: chlorococcoid. Perhaps from Gr. *biator*, small + L. *-ellus*, diminutive; after the minute, numerous spores. Spores numerous, hyaline, simple)

***Biatorella cyphalea*** (Tuck.) Zahlbr. (Perhaps from Gr. *kyphos*, humped, curved + *aleo*, exposed to the sun; perhaps after the tiny convex apothecia on open-grown trees) = *Biatora cyphalea* Tuck. Fink (29) restricted this species to Illinois. Magnusson (55) cited a Wolf specimen from elm bark, and he also cited

a Calkins specimen from elms, "Chicago: Fox River." Actually, Calkins reported it as "rare on elms near the Fox River," a location that is more likely in Kane County. Cook-55, Kane-1

**BRYORIA** Brodo & D. Hawksw. (PARMELIACEAE. Photobiont: *Trebouxia*. A syncopation of the two genera: *BRYopogon* and *AlectORIA*. Spores 2–8, hyaline to brownish, simple)

**Bryoria furcellata** (Fr.) Brodo & D. Hawksw. (*L. furca*, fork + *-ella*, diminutive, + *-atus*, adjective ending; meaning minutely forked) Corticolous. [fumarprotocetraric acid] St. Joseph-9

**BUELLIA** De Not. (PYXINACEAE. Photobiont: *chlorococcoid*. After Esuperanzo Buelli (d. 1840), friend of De Notaris. Spores 8, brown, 1(3)-septate)

Apothecia and thallus notably K+ yellow to red.

Thallus corticolous..... *B. stillingiana*

Thallus saxicolous..... *B. stigmaea*

Apothecia and thallus K– or weakly K+.

Spores 17  $\mu$  or more long..... *B. erubescens*

Spores less than 17  $\mu$  long.. .. *B. turgescens*

***Buellia erubescens*** Arnold (*L. e-*, prefix meaning out or away from + *rubescens*, becoming red; perhaps an allusion to fact that the apothecia remain black when wet rather than turn reddish as in some other lichens with black apothecia) There is a specimen of this species (NY) from La Salle County, originally called *B. parasema* by Calkins and later annotated by Imshaug to *B. zahlbruckneri*, a synonym of *B. erubescens*. [usually with traces of norstictic acid, atranorin, and stictic acid]

***Buellia stigmaea*** Tuck. (Gr. *stigma*, points or dots + *L. -ea*, ending used to form epithets from root words ending in a vowel; perhaps from the appearance of numerous tiny black apothecia) This species is known from nearby Ogle County, where it grows on a sandstone cliff at Castle Rock State Park. [norstictic acid, atranorin]

***Buellia stillingiana*** J. Steiner (from *Stillingia*, the substrate of the type material) This species is not uncommon on corticolous substrates just south of the Chicago region, but it is rare locally. Richard Harris (pers. comm.) believes that Calkins's report of *B. disciformis* is likely to be based upon material of *B. stillingiana*, a theory reinforced by the fact that Imshaug cited a Cook County specimen of *B. stillingiana* and excluded *B. disciformis* from the Chicago region. [norstictic acid,  $\pm$  atranorin] Cook-1-39

***Buellia turgescens*** Tuck. (*L. turgescens*, becoming swollen; from the swollen appearance of the thallus areoles) This species resembles the tumescent *B. stigmaea*, but it reacts K– instead of K+ red. Our only record locally is from an HCl– boulder in a pastured fen. McHENRY

**CALOPLACA** Th. Fr. (TELOSCHISTACEAE. Photobiont: mostly "*Pseudotrebourgia*." Gr. *kalos*, beautiful + *plax*, a flat round plate, dish; from the attractive, round, yellow apothecia, resembling plates, of some species. This is a genus in which it is distinctly ungratifying to name specimens. With a few exceptions, most of the following names should be regarded as tentative. Spore measurements are taken from mature spores in 8-spored asci. Spores 8, hyaline, polaribilocular. Most species contain anthraquinones, particularly parietin)

Thallus sorediate.

Thallus saxicolous.

Thallus margins effigurate; soredia in soralia confined to the ends of the interior lobes..... *C. cirrochroa*

Thallus not effigurate; soredia in poorly delimited soralia. .... *C. citrina*

Thallus lignicolous or corticolous.

Thallus and soredia grayish, K–..... *C. obscurella*

Thallus and/or soredia yellow to orange, K+ red.

Thallus bright orange..... *C. microphyllina*

- Thallus pale yellow, only the apothecial discs bright orange. . . . . *C. chrysophthalma*
- Thallus esorediate.
- Apothecial discs black or brownish black, or buff and pruinose, K– or K+ violet.
- Discs distinctly K+ violet red; thallus corticolous or lignicolous, usually on *Juniperus*. . . . . *C. pollinii*
- Discs K– or K+ pale violet; substrate various.
- Thallus corticolous.
- Discs buff to brownish, pruinose. . . . . *C. camptidia*
- Discs black or brownish black, epruinose. . . . . *C. brunneola*
- Thallus saxicolous.
- Spores up to 12  $\mu$  long, less than 6.5  $\mu$  wide; apothecia initially immersed. . . . . *C. conversa*
- Spores more than 12  $\mu$  long and 6.5  $\mu$  wide; apothecia not initially immersed.
- Thallus and apothecial margins white; discs white pruinose. . . . . *C. variabilis*
- Thallus and apothecial margins gray or blackish; discs not pruinose. . . . . *C. atroalba*
- Apothecial discs pale yellow to orange, red orange, or brownish orange, K+ violet red.
- Thallus corticolous or lignicolous.
- Thallus yellowish gray to yellow, K+ red. . . . . *C. flavorubescens*
- Thallus absent or immersed, gray or blackish, or waxy white, K–.
- Thallus waxy, pale gray, the discs bright orange and nearly or quite without a thalloid exciple. . . . . *C. sp. #3*
- Thallus absent, or immersed, or blackish; thalloid exciple present or absent.
- Apothecial margins distinctly white pruinose, the discs dull tan yellow. . . . . *C. ulmorum*
- Apothecial margins epruinose, the discs rusty brown to orange.
- Apothecial margins mostly yellow to orange, usually a little paler than the discs. . . . . *C. holocarpa*
- Apothecial margins gray to rusty red or darker.
- Apothecial rim gray, conspicuous, and persistent. . . . . *C. cerina*
- Apothecial rim darkened rusty red, mostly flexuous and turning under in age. . . . . *C. ferruginea*
- Thallus saxicolous.
- Thallus yellow or orange, distinctly present at least near many of the apothecia, K+ purple.
- Thallus distinctly effigurate, the marginal lobes well developed, often branched, and usually with a particular orientation.
- Thallus distinctly pinkish-tinged, the lobes flat, with the outer portions heavily pruinose. . . . .  
. . . . . *C. galactophylla*
- Thallus saffron orange to red, the lobes convex, epruinose to thinly pruinose more or less all over.
- Many marginal lobes more than 0.6 mm wide and 2.5 mm long. . . . . *C. trachyphylla*
- Marginal lobes all less than 0.6 mm wide and less than 2.5 mm long. . . . . *C. saxicola*
- Thallus squamulose, areolate, or continuous, never effigurate, but sometimes with crenulate or divided lobe tips.
- Thallus distinctly orange-tinged, the paler than to concolorous with the apothecia.
- Many of the apothecia more than 0.4 mm across. . . . . *C. squamosa*
- Apothecia all less than or equal to 0.4 mm across. . . . . *C. subsoluta*
- Thallus distinctly yellow, notably paler than the orange or brownish apothecia.
- Thallus margins usually notably lobulate and commonly loosely appressed to the substrate; apothecia less than 0.4 mm across. . . . . *C. schaeferi*
- Thallus scant to continuous, but without notable lobulate margins; apothecia commonly more than 0.4 mm across.
- Thallus thin, more or less continuous, the apothecial rims essentially concolorous with the brownish or orange discs and tending to disappear in age. . . . . *C. flavovirescens*
- Thallus thick, more or less aggregated around the apothecia, the apothecial rims paler than the yellowish or brownish discs. . . . . *C. vitellinula*
- Thallus K– or absent or essentially so.
- Apothecial margins gray; thallus abundant, gray to black. . . . . *C. sideritis*
- Apothecial margins yellow, orange, or red brown; thallus absent, gray, or black; substrate chemistry various.
- Spore isthmus narrow, no more than 3.5  $\mu$  wide.
- Apothecia red brown or red orange. . . . . *C. sp. #1*
- Apothecia yellow or yellow orange, or the discs sometimes aging to tawny or brownish yellow or brownish black. . . . . *C. feracissima*
- Larger spore isthmi wider than 3.5  $\mu$ .
- Apothecia less than 0.3 mm across, the thallus immersed, or epilithic and thin or scant. . . . . *C. sp. #2*
- Many of the apothecia more than 0.3 mm across; thallus various.

- Thallus absent or essentially so.  
 Apothecia and rims deep orange, commonly angular by compaction. . . . . *C. lithophila*  
 Apothecia pale to dirty orange, the rims paler, not commonly misshapened by compaction. . . . .  
 . . . . . *C. vitellinula*  
 Thallus evident, thin or thick.  
 Substrate HCl-; proper exciple well developed and elevated above the surface of the disc. . . . .  
 . . . . . *C. oxfordensis*  
 Substrate HCl+; proper exciple scarcely evident, the disc flat or convex . . . . . *C. sp. #4*

**Caloplaca atroalba** (Tuck.) Zahlbr. (*L. ater*, black + *albus*, white; probably from the dark discs and pale-colored rims) This species was first discovered from Illinois by Richard Harris, who found it mixed with Calkins's specimen of *Lecania perproxima* at the New York Botanical Garden. There is one contemporary record from the Chicago region, in Will County, where it grows on bedrock within the zone of fluctuation along Prairie Creek just north of Wilmington, at the Joliet Arsenal. It also grows just south and west of the region on HCl+ rock outcrops. A Calkins specimen (#1752 NY) from Will County was originally named *Lecanora aipospila*. COOK-NY, WILL-NY

**Caloplaca brunneola** Wetmore (*L. brunneus*, dark brown + *-olus*, diminutive; from the color of the apothecial discs) Yet unknown from the Chicago region, this species is occasional farther south on a wide variety of deciduous trees and on *Juniperus virginiana*.

**Caloplaca camptidia** (Tuck.) Zahlbr. (*Gr. kampto*, to bend + *L. -idus*, diminutive; perhaps from the sometimes flexuous margins) Yet unknown from the Chicago region, this species occurs farther south, where it is rare on both hardwoods and junipers.

**Caloplaca cerina** (Ehrh. ex Hedwig) Th. Fr. (*L. cerinus*, yellowish, the color of yellow wax; from the color of the apothecia) An early Cook County specimen at ILL was named *Placodium ferrugineum* by Calkins. There is a modern Cook County record from a wooden fence rail. Our Porter and Berrien county specimens are from *Populus deltoides*. Just north of the Chicago region, and in Berrien County, this species is frequent on *P. deltoides*, commonly with *C. holocarpa*. BERRIEN-52-MIN, COOK-30-LE, Porter-35-MIN.

**Caloplaca chrysophthalma** Degel. (*Gr. chrysos*, gold + *ophthalmos*, the eye; probably from the deep golden orange apothecia on a pale yellow background) This attractive species is known from as far north in Illinois as Woodford County and as far south in Minnesota as Winona County, but it is yet unknown from the Chicago region.

**Caloplaca cirrochroa** (Ach.) Th. Fr. (*L. cirrhus*, yellowish, tawny orange + *Gr. chroa*, superficial color; perhaps from yellow thallus lobes) This species grows on exposed limestone just to the west of the Chicago region, in Jo Daviess, Rock Island, and Winnebago counties.

**Caloplaca citrina** (Hoffm.) Th. Fr. (*L. citrinus*, lemon-colored; from the color of the soredia) This species is typically found on vertical, dolomitic cliff faces or weathered quarry walls. It is characterized by isidiate or sorediate granules scattered over the surface. Occasional forms in which corticate areolae are sorediate on the edges have been called *C. citrina* var. *flavocitrina* (Nyl.) A. E. Wade, to which variety the Racine County record is referable. COOK, DU PAGE, KANE, KANKAKEE, KENDALL, RACINE, WILL

**Caloplaca conversa** (Kremp.) Jatta (*L. con-*, with, together + *versus*, turned; from what aspect of the lichen we cannot speculate) This species is known from southwest of the Chicago region, but we have not seen it locally.

**Caloplaca feracissima** H. Magn. (*L. ferax*, rich, fertile + *-issimus*, superlative suffix; from the masses of tiny yellow apothecia) This species accounts for most of the dirty yellow encrustations on sidewalks, flagstones, and weathered concrete. It grows routinely with *Endocarpon pusillum* and *Lecanora dispersa*. As understood here, this species includes specimens whose apothecia have discs that appear orange-brown and have pale rims as well as those whose apothecia have definitely brownish discs and even yellower and larger rims. There are populations that at times seem so distinct that one is scarcely able to imagine lumping them; then, there are others in which the apothecia appear to blend insensibly

from one end of the spectrum to the other. Neither group has the nearly septate spores of *C. approximata* (Lynge) H. Magn., in which the isthmus is scarcely 1  $\mu$  wide. Both groups though distinct are very weedy on weathered flagstone and concrete. Occasional specimens have paraphyses in which the terminal 1 or 2 cells expand to 7 or 8  $\mu$ , said to be characteristic of *C. lactea* (A. Massal.) Zahlbr., but so many of our specimens grade from 3 to 6  $\mu$  in this respect that it seems there is no discontinuous segregation. The reports of *C. arenaria* by McKnight, Wilhelm, & Whiteside (24) should be referred here. BERRIEN, BOONE, COOK-24, DE KALB, DU PAGE-24, GRUNDY-24, JASPER, KANE-24, KENDALL, LAKE IL-24, LAKE IN, La Porte-35, McHENRY, NEWTON, PORTER-35, RACINE, ST. JOSEPH, WALWORTH, WILL

**Caloplaca ferruginea** (Huds.) Th. Fr. (*L. ferrugo*, rust + *-ineus*, denotes a similar color or material; from the reddish brown apothecia, evocative of the color of rust) = *Placodium ferrugineum* (Huds.) Hepp. Calkins noted this species from "oaks along the Des Plaines river and near Elgin on hickories . . . plentiful." We have seen a specimen, properly identified (Calkins #318, NY) from "oaks, Illinois." This specimen was later annotated *C. pollinii* by Rudolph, we believe erroneously. Cook-1, Will-LE

**Caloplaca flavorubescens** (Huds.) J. R. Laundon (*L. flavus*, yellow + *rubescens*, becoming red; perhaps from the emergence of orange apothecia from a yellow thallus) = *C. aurantiaca* of American authors, not (Lightf.) Th. Fr.; *Placodium aurantiacum* of Calkins. The Newton County specimen is from *Quercus velutina* in black oak savanna. Calkins listed it from "elms and poplars at Glencoe; on hickories and other trees along the Des Plaines River." Curiously, he said it grew on rocks at Lemont and elsewhere; we wonder if these latter reports might have referred to what is now known as *C. flavovirescens*. Cook-1, NEWTON

**Caloplaca flavovirescens** (Wulfen) Dalla Torre & Sarnt. (*L. flavus*, yellow + *virescens*, becoming green or flourishing; perhaps from the fecundity and tumescence of the apothecia) Locally this species is infrequent on weathered concrete, dolomitic erratics, or quarry walls; it is much more common away from the region. Occasional specimens of this species (e.g. Calhoun and Carroll counties, Illinois) have in their hymenia parasitic, polysporous asci with brown, septate spores mostly 4–6  $\mu$  long. These may be *Muellerella lichenicola* (Fr.) D. Hawksw. COOK, DU PAGE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, RACINE

**Caloplaca galactophylla** (Tuck.) Zahlbr. (*Gr. galaxaios*, milky + *phyllon*, leaf; probably from the densely pale pruinose lobes) Yet unknown from northern Illinois, this species occurs on dry calcareous rock both north and south of our region, to the west.

**Caloplaca holocarpa** (Hoffm.) A. E. Wade (*Gr. holos*, whole, all + *karpos*, fruit; possibly from scant or often absent thallus) This is an occasional but widespread species of a wide variety of bark and lignin substrates, but particularly on *Populus detoides*. BERRIEN, COOK, LAKE IL, LAKE IN, McHENRY, PORTER, RACINE, WILL.

**Caloplaca lithophila** H. Magn. (*Gr. lithos*, rock + *philos*, loving, with a strong affinity to; from its inhabitancy of rocks) This lichen is infrequent locally on weathered dolomite and concrete. *Caloplaca lithophila* is not likely to be the proper name for this species, but the "*C. pyracea*" group for the interior United States has yet to be worked out by current students of the genus. Whatever this lichen is, it is fairly distinct in that the discs of the apothecia are deep orange or orange brown, and the rims are slightly paler orange; the apothecia are quite compact in their growth, which results in tight clusters of angular apothecia. Thallus tissue is nearly or quite absent. For the most part, the spores range from 10 to 14  $\mu$  long, with isthmi 4–5  $\mu$  wide. In some respects, this species resembles *C. squamosa*. GRUNDY, KANKAKEE, KENOSHA, WILL

**Caloplaca microphyllina** (Tuck.) Hasse (*Gr. mikros*, small + *phyllon*, leaf + *L. -inus*, pertaining to; perhaps from the occasional, tiny, flattened, areoles) = *Placodium microphyllum* of Calkins. Fink (29) spells the epithet "*microphyllina*." Rudolph (30) placed this species in the genus *Gasparinia*. That orange swatch that appears on farm wood and fences in the agricultural districts is either rust leached from barbed wire or *C. microphyllina*. It often grows with *Physcia millegrana* and *Amandinea punctata*.

COOK-1, DE KALB, DU PAGE, GRUNDY, JASPER, KANE, KENDALL, LAKE IL, LAKE IN, McHENRY, NEWTON, RACINE, STARKE, WALWORTH, WILL-1

***Caloplaca obscurella*** (J. Lahm ex Körb.) Th. Fr. (*L. obscurus*, dusky + *-ella*, diminutive; from the small gray thallus) Yet unknown from the Chicago region, this species was reported by Wetmore (78) from widely scattered locations all around the Midwest.

***Caloplaca oxfordensis*** Hedr. (Probably of Oxford, Ohio) Our only records of this species are from granitic boulders in open meadows or pastures. Wetmore (89) maps this species in several counties just to the north and east of the Chicago region. DU PAGE-84, KANE

***Caloplaca pollinii*** (A. Massal.) Jatta (after Ciro Pollini, 1782–1833, Italian physician and botanist) Farther south, this species grows on *Juniperus virginiana* in natural areas. The Cook (Calkins 53, MICH) and Kane (Fink, July 1895, MICH) county specimens were confirmed by Wetmore (78). Cook-78-MICH, Kane-78-MICH

***Caloplaca saxicola*** (Hoffm.) Nordin (*L. saxum*, stone + *colo*, to inhabit; from its inhabitancy of rocks) Yet unknown from the Chicago region, this species occurs regularly on dolomitic outcrops in hill prairies farther west and south, particularly along the Mississippi and Illinois rivers. Our Illinois material is consistently saffron orange and not as red as specimens from farther west.

***Caloplaca schaeferi*** (Flörke.) Zahlbr. (after Ludwig Emanuel Schaefer, 1785–1853) This species is uncommon locally on dolomitic cliff faces and outcrops. It can resemble *C. cinnabarina* because the apothecia are tiny, rarely more than 0.4 mm across, and the thallus is cracked-areolate to continuous, even occasionally minutely lobed near the edge, but the thallus is notably less orange than the discs, and the spores commonly are more than 11  $\mu$  long. We are not the least bit certain that *C. schaeferi* is the proper name for this lichen, but it appears to be the one used by Rudolph (30) for at least a similar lichen. BOONE, DU PAGE, KENDALL

***Caloplaca sideritis*** (Tuck.) Zahlbr. (Gr. *sideros*, iron or things made from iron + *-ites*, belonging to or having to do with; from the iron to greenish gray thallus) This species is occasional on granitic and dolomitic erratics, and on dolomitic outcrops and cliff faces. It is a variable species locally, particularly with respect to spore size; a few of our specimens have spores ranging from 16 to 22  $\mu$ , but are alike in all other respects. One specimen, from nearby Ogle County, Illinois, was from carbonate rock at Nachusa Grasslands, but it otherwise looks like *C. sideritis*. BOONE, COOK, DU PAGE, GRUNDY, KANE, KENDALL, McHENRY, WILL

***Caloplaca squamosa*** (de Lesd.) Zahlbr. (*L. squamosus*, scaly; from the squamuliform thallus) Uncommon locally on dolomitic erratics and on weathered concrete or mortar, it is more common farther south. Rarely, specimens have clustered apothecia with tiny fringes of minutely lobulate thallus, evocative of descriptions we have seen for *C. irrucescens* (Nyl.) Blomb. DU PAGE, KANE, WILL

***Caloplaca subsoluta*** (Nyl. ex Wedd.) Zahlbr. (Gr. *kinnabari*, a red pigment; from the color of the apothecia and thallus) = *Placodium cinnabarinum* of Calkins. As it was in Calkins's day, this is a frequent species of a variety of carbonate rocks, including concrete; it also can grow on HCl- rocks. It grows in weedy areas as well as on rocks in natural contexts. Occasional asci will be found with 1 or 2 spores that are larger than normal, but typically the 8-spored asci contain broadly ellipsoid spores 10–11  $\mu$  long, with isthmi 3–4  $\mu$  long. The apothecia rarely exceed 0.4 mm across, and mostly run about 0.2–0.3 mm across. This species was long known as *C. cinnabarina* (Ach.) Zahlbr. See also comments under *C. schaeferi*. BOONE, COOK-1, DE KALB, JASPER, KANKAKEE, KENDALL, LAKE IL, McHENRY, RACINE, WILL

***Caloplaca trachyphylla*** (Tuck.) Zahlbr. (Gr. *trachys*, rough + *phyllon*, leaf; from the rough surface of the thallus lobes) Yet unknown from the Chicago region, this species is rare farther west on carbonate rock.

***Caloplaca ulmorum*** (Fink) Fink (*L. ulmus*, the elm; of elm trees) We have a specimen from just west of the Chicago region, which grew on the trunk of *Juglans nigra* in a partly open mowed area. There are several Calkins specimens of this species at the New York Botanical Garden, all of which Calkins had called *Placodium aurantiacum*. Cook-NY, Kane-MICH



**Caloplaca variabilis** (Pers.) Müll. Arg. (*L. variabilis*, variable; perhaps from the variable size and appearance of the apothecia) = *Pyrenodesmia variabilis* (Pers.) A. Massal. Rudolph (30) listed this species from La Salle County. Interestingly, there is a Calkins specimen (F1177718) at the Field Museum referable to *C. atroalba*, which see. Our only record for this species is from a dolomitic boulder in a pasture at the Des Plaines Fish & Wildlife Area, near Wilmington. WILL

**Caloplaca vitellinula** (Nyl.) H. Olivier (*L. vitellus*, egg yolk + *-inus*, pertaining to + *-ulus*, diminutive; from the resemblance of the apothecia to tiny egg yolks) This species occurs occasionally in our southwestern sector and farther south and west on weathered dolomite and concrete. It is disturbingly similar to what we are calling *C. squamosa*, which has a more orange thallus, with more distinctly lobulate squamules. COOK, GRUNDY, KANE, KENDALL, WILL.

**Caloplaca sp. #1 sensu MOR** Thallus evidently absent; apothecia red brown to red orange, to 0.5 mm across, lacking a thalloid exciple, the proper exciple thick and not as prone to becoming as brownish as the disc. Spores are about 17  $\mu$  long, with an isthmus less than 3  $\mu$  long. Many of the paraphyses expand at the tips to nearly 6  $\mu$  wide. Rare farther south on carbonate rock, often with *Psora pseudorussellii*, it appears associated with minute excavations in the substrate, as if it were able to dissolve calcium carbonate. It is tempting to force it into *C. arenaria* (Pers.) Müll. Arg. or perhaps *C. lamprocheila* (DC.) Flag., but those species are alleged to grow on HCl– rock, and there are conflicting descriptions for them. Its habitat, calcareous hill prairies or glades, suggests that it is something other than those species. Representative specimen: Jones 2156c MOR.

**Caloplaca sp. #2 sensu MOR** Yet unknown from the Chicago region, this species occurs farther south on limestone outcrops, particularly along the bluffs of major rivers and in glades. It is characterized by tiny apothecia, mostly 0.1–0.25 mm across, growing in loose aggregations over the rock. The apothecial rims are scarcely paler than the discs, and the thallus is immersed or scant, consisting of a thin gray epilithic crust or of minute, grayish or blackish amounts near the apothecia.

**Caloplaca sp. #3 sensu MOR** Characterized by a waxy, pale gray, areolate thallus, with orange discs and proper exciples. Young apothecia appear to have a weakly developed thalloid exciple, but this is soon evanescent; spores are about 14  $\mu$  long, with isthmi about 6  $\mu$  long. Our only record for this distinctive lichen is from a wooden fence rail at Harms Woods, in Cook County. Representative specimen: Hyerczyk #863, MOR. COOK

**Caloplaca sp. #4 sensu MOR** This species resembles *C. sideritis*, except that it lacks a thalloid exciple, nearly from the start, and is evidently confined to carbonate rock. Sometimes we are inclined to ignore these differences and lump it with *C. sideritis*, but that would corrupt what is otherwise quite a distinctive species. At other times we are tempted to imagine that the thallus really is not gray, but rather a washed-out yellow, and to include it with *C. flavovirescens*. Other desperate measures have included lumping it with *C. sp. #2*, but there is too much thallus and the apothecia are more variable in size. Our only local specimens are from dolomitic outcrops along the bluffs of major streams. DU PAGE, KENDALL.

**CANDELARIA** A. Massal. (PARMELIACEAE. Photobiont: chlorococcoid. *L. candela*, candle + *-arius*, belonging to; from the yellow color, like the glow of a candle. Spores small, 16–32, hyaline, simple or rarely 1-septate; all species contain calycin and pulvinic dilactone)

Thallus esorediate. . . . . *C. fibrosa*  
Thallus sorediate.

Thallus primarily with marginal soralia, notably visible amongst the soredia. . . . . *C. concolor* var. *concolor*  
Thallus nearly or quite concealed by the densely laminal soredia. . . . . *C. concolor* var. *effusa*

**Candelaria concolor** (Dicks.) Stein var. **concolor** (*L. concolor*, the same color; from the fact that the apothecia are the same color as the thallus) = *Theloschistes concolor* of Calkins. This species, with the possible exception of *Physcia millegrana*, is the most common lichen in the Chicago region. It accounts

for most of the yellow swatches that are so characteristic of suburban trees such as *Populus deltoides*, *Acer negundo*, *Juglans nigra*, and *Ulmus americana*. It also grows on fence posts and rails, concrete, dolomitic erratics and outcrops, and tombstones. BERRIEN-35-52, BOONE, COOK-1, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, La Porte, McHENRY-NY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL-10

**Candelaria concolor** (Dicks.) Stein var. **effusa** (Tuck.) Burnham (*L. effusus*, spread out; from the unconsolidated granular thallus) Egan (41) did not recognize this element, but later Egan (53) placed it, evidently erroneously, in the genus *Candelariella*. Most of our specimens are from *Crataegus*, *Populus*, *Fraxinus*, *Ulmus pumila* and *Salix fragilis* in developed areas. The Starke County specimen is from *Quercus velutina* in a remnant savanna near Knox. BERRIEN, COOK, DE KALB, DU PAGE, GRUNDY, KANE, KENOSHA, LAKE IL, LAKE IN, STARKE, WILL

**Candelaria fibrosa** (Fr.) Müll. Arg. (*L. fibra*, a fiber or filament + *-osus*, denotes abundance or fullness; probably from the dense ring of white fibers that invests many apothecia) There is a Cook County specimen collected by Calkins. Still frequent on canopy branches in Missouri, it has not been collected in Illinois in this century. Cook-NY

**CANDELARIELLA** Müll. Arg. (LECANORACEAE. Photobiont: chlorococcoid. Diminutive of *Candelaria*. Spores 8–32, hyaline, simple or rarely 1-septate; all species contain calycin, pulvinic dilactone, and pulvinic acid)

Thallus of small squamules or areolae, or absent; apothecia usually present; corticolous or saxicolous.

Substrate carbonate rock or lignin; spores 8 per ascus. . . . . *C. aurella*

Substrate not carbonate rock; spores 16–32 per ascus. . . . . *C. vitellina*

Thallus notably sorediate or of corticate granules; apothecia rare; corticolous.

Thallus of scattered, globose, distinctly corticate, more or less evenly distributed granules. . . . . *C. xanthostigma*

Thallus sorediate, with ecorticate granules more or less clustered into soralia. . . . . *C. efflorescens*

**Candelariella aurella** (Hoffm.) Zahlbr. (*L. aurum*, gold + *-ella*, diminutive; from the tiny yellow apothecia) = *Placodium vitellinum* var. *aurellum* of Fink (12). Most of our specimens have come from weathered concrete within a few hundred yards of Lake Michigan, from weathered calcareous ballast rock in Grundy County, and from a weathered concrete bridge rail in De Kalb County. The Will County record is from a fence post, and the Racine County record is from weathered fence rails in Wind Lake. DE KALB, GRUNDY, Kane-12, KENOSHA, LAKE IL, RACINE, WILL

**Candelariella efflorescens** R. C. Harris & Buck (*L. efflorescens*, very rarely flowering) More than half of the Chicago region specimens are from *Quercus velutina*, though we also have it from *Q. macrocarpa*, *Crataegus*, *Juglans nigra*, *Populus deltoides*, *Prunus serotina*, *Tilia americana*, and weathered fence rails. The only Chicago Region specimens that we have seen with apothecia was from a Bur Oak; it bore asci with 32 spores. Harris & Buck (79) map it from areas all around the Chicago region, particularly north and east of us. Our lower Midwestern specimens infrequently produce apothecia, but all that we have seen have 8-spored asci and are referable to *C. reflexa* (Nyl.) Lettau. BERRIEN, BOONE, COOK, DU PAGE-24, GRUNDY, JASPER, KANE-24, KANKAKEE-24, LAKE IL-24, LAKE IN, NEWTON, Porter-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH

**Candelariella vitellina** (Ehrh. ex Hoffm.) Müll. Arg. (*L. vitellus*, egg yolk + *-inus*, pertaining to; from the tiny yellow apothecia) = *Placodium vitellinum* of Calkins. Most northern Illinois specimens are from sandstone exposures, but the only Chicago region saxicolous specimens we have seen are from igneous boulders. It is rare on lignin, such as old fence rails and wood, from which substrate it is reported by Calkins. We also have specimens from *Quercus alba* and *Q. macrocarpa*. On wood or bark it could be mistaken for *C. xanthostigma*, but the thallus granules of *C. xanthostigma* are smaller and not as coalesced. Cook-1, DU PAGE, JASPER, McHENRY, RACINE, WILL

**Candelariella xanthostigma** (Ach.) Lettau (Gr. *xanthos*, the various shades of yellow + *stigma*, point, dot, or tattoo; from the scattered, corticate, yellow granules) Seventy-five percent of Chicago region specimens are from species of *Quercus*, but there are also specimens from *Tilia americana*, *Juglans nigra*, *Carya ovata*, *Populus grandidentata*, and weathered fence rails. Berrien-35-52, DE KALB, DU PAGE-24, GRUNDY, JASPER, KANE-24, KANKAKEE-24, KENDALL-24, KENOSHA, LAKE IL-24, Lake IN-35, La Porte-35, McHENRY-24, NEWTON, Porter-INDU, RACINE, STARKE, WALWORTH, WILL

**CATAPYRENIUM** Flot. (VERRUCARIACEAE. Photobiont: *Trebouxia* and *Myrmecia*. Gr. *kata*, downward, inferior + *pyren*, kernel; apparently from the sunken perithecia. Spores 8, hyaline, simple)

Thallus corticolous, squamulose and adnate to foliose with the lobes densely rhizinate below. . . . . *C. tuckermanii*  
Thallus terricolous, squamulose or crustose, tightly adnate; rhizines absent. . . . . *C. lachneum*

**Catapyrenium lachneum** (Ach.) R. Sant. (Gr. *lachnos*, woolly hair, down; from the dense, black, fibrous prothallus) = *Dermatocarpon lachneum* (Ach.) A. L. Sm. Including *Endocarpon hepaticum* Ach.; probably also including *E. rufescens* Ach. Thomson (42) does not cite specimens, but appears to dot Cook and Walworth counties on a distribution map. The Boone, Cook, Kane, McHenry, and Will county specimens are from shallow soil over dolomite. This species often grows with *Psora decipiens* and prairie species such as *Andropogon gerardii*, *A. scoparius*, *Artemisia caudata*, *Comandra richardsiana*, *Euphorbia corollata*, *Liatris cylindracea*, *Petalostemum purpureum*, *Silphium terebinthinaceum*, and *Solidago nemoralis*. Near Lake Michigan at Clarke & Pine Nature Preserve and Illinois Beach State Park, it grows in stabilized sand prairie with *Andropogon scoparius*, *Arenaria stricta*, *Artemisia caudata*, *Aster azureus*, *A. ptarmicoides*, *Carex richardsonii*, *Liatris aspera*, and *Solidago nemoralis*. According to Richard C. Harris (pers. comm.), this species may wind up in the genus *Dermatocarpella*. BOONE, COOK-1-NY, KANE-12, LAKE IL, LAKE IN, McHENRY, WALWORTH, WILL-1

**Catapyrenium tuckermanii** (Ravenel ex Mont.) J. W. Thomson (after Edward Tuckerman, 1817–1886, American botanist and outstanding lichenologist) Although this species is yet unknown from the Chicago region, there is a Calkins specimen from La Salle County at the University of Illinois in the bound volumes of *Lichenes Exsiccati*. Calkins called it *Endocarpon arboreum*. Farther south, this species is occasional on old-growth, open-grown oaks of the white oak group.

**CATILLARIA** A. Massal. (MICAREACEAE. Photobiont: chlorococcoid. *L. catillus*, a small dish or plate + *-arius*, belonging to or resembling; possibly from the small dishlike apothecia. Spores 8, hyaline, 1-septate)

**Catillaria nigroclavata** (Nyl.) Schuler (*L. niger*, black + *clavatus*, club-shaped; probably from the club-shaped paraphyses tips and the dark epitecium) The Berrien County specimen was collected on *Populus deltoides* at Warren Dunes State Park. Berrien-35-52

**CETRARIA** Ach. (PARMELIACEAE. Photobiont: *Trebouxia*. *L. caetra*, a leather shield + *-arius*, like or connected with; from the shape and texture of the thallus. Spores 8, hyaline, simple)

**Cetraria arenaria** Kärnefelt (*L. arena*, sand + *-arius*, like or connected with; from its sandy soil habitat) The only record for this boreal species in the region of southern Lake Michigan is at Illinois Beach State Park, where it grows in sand prairie near the lake, with *Helianthus occidentalis*, *Andropogon scoparius*, *Arctostaphylos uva-ursi coactilis*, *Arabis lyrata*, *Juniperus horizontalis*, *Solidago speciosa*,

*Smilacina stellata*, *Opuntia humifusa*, *Carex umbellata*, *C. richardsonii*, *Sorghastrum nutans*, *Draba reptans*, and *Arenaria stricta*. [fatty acids] LAKE IL-24

**CHRYSOTHRIX** Mont. (CHRYSOTHRICHACEAE. Photobiont: *Chlorella*. Gr. *chrysos*, gold + *thrix*, the hair; perhaps from the tangled yellow hyphae. Spores not seen)

***Chrysothrix candelaris*** (L.) J. R. Laundon (*L. candela*, candle + *-aris*, pertaining to; from the yellow color of the thallus) This species is yet unknown from the twenty-two county Chicago region, but we do have a specimen from nearby Stephenson County, Illinois, where it grew at the base of an open-grown *Quercus alba*. [calycin or pinastric acid or rarely both]

**CLADINA** (Nyl.) Harm. (CLADONIACEAE. Photobiont: *Trebouxia*. Gr. *kladion*, a small branch; from the finely branched podetia. Spores 8, hyaline, simple)

Podetia white, usnic acid absent, K+ yellow. . . . . *C. rangiferina*  
 Podetia yellow green or grayish, usnic acid present, K-.  
 Fumarprotocetraric acid absent (P-). . . . . *C. mitis*  
 Fumarprotocetraric acid present (P+ red).  
 Ultimate branches with a strong tendency to be swept in one direction. . . . . *C. arbuscula*  
 Ultimate branches not notably oriented in one direction. . . . . *C. subtenuis*

***Cladina arbuscula*** (Wallr.) Hale & Culb. (*L. arbuscula*, a small tree, from the many-branched thallus) Our only records for this species are from Palos Park and in an open black oak sand savanna at the Kankakee River Valley Forest Preserve. [usnic acid, fumarprotocetraric acid] COOK, KANKAKEE

***Cladina mitis*** (Sandst.) Hustich (*L. mitis*, harmless, without spines; probably from the softness of moistened thalli) The Berrien County specimen was from soil in open sandy scrub at the Robinson Preserve, where it is common; the Porter County specimen was from sand prairie southwest of the visitor center of the Indiana Dunes National Lakeshore, along the horse trail. [usnic acid] BERRIEN, PORTER-35-MIN

***Cladina rangiferina*** (L.) Nyl. (*L. rangifer*, a reindeer + *-inus*, pertaining to; from the branched thallus reminiscent of reindeer) = *Cladonia rangiferina* (L.) Weber. Brodo (16) agrees with Ahti that Nylander was the first to make this combination, though some credit Harmand. Our Porter County specimen was from behind the visitor center of the Indiana Dunes National Lakeshore. The Berrien and St. Joseph county specimens were from open sand scrub. [atranorin, fumarprotocetraric acid] BERRIEN, PORTER-35-MIN, ST. JOSEPH, Walworth-3

***Cladina subtenuis*** (Abbayes) Hale & W. Culb. (*L. sub-*, below, almost, near; from its strong resemblance to *Cladina tenuis*) Probably = *Cladonia rangiferina* var. *sylvatica* of Calkins; note that Calkins did not mention any other *Cladina*. Locally, this species is rare on sandy open soil, or on eroded, well leached clayey till or loess, typically with other terricolous lichens and *Danthonia spicata*. [usnic acid, fumarprotocetraric acid] Cook-1, DU PAGE-47, KANKAKEE, PORTER, ST. JOSEPH, WILL-1

**CLADONIA** P. Browne (CLADONIACEAE. Photobiont: *Trebouxia*. Gr. *kladion*, a small branch; from shape of the podetia. Spores 8, hyaline, simple)

1. Podetia forming cups.
2. Podetia and cups esorediate.
  3. Thallus UV+ bright white (squamatic acid).
    - Baeomyceic acid absent. . . . . *C. squamosa*
    - Baeomyceic acid present. . . . . *C. atlantica*
  3. Thallus UV-, podetia without or with only scattered squamules.
  4. Central portions of the cups proliferating, producing secondary and tertiary cups. . . . . *C. verticillata*

4. Cups not proliferating, or proliferating from their margins only.  
 5. Cups with membranes irregularly perforated. . . . . *C. multiformis*  
 5. Cups without perforations.  
 6. Podetia tall, olive green, with the cups usually proliferating at their margins. . *C. gracilis* ssp. *turbinata*  
 6. Podetia short, gray green, the cups not or only rarely proliferating.  
 Homosekikaic acid present. . . . . *C. homosekikaica*  
 Homosekikaic acid absent. . . . . *C. pyxidata*
2. Podetia and or cups nearly or quite covered by fine to coarse soredia.  
 7. Podetia very elongate, terminated by small cups, finely sorediate, nearly or quite to the base.  
 Cups usually poorly developed and on only a few podetia; grayanic acid present. . . . . *C. cylindrica*  
 Most or all of the podetia with well developed cups; grayanic acid absent. . . . . *C. fimbriata*
7. Podetia stout, the cups often deep and flaring, sometimes partly corticate.  
 8. Apothecia and/or pycnidia red; thallus yellowish green; usnic acid present. . . . . *C. pleurota*  
 8. Apothecia and/or pycnidia brown; thallus grayish or whitish; usnic acid absent.  
 9. Grayanic acid present. . . . . *C. grayi*  
 9. Grayanic acid absent.  
 10. Cryptochlorophaeic acid present. . . . . *C. cryptochlorophaea*  
 10. Cryptochlorophaeic acid absent.  
 Soredia coarse and granular; cups stout; bourgeanic acid absent. . . . . *C. chlorophaea*  
 Soredia fine; cups thin, deep and expanded; bourgeanic acid present. . . . . *C. humilis*
1. Podetia not forming cups, or podetia absent.  
 11. Podetia chronically absent or less than 4 mm long.  
 12. Apothecia manifest, the podetia nearly or quite sessile; squamules notably incised.  
 Squamules K<sup>-</sup> (fumarprotocetraric acid). . . . . *C. caespiticia*  
 Squamules K<sup>+</sup> yellow (thamnolic acid). . . . . *C. parasitica*
12. Apothecia rare, the podetia minute and pointed or absent; squamules various.  
 13. All squamules less than 2 mm long.  
 14. Squamules P<sup>-</sup> or P<sup>+</sup> yellow, fumarprotocetraric acid absent.  
 Lower surface of squamules C<sup>+</sup> green. . . . . *C. strepsilis*  
 Lower surface of squamules C<sup>-</sup>. . . . . *C. bacillaris*
14. Squamules P<sup>+</sup> red (fumarprotocetraric acid).  
 15. Grayanic acid present. . . . . *C. cylindrica*  
 15. Grayanic acid absent.  
 Sphaerophorin present. . . . . *C. petrophila*  
 Sphaerophorin absent. . . . . *C. ramulosa*
13. Many squamules (2)3 mm or more long.  
 16. Squamules yellowish green; usnic acid present. . . . . *C. robbinsii*  
 16. Squamules grayish green or gray; usnic acid absent.  
 17. Squamules K<sup>+</sup> yellow turning red (norstictic acid).  
 Atranorin present. . . . . *C. symphycarpa*  
 Atranorin absent. . . . . *C. polycarpoides*
17. Squamules K<sup>-</sup> or K<sup>+</sup> yellow; norstictic acid absent.  
 18. Squamules UV<sup>-</sup>, squamatic acid absent.  
 Atranorin present. . . . . *C. apodocarpa*  
 Atranorin absent. . . . . *C. sobolescens*
18. Squamules UV<sup>+</sup> or UV<sup>-</sup>, squamatic acid present.  
 19. Lower surface of squamules C<sup>+</sup> green. . . . . *C. strepsilis*  
 19. Lower surface of squamules C<sup>-</sup>.  
 Baeomycic acid present. . . . . *C. atlantica*  
 Baeomycic acid absent. . . . . *C. squamosa*
11. Podetia manifest, 4 mm or more long.  
 20. Podetia esorediate.  
 21. Podetia much branched and elongated; basal squamules few or absent; apothecia absent.  
 22. Podetia gray green, UV<sup>-</sup>, P<sup>+</sup> red (fumarprotocetraric acid). . . . . *C. furcata*  
 22. Podetia yellow green, UV<sup>+/-</sup>, P<sup>-</sup> or P<sup>+</sup> yellow (usnic acid).  
 Ends of the branches lustrous, obviously areolate; squamatic acid present. . . . . *C. uncialis*  
 Branches more or less dull throughout, areoles obscure or absent; squamatic acid absent. . . . .  
 . . . . . *C. caroliniana*

21. Podetia simple or only sparingly branched; basal squamules well developed; apothecia conspicuous.
23. Apothecia red (rarely black); barbatic acid present.  
 Podetia wholly corticate. . . . . *C. cristatella*  
 Podetia with ecorticate patches that turn brown and translucent. . . . . *C. didyma*
23. Apothecia tan or brown to nigrescent; barbatic acid absent.
24. Podetia K+ yellow turning red (norstictic acid).  
 Atranorin present. . . . . *C. symphycharpa*  
 Atranorin absent. . . . . *C. polycarpoides*
24. Podetia K- or K+ yellow; norstictic acid absent.
25. Podetia K+ yellow (atranorin). . . . . *C. cariosa*
25. Podetia K-; atranorin absent.
26. Thallus yellowish green; usnic acid present. . . . . *C. piedmontensis*
26. Thallus grayish green or gray; usnic acid absent.
27. Apothecia tan; squamules less than 1.5 mm long. . . . . *C. peziziformis*
27. Apothecia brown; many squamules more than 1.5 mm long.
28. Podetia UV- (fumarprotocetraric acid), smooth or sparsely squamulose. . . . . *C. sobolescens*
28. Podetia UV+ bright white (squamic acid), densely squamulose or not.  
 Baeomycic acid present. . . . . *C. atlantica*  
 Baeomycic acid absent. . . . . *C. squamosa*
20. Podetia sorediate, at least in part.
29. Apothecia and/or pycnidia red.
30. Many basal squamules more than 2 mm long, heavily sorediate; squamic acid present; barbatic acid absent. . . . . *C. incrassata*
30. All basal squamules less than 2 mm long, sorediate or not; squamic acid absent; barbatic acid present.  
 Squamules incised, esorediate; podetia scarcely sorediate, beset with granular or isidioid squamules except in ecorticate areas that turn brown and translucent. . . . . *C. didyma*  
 Squamules occasionally lobed but not incised, sorediate; podetia with patches of fine soredia. . . . . *C. bacillaris*
29. Apothecia and pycnidia brown.
31. Podetia both P- and K-; fumarprotocetraric acid and norstictic acid absent.  
 Podetia and squamules finely divided, often yellowish; barbatic acid, ± usnic acid. . . . . *C. bacilliformis*  
 Podetia and squamules not notably divided, grayish green; homosekikaic acid only. . . . . *C. rei*
31. Podetia either P+ red or K+ red; either fumarprotocetraric acid or norstictic acid present.
32. Grayanic acid present. . . . . *C. cylindrica*
32. Grayanic acid absent.
33. Podetia K+ yellow turning red (norstictic acid), esorediate.  
 Atranorin present. . . . . *C. symphycharpa*  
 Atranorin absent. . . . . *C. polycarpoides*
33. Podetia K-, norstictic acid absent, usually sorediate.
34. Many squamules more than 2 mm long, lobed, but not much incised; basal portions of podetia with large corticate, smooth patches  
 Podetia mostly very slender, commonly corticate for more than 2 mm above the base. . . . . *C. ochrochlora*  
 Podetia mostly stout, sorediate throughout, or corticate to about 2 mm above the base. . . . . *C. coniocraea*
34. Most of the squamules less than 2 mm long, lobed or incised, but podetia essentially decorticate and finely granular sorediate throughout.  
 Squamules not much incised; podetia very elongate and tapering, some of them 1.5 cm or more long. . . . . *C. subulata*  
 Squamules usually incised; podetia various, but shorter than 1.5 cm. . . . . *C. ramulosa*

***Cladonia apodocarpa*** Robbins (Gr. *a-*, without, absent, away + *podos*, foot + *karpos*, fruit; from the typically sessile apothecia) Yet unknown from the Chicago region, this species is known from nearby La Salle County where it grows on a bluff top at the Seneca Hill Prairie. [fumarprotocetraric acid, atranorin]

**Cladonia atlantica** A. Evans (after the Atlantic coast) The Kane County material was collected on a decorticate log in open woods; the Berrien County population is on sandy soil in scrubby woods at the Robinson Preserve, and the Jasper County population is from shaded vertical sandstone along Carpenter Creek in Fountain Park. All of our specimens, like so much Midwestern material, contain what appears to be barbatic acid rather than baeomyctic acid, and should perhaps be treated as a chemical race of *C. squamosa*. [squamatic acid, baeomyctic acid, or barbatic acid?] BERRIEN, JASPER, KANE

**Cladonia bacillaris** Nyl. (*L. baculus*, staff, rod + *-aris*, pertaining to; from the resemblance of the podetia to little rods) Including *C. bacillaris* f. *clavata* (Ach.) Vain. It is probable that Calkins's report of *C. macilenta* is referable here inasmuch as he did not list *C. bacillaris*, and noted that *C. macilenta* and *C. cristatella* were easily told by their scarlet apothecia. This species is characteristic of decorticate logs, stumps, and weathered farm wood, where it often covers large areas and sometimes, especially on corticate logs, grows with mosses such as *Platygyrium repens* and *Entodon seductrix*. Lichen associates often include *Cladonia coniocraea*, *C. cylindrica* and *C. cristatella*. There are also specimens from the bases of *Pinus*, *Quercus velutina*, and *Prunus serotina*. In our eastern sector, it sometimes grows on stable sandy soil, and there is one specimen from a shaded vertical sandstone cliff. [barbatic acid] BERRIEN, COOK-1-NY-US, DU PAGE-47, GRUNDY, JASPER, KANE-ILL, KANKAKEE, LAKE IL, LA PORTE-35, McHENRY-ILL, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH-3-US, WILL

**Cladonia bacilliformis** (Nyl.) Glück (*L. baculus*, staff, rod + *forma*, shape, appearance; from the resemblance of the podetia to little rods) The Porter County specimen was collected on a log behind the visitor center of the Indiana Dunes National Lakeshore at Kemil Road. The label reads P-, K-, KC+R; the specimen did not appear yellowish and does not appear to have been chromatographed. [barbatic acid, usnic acid] Porter-35-MIN

**Cladonia caespiticia** (Pers.) Flörke (*L. caespiticius*, forming a turf; from the turflike development of the squamules) According to Harris (15), a synonym for this plant is *C. invisita* Robbins. The substrate is quite variable, though this species is most often found at the bases of *Quercus velutina* or *Q. palustris*. There is a specimen from the base of *Tsuga canadensis*, one from HCl+ rock, one from a decorticate log, and one from shaded stable sands along the foredunes at Indiana Dunes State Park. Fink's Kane County specimen (ILL) is from an old cedar log in the *Thuja* swamp at Elgin. [fumarprotocetraric acid] BERRIEN, COOK, JASPER, KANE-ILL-NY-US, LA PORTE, NEWTON, PORTER-35

**Cladonia cariosa** (Ach.) Spreng. (*L. cariosus*, much decayed; perhaps from the often nigrescent or brownish tinge of older, typically persistent squamules) = *C. "cariota"* of some authors. Calkins & Huett report this species from La Salle County; the only Illinois specimens we have seen are from southern Illinois. It is probable that this local report is based upon some other species. [atranorin]

**Cladonia caroliniana** Schwein. ex Tuck. (of the Carolinas) This lichen is unknown from the twenty-two county Chicago region, but it grows just to the west in sandstone areas of Lee and Ogle counties. Richard Harris (pers. comm.) regards all of the Midwestern material to be *C. dimorphoclada* Robbins. [usnic acid]

**Cladonia chlorophaea** (Flörke ex Sommerf.) Spreng. (Gr. *chloros*, green, greenish yellow + *phaios*, dusky, dark, gray; from the greenish gray color of the podetia and squamules) Probably = *C. pyxidata* and *C. pyxidata* var. *pocillum* of Calkins. Including *C. chlorophaea* f. *carpophora* (Flörke) Anders.; *C. chlorophaea* f. *simplex* (Hoffm.) Arnold. Note that Calkins did not mention this species and, of course, was unaware of the chemical segregates. Usually, this species grows on weathered clayey till or spoil, or weathered sandy fields, sand prairies, and black oak savannas. It is occasional at the bases of trees, particularly *Quercus*, but there are also specimens from burnt wood, decorticate logs, and stumps. A Calkins specimen from Cook County (#1891 NY) was originally named *C. fimbriata simplex*. [fumarprotocetraric acid] BERRIEN-35-52, COOK-1-ILL-NY, DU PAGE-47, GRUNDY, JASPER, KANE, KENDALL, LAKE IL-NY, LAKE IN, La Porte-34, McHENRY-ILL, PORTER-35, RACINE, ST. JOSEPH, STARKE, WALWORTH-3

**Cladonia coniocraea** *auct.* (Gr. *konios*, point, top + *craer*, dusty; perhaps from the sorediate podetia) Including *C. coniocraea* f. *ceratodes* (Flörke) Dalla Torre. Perhaps including *C. fimbriata* var. *tubaeformis* of Calkins, in part. We are also including here Mueller's (1889) report of *C. ochrochlora* Flörke pending verification of his specimen. We have identified a specimen from Schuyler County, in southern Illinois, as this species based upon its podetia, which have corticate areas above the middle that are mixed with sorediate patches; the squamules are more dissected than those of *C. coniocraea*, and usually a few are laminal. *C. coniocraea* is characteristic of corticate and decorticate logs in shaded woods, often with *C. bacillaris*, but it is occasional at the bases and along the lower trunks of trees, particularly *Quercus*. There is one specimen from a stable, partly shaded foredune at Indiana Dunes State Park. Calkins specimens from Cook County (#1898, #251, #1981, and #1848) were originally called *C. fimbriata*, *C. f. tubaeformis*, *C. f. apolepta*, and *C. ochrochlora*, respectively. [fumarprotocetraric acid] BERRIEN, COOK, DU PAGE-47, JASPER, KANE, KENDALL, LAKE IL, La Porte-35, McHENRY-ILL, NEWTON, PORTER-35, STARKE, Walworth-3, WILL

**Cladonia cristatella** Tuck. (L. *crista*, a crest + *tellus*, earth; from the soil-inhabiting, red-crested podetia, or perhaps from the diminutive of *cristatus*, crested) This is the common "British Soldiers" lichen. It grows on just about any substrate that will support *Cladonia*, though it is most frequent on decorticate logs and old wood; it is also frequent as a terricolous species in black oak savannas and in sandy prairies. Occasionally it is found on shingled roofs, fence posts, and even on weathered cinders along railroads. Calkins & Huett reported *C. floerkeana* from La Salle County, and Müller (67) reported it from Lake County, Indiana; we are referring reports of that eastern species here pending examination of voucher material. [barbatic acid, didymic acid, ± usnic acid] BERRIEN-35-52, BOONE, COOK-1-NY, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, LAKE IL-NY, LAKE IN-35, La Porte-35, McHenry-ILL, NEWTON, PORTER-INDU, ST. JOSEPH, STARKE, WALWORTH, WILL-10

**Cladonia cryptochlorophaea** Asahina (Gr. *kruptos*, hidden + *chlorophaea*, a related species, which see; from its hidden, chemical, distinction from *C. chlorophaea*) Thomson (32) mapped this species from extreme southeastern Wisconsin. It grows in habitats similar to those of *C. chlorophaea*, though it is less common. A Calkins specimen from Cook County (#1991) was originally called *C. fimbriata simplex*. [cryptochlorophaeic acid, ± fumarprotocetraric acid, ± atranorin] BERRIEN, BOONE, COOK-NY, DU PAGE-47, JASPER, KANKAKEE, LAKE IL, La Porte-35, NEWTON, Porter-35, Starke-66

**Cladonia cylindrica** (A. Evans) A. Evans (Gr. *kylindros*, a cylinder; from the somewhat cylindrical shape of the podetia) = *C. borbonica* (Del.) Nyl. f. *cylindrica* Evans. Except for one specimen that grew on humus over sand at Illinois Beach State Park, all Chicago region material is from shaded decorticate logs and old stumps. Calkins's specimens from Cook County (#1849 and #1991) were originally called *C. fimbriata simplex*. [grayanic acid, fumarprotocetraric acid] COOK-NY, DU PAGE-47, LAKE IL, La Porte-34-51-US, NEWTON, PORTER-35, ST. JOSEPH, WILL

**Cladonia didyma** (Fée) Vain. (Gr. *didymos*, double, twofold; only Fée knows why he named it thus) Including *C. didyma* f. *subulata* Sandst.; *C. pulchella* Schwein. Rare locally, this species is confined to decorticate logs. [barbatic acid, didymic acid] BERRIEN, COOK, DU PAGE-47, McHENRY, NEWTON, Walworth-3-US

**Cladonia fimbriata** (L.) Fr. (L. *fimbriatus*, fibrous, fringed with hairs; from the fringed appearance of the evenly spaced podetia on decorticate logs) This species is occasional on decorticate logs and stumps, rare on weathered till. [fumarprotocetraric acid] COOK-1, DE KALB, DU PAGE-26-47, JASPER, KANE, KENDALL, LAKE IL, Lake IN-67-INDU, NEWTON, PORTER-35, Will-1

**Cladonia furcata** (Huds.) Schrad. (L. *furcatus*, forked; from the branched podetia tips) Locally, weathered till in natural areas is the most common habitat, but there is one record from black oak savanna, and another from high, stable mesophytic dune forest in Berrien County. [fumarprotocetraric acid] BERRIEN, COOK, DU PAGE-47, JASPER, KANE, LAKE IL, McHENRY, PORTER, RACINE, ST. JOSEPH, WALWORTH, WILL-1



**Cladonia gracilis** (L.) Willd. ssp. **turbinata** (Ach.) Ahti (*L. gracilis*, slender, simple; from the slender podetia; *L. turbinatus*, cone- or top-shaped; from the shape of the podetia that typically flare distally) = *C. gracilis* of Calkins. It is likely that his report is referable to some other species. *C. gracilis* var. *verticillata* of Calkins may be referable here, because at least one specimen with that name, in his bound *Lichenes Exsiccati* at ILL, is this species. [fumarprotocetraric acid] Cook-LE

**Cladonia grayi** G. Merr. ex Sandst. (after Rev. Fred Gray, of West Virginia, an amateur botanist) Including *C. grayi* f. *aberrans* Asahina. Some of Calkins's reports of *C. pyxidata* may be referable here. This species is probably the commonest cup lichen in the region, growing on weathered till, decorticate logs, tree bases, and in sandy prairies and savannas. [grayanic acid, ± fumarprotocetraric acid] BERRIEN, COOK, DU PAGE-47, JASPER, KANKAKEE, LAKE IL, LAKE IN, La Porte-US, NEWTON, PORTER-INDU, ST. JOSEPH, STARKE-66, WALWORTH-3-US, WILL

**Cladonia homosekikaica** Nuno (A chemical species related to *C. pyxidata*, identified by the presence of homosekikaic acid) In North America, this species is confined to the antedunal region of Illinois Beach State Park, where even there it is rare. [homosekikaic acid, atranorin, fumarprotocetraric acid] LAKE IL-24

**Cladonia humilis** (With.) J. R. Laundon (*L. humilis*, small, dwarfish, on the ground; probably from its low habit) = *C. conista* (Ach.) Robbins. Including *C. conista* f. *simplex* Robbins. This segregate of *C. chlorophaea* is rare with us, known from just a few sandy prairies and savannas. A Calkins specimen from Cook County (#1991) was originally called *C. fimbriata simplex*. [fumarprotocetraric acid, bourgeanic acid] Cook-NY, LAKE-IL, Porter-US, Walworth-3, WILL

**Cladonia incrassata** Flörke (*L. incrassatus*, thickened, stout; probably from the relatively thickened squamules) In the Chicago region, this species is confined to ombrotrophic bogs, where it grows at the bases of *Larix laricina* or on the old stumps. [squamic acid, usnic acid, rhodocladonic acid] BERRIEN, LA PORTE, Walworth-3

**Cladonia multiformis** G. Merr. (*L. multus*, many + *forma*, shape, appearance) Our only record of this northern species is from weathered till, where it grows with *C. peziziformis*. [fumarprotocetraric acid] DU PAGE-47, WILL

**Cladonia ochrochlora** Flörke (Gr. *okhros*, pale yellow + *khloros*, green) There is some controversy over the taxonomy of this species and *C. coniocraea*. The only specimen we have seen of this species locally is one from Cook County (Calkins #1897 NY) that Calkins labeled *C. fimbriata* var. *coniocraea* and indicated that it had grown on an exposed cedar root near Glencoe. [fumarprotocetraric acid] COOK

**Cladonia parasitica** (Hoffm.) Hoffm. (Gr. *para*, beside, near + *sition*, grain, food; from its presumed habitat on its nutrient source) = *C. delicata* of Calkins, who noted that was "found near Elgin on old stumps, near Lemont, and elsewhere." [thamnolic acid, decarboxythamnolic acid] Cook-1-NY

**Cladonia petrophila** R. C. Harris (Gr. *petra*, a rock, particularly a rock ledge + *philos*, loving, having an affinity for; from its fidelity to rock substrates) Yet unknown from the Chicago region, this species is known from nearby Marshall County, Illinois, where it grows on shaded sandstone in a mesophytic ravine along Tomahawk Bluff. This species was called *C. subapodocarpa* by Hale (6). [sphaerophorin, atranorin, fumarprotocetraric acid]

**Cladonia peziziformis** (With.) J. R. Laundon (*L. pezica*, a sessile mushroom + *forma*, shape, appearance; from the supposed mushroomlike appearance of the small, flesh-colored apothecia atop stipelike podetia) = *C. capitata* (Michx.) Spreng.; *C. mitrula* Tuck. Including *C. mitrula* f. *squamulosa* G. Merr. With the possible exception of *C. polycarpoides*, this species is the weediest of our *Cladoniae*. It is characteristic of weathered clay tills and bluffs, often along worn paths and compacted soils, particularly where *Danthonia spicata* grows. It also grows in sandy prairies and savannas, and we even have a specimen from an old rag. [fumarprotocetraric acid] BERRIEN-52, COOK-1-NY, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, LAKE IL, Lake IN-67-68-INDU, McHenry-ILL, NEWTON, PORTER, ST. JOSEPH, WALWORTH-3-US, WILL

**Cladonia piedmontensis** G. Merr. (of the Piedmont) Although we have a couple of specimens from weathered clay till, most of the Chicago region material comes from our eastern sector, where it grows

in sandy prairies and black oak savannas. [usnic acid; the Will County specimen contains fumarprotocetraric acid, as do a couple of specimens from the Florida panhandle] BERRIEN, COOK, DU PAGE-47, NEWTON, PORTER, ST. JOSEPH, WILL

**Cladonia pleurota** (Flörke) Schaer. (Gr. *pleuron*, a rib, the side + *ota*, the ear; perhaps from the often imperfectly shaped cups evocative of the ear) Although we have a couple of specimens from weathered clay till, most of the Chicago region material comes from our eastern sector, where it grows in sandy prairies, black oak savannas, and even on long-stabilized sand in old sand pits and along road shoulders. One specimen is from a decorticate log. [usnic acid, zeorin] BERRIEN, COOK, DU PAGE-47, KANKAKEE, LA PORTE, NEWTON, PORTER-INDU, ST. JOSEPH, Starke-66

**Cladonia polycarpoides** Nyl. in Zwackh (Gr. *poly*, many + *karpos*, fruit + *-ideos*, denoting a likeness of form; from the often aggregated apothecia atop a single podetium) Though the photograph in Armstrong (26) is labeled *C. polycarpoides*, it is actually an image of *C. chlorophaea* s.l.; nevertheless, preserved voucher specimens of both species from the Armstrong work are present at MOR. Most local reports of *C. symphyrcarpa* probably should be referred here. Though not quite as "weedy" as *C. peziziformis*, *C. polycarpoides* is as widespread and will grow here on almost any terricolous substrate suitable for lichens. [norstictic acid] BERRIEN, COOK, DU PAGE-26-47, KENDALL, LAKE IL, LAKE IN, LA PORTE, NEWTON, PORTER-INDU, ST. JOSEPH, STARKE, WALWORTH, WILL

**Cladonia pyxidata** (L.) Hoffm. (*L. pyxidatus*, boxlike, cubical; presumably from the boxlike depressions formed by the cupped podetia) Thomson (32) mapped this species from extreme southeastern Wisconsin. A rare species here, the Lake County, Illinois, specimen is from weathered clay till on the south face of a pastured slope. The Lake County, Indiana, specimen was collected from "Miller Woods," where it no doubt grew in sandy black oak savanna. [fumarprotocetraric acid] Berrien-35-52, Cook-LE, LAKE IL, LAKE IN-ILL, McHenry-ILL, Porter-INDU

**Cladonia ramulosa** (With.) J. R. Laundon (*L. ramulus*, a little branch + *-osus*, denoting full of or prone toward; from the occasional small branchlets at the tips of the podetia) = *C. pityrea* (Flörke) Fr. Including *C. pityrea* var. *zwackii* Vain. f. *squamulifera* Vain.; *C. pityrea* var. *zwackii* f. *subacuta* Vain. Some recent authors have used the name *C. anomaea* (Ach.) Ahti & P. James. This species is characteristic of corticate and decorticate fallen logs in partly shaded areas, where it often grows with *C. bacillaris*. It also grows at the bases of trees in oak woodlands. There is a common squamulose, epodetiate, fumarprotocetraric acid-producing species that occurs at the bases of trees throughout the Midwest; it may be referable here. [fumarprotocetraric acid] COOK, DU PAGE-47, JASPER, KENOSHA, LAKE IL, LAKE IN, NEWTON, PORTER-35, STARKE, WALWORTH-3-US, WILL

**Cladonia rei** Schaer. (after Giovanni Re, 1773–1833, Italian botanist and physician) Skorepa's (10) report of *C. decorticata* (Flörke) Spreng. [Skorepa & Vermoch #5225 (SIU)] is referable here. This species occupies a wide variety of substrates, in waste ground and in natural areas. It grows on such things as charcoal, burnt wood, corticate and decorticate logs, tree bases, humus, weathered till, sand, and spoil banks. [homosekikaic acid] BERRIEN-52, COOK, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, LAKE IL, LAKE IN-35, La Porte-35, McHENRY-ILL, NEWTON, PORTER-INDU, ST. JOSEPH, STARKE, WALWORTH, WILL-10

**Cladonia robbinsii** A. Evans (after William Jacob Robbins, 1890–1978, American botanist) Very rare, evidently confined to the moist stable sands of the antedunal region of Illinois Beach State Park, and stable dunes and black oak savannas near Lake Michigan. [usnic acid, barbatic acid] LAKE IL, PORTER

**Cladonia sobolescens** (Nyl.) Vain. (*L. soboles*, sprout, shoot + *-escens*, beginning, becoming, slightly; from appearance of the podetia as sprouts) = *C. clavulifera* Vain. This species is occasional on disturbed but stable sands in power line rights-of-way and roadsides. [fumarprotocetraric acid] KANKAKEE, PORTER, ST. JOSEPH

**Cladonia squamosa** (Scop.) Hoffm. (*L. squamosus*, scaly; from the squamulose podetia) Calkins reported it from "earth and rotten logs in Will County and the western part of Cook." See also the comments under *C. atlantica*. [squamic acid] COOK-1, WILL-1

**Cladonia strepsilis** (Ach.) Vain. (Gr. *strepsis*, a twist + *-ilis*, denoting a quality or capacity; from what aspect we have yet to imagine) Our only specimen is from a stable blowout opposite the visitor center of the Indiana Dunes National Lakeshore. [strepsilin, baecomysic acid, squamic acid] PORTER-35

**Cladonia subulata** (L.) Webber ex F. H. Wigg. (*L. subulatus*, shaped like an awl; from the shape of the podetia) Possibly = some of those specimens Calkins called *C. fimbriata* var. *tubaeformis*. Our few records for this species include a specimen (Clinton-ILL) collected in 1890 in Cook County and one collected recently in Cook County at Spring Lake Nature Preserve on a decorticate log. There is another contemporary collection from a stump in a remnant savanna in Walworth County. We have a modern record from a weathered strip mine area near Ottawa in La Salle County. [fumarprotocetraric acid] COOK-ILL, WALWORTH

**Cladonia symphycarpa** (Ach.) Fr. (Gr. *symphyo*, to glue together + *karpos*, fruit; from the often united or coalesced apothecia atop a podetium) The few specimens we have are from sandy prairies and black oak savannas. [atranorin, norstictic acid] BERRIEN, JASPER, KANKAKEE, PORTER

**Cladonia uncialis** (L.) Weber ex F. H. Wigg. (*L. uncialis*, the twelfth part of anything; from what we have no idea) Calkins & Huett reported this species from La Salle County, and we have a modern record from Ogle County, where it grows in prairie at the mouth of Anne's Canyon, at Castle Rock State Park. [squamic acid, usnic acid]

**Cladonia verticillata** (Hoffm.) Schaer. (*L. verticillatus*, whorled; presumably from the position of the apothecia along the rims of the flares at the tips of the podetia) = *C. gracilis* var. *verticillata* of Calkins; *C. cervicornis* (Ach.) Flot. ssp. *verticillata* (Hoffm.) Ahti. Some of our specimens are from weathered clayey till, often with *Danthonia spicata*, but most are from sand prairies or black oak savannas. [fumarprotocetraric acid] BERRIEN, COOK, DU PAGE-47, LAKE IL, La Porte, McHenry-ILL, PORTER-INDU, ST. JOSEPH, WILL-1

**COLLEMA** F. H. Wigg. (COLLEMATACEAE. Photobiont: *Nostoc*. Gr. *kollema*, that which is glued; from the gelatinous thallus. Spores 8, hyaline, septate to muriform)

Thallus isidiate or warty-papillose.

Thallus minute, to 0.5 cm across, subcrustose, the lobes not warty; spores 2–5 septate, 1–2 muriform, 16–30  $\mu$  long, about half as wide. . . . . *C. fragrans*

Thallus larger, clearly foliose, the lobes flat to much thickened and warty; spores not muriform.

Lobes much thickened and warty-isidiate; apothecia abundant; spores 2(4)-celled, 15–24  $\mu$  long. . . . . *C. conglomeratum*

Lobes flat, finely isidiate; apothecia rare; spores 3–6 celled, 25–80  $\mu$  long.

Thallus saxicolous. . . . . *C. flaccidum*

Thallus corticolous.

Lobe surfaces dull, subtly but distinctly pustular; spores 5–6 celled, 40–80  $\mu$  long, elongate fusiform. . . . .

. . . . . *C. furfuraceum*

Lobe surfaces smooth and sublustrous; spores 3–5 celled, 26–45  $\mu$  long, short fusiform. . . . . *C. subflaccidum*

Thallus without isidia or warty papules.

Thallus saxicolous, gray, finely wrinkled; apothecia absent or rare; spores 3–4 septate, 1-muriform, elliptic, 26–36  $\mu$  long. . . . . *C. auriforme*

Thallus terricolous, corticolous, or rarely saxicolous, dark olivaceous to brownish black, not finely wrinkled; apothecia common; spores various.

Thallus corticolous or saxicolous; lobes large; spores acicular, 6–13 septate, 50–90  $\mu$  long. . . . . *C. nigrescens*

Thallus terricolous, the lobes small; spores elliptic, 3–7 septate.

Spores 4 per ascus, 3–5 septate, 1–2 muriform; lichen of leached clayey soils. . . . . *C. limosum*

Spores 8 per ascus, 3-septate, 0–1 muriform; lichens of carbonate-rich soils or rock. . . . . *C. tenax*

**Collema auriforme** (With.) Coppins & J. R. Laundon (*L. auris*, an ear + *forma*, shape, appearance; from the folded thallus resembling an ear) = *C. granosum* of Calkins, who reported it from mossy rocks near the Des Plaines River. Will-1

**Collema conglomeratum** Hoffm. (*L. con-*, with + *glomeratus*, wound up; from the appearance of the apothecia all wound up together) = *C. pycnocarpum* of Calkins, who noted it from "elms and shrubs in Will County," and regarded it as rare. Will-1

**Collema flaccidum** (Ach.) Ach. (*L. flaccidus*, relaxed, flaccid; from the limber thallus) Yet unknown from the Chicago region, this species has been collected recently in Lee County, Illinois, on an exposed limestone cliff in a pasture off Grand Detour Road. See comments under *C. subflaccidum*.

**Collema fragrans** (Sm.) Ach. (*L. fragrans*, sweet-smelling; an inexplicable epithet) = *C. microphyllum* of Calkins, who recorded it from "elm bark; Cook and Will counties," and regarded it as rare. Cook-1, Will-1

**Collema furfuraceum** (Arnold) Du Rietz (*L. furfur*, bran + *-aceus*, of or pertaining to; perhaps from the scaly appearance of the dried thallus) Yet unknown from the Chicago region, it has been collected from nearby Montgomery County, Indiana, where it grew on *Carya cordiformis*. Farther south in Illinois it is frequent on partly shaded oak trunks.

**Collema limosum** (Ach.) Ach. (*L. limosus*, full of mud, slime; from the dark wet thallus) Calkins reported this species as rare on clay soil in Will County. Will-1

**Collema nigrescens** (Huds.) DC. (*L. nigrescens*, blackening; from the dark thallus) Calkins & Huett reported this species from "elms and limestones" in La Salle County.

**Collema subflaccidum** Degel. (*L. sub-*, below, almost, near; from its close relationship to *C. flaccidum*) Calkins reported "*C. flaccidum*" from oaks and elms, and stated that it was rare locally. He noted also that *C. flaccidum* grew on rocks, but such reports are best referred to *C. flaccidum*, which see. In Calkins's bound volumes of *Lichenes Exsiccati*, a specimen from La Salle County labeled *C. flaccidum* is referable here. Cook-1, Will-1

**Collema tenax** (Sw.) Ach. (*L. tenax*, gripping, holding; from its close adherence to its substrate) The only modern records for this species are from dolomitic canyons near Lemont in Cook County and DuPage counties, and at Kankakee River State Park in Kankakee County; generally, it grows with *Amblystegium tenax* and *Conocephalum conicum*, which also clings to the canyon walls just above the base of the canyon floor. Calkins found it on "calcareous soil" near Joliet. Wilhelm & Lampa (47) reported this specimen as *Heppia lutosa*, and Wilhelm (84) referred it to *Collema bachmanianum*, which has flatter lobes. This species sometimes has a patchy tomentum beneath. COOK, DuPAGE, KANKAKEE, Will-1

**CONOTREMA** Tuck. (THELOTREMATACEAE. Photobiont: *Trebouxia*. Gr. *konos*, a cone + *trema*, a hole, especially the female pudendum; from the concave, immersed apothecia. Spores large, acicular, 8, hyaline, more than 25-septate)

**Conotrema urceolatum** (Ach.) Tuck. (*L. urceolus*, a pitcher + *-atus*, adjective ending; from the appearance of the apothecium) Calkins stated that this species was found on "maples and poplars in Cook and Will counties." Farther east, this species forms characteristic white patches on *Acer saccharum* in old growth forests (Wong & Brodo, 77). Cook-1, Will-1

**CYPHELIUM** Ach. (CALICIACEAE. Photobiont: *Trebouxia*. Possibly from Gr. *kypellon*, beaker, goblet, or perhaps *kyphella*, the hollow of the ears; from its hymenium sunken into the warty thallus, resembling a cup; we wonder if it should be spelled with two *ls*?. Spores 8, brown, 1-septate)

**Cyphelium tigillare** (Ach.) Ach. (*L. tigillaris*, pertaining to a bit or tuft of wool; probably from the fact that the warts appear to be stuffed with soot or wool) This species is occasional on old fence posts and rails, but we have one specimen from a decorticate stump of *Larix laricina*, one from the bark of *Prunus serotina*, and another from *Gleditsia triacanthos*. [rhizocarpic acid, epanorin, + two unknowns] COOK, DU PAGE, GRUNDY, JASPER, KANE, KENDALL, LAKE IL, LaPORTE, McHENRY, NEWTON, PORTER, ST. JOSEPH, WILL

**DERMATOCARPON** Eschw. (VERRUCARIACEAE. Photobiont: chlorococcoid, with *Protococcus* and *Hyalococcus*. Gr. *dermatos*, of skin or leather + *karpos*, fruit; from the leathery-looking thallus with its inspersed perithecia. Spores 8, hyaline, simple)

**Dermatocarpon miniatum** (L.) W. Mann (*L. miniatus*, colored with cinnabar or vermilion; an inexplicable epithet inasmuch as it has little or no red color) = *Endocarpon miniatum*, including *E. m.* var. *complicatum* and *E. m.* var. *muhlenbergii* of Calkins. This species is occasional on exposed or shaded basalt or dolomite, often in canyons or on rocky cobbles in woodland streams. BOONE, COOK-1, DU PAGE-26-47, GRUNDY, Jasper-34-51, KANE, KANKAKEE-70, KENDALL, WILL-70

**DIMELAENA** Norman (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *di-*, two, double + *melaina*, black; probably from the presence of black apothecia and a black margin on the squamules. Spores 8, brown, 1-septate)

**Dimelaena oreina** (Ach.) Norman (Gr. *oreinos*, hilly, mountainous; perhaps from its frequency in rocky, hilly areas) Hale (23) mapped a P– C– record for extreme southeastern Wisconsin. Most of our specimens have gyrophoric acid and present at least weakly positive C reactions on the cortex. See also Hale (6). Locally, it is rare on granitic boulders in pastures or prairie remnants. [usnic acid] COOK, GRUNDY, KANE, McHENRY, Walworth?-23, WILL

**DIMERELLA** Trevis. (GYALECTACEAE. Photobiont: *Trentepohlia*. Gr. *dis*, twice, two, + *meros*, part, portion, + L. *-ellus*, diminutive; perhaps from the tiny 2-celled spores. Spores 8, hyaline, 1-septate.

**Dimerella pineti** (Schrad. ex Ach.) Vězda (Evidently after a botanist named Pinet) This is a rare species in Illinois; our only local record is from a shaded decorticate log at the Danada Forest Preserve. DU PAGE

**DIPLOSCHISTES** Norman (THELOTREMATAACEAE. Photobiont: *Trebouxia*. Gr. *diploos*, double + *schistos*, divided, cleft; from the muriform spores. Spores 4–8, brown, muriform)

Thallus saxicolous; spores 4–8 per ascus. . . . . D. scruposus  
Thallus, corticolous, muscicolous, or lichenicolous, or in part on sand; spores constantly 4 per ascus. . . D. muscorum

**Diploschistes muscorum** (Scop.) R. Sant. (*L. muscus*, moss; from its common inhabitancy over mosses) = *Urceolaria scruposa* of Calkins. This species is locally frequent on mosses and lichens over sand at Illinois Beach State Park. The Porter County material, evidently lumped with *D. scruposus* by Wetmore, was lichenicolous on *Cladonia*, growing in oak woodland at West Beach. Calkins described the habitat as "calcareous earth" in Will County. A Calkins specimen from La Salle County was collected on the lignin of *Juniperus virginiana*. [lecanoric acid, diploschistesic acids] LAKE IL, Porter-INDU-MIN, Will-1

**Diploschistes scruposus** (Schreb.) Norman (*L. scruposus*, rough, stony; from its gray, unevenly wartlike thallus) The Berrien County specimen was on stabilized dunes at Warren Dunes State Park, and may well be referable to *D. muscorum*. This species is frequent on sandstone and HCl– rock west and south of the Chicago region. [lecanoric acid, ± diploschistesic acid ] Berrien-35-52-MIN

**DITREMIS** Clem. (MONOBLASTIACEAE. Photobiont: *Trentepohlia* Gr. *dis*, twice, double + *?tremis*, a hole, particularly the female pudendum; from what, we cannot imagine. Spores 8, hyaline, 1–3 septate. According to Harris (71), this is the oldest name for this genus)

Spores about 3 times as long as wide, sometimes becoming 4-celled; microconidia elliptical. . . . . *D. nyssaegena*  
Spores about twice as long as wide, remaining 2-celled; microconidia globose. . . . . *D. biformis*

**Ditremis biformis** (Borrer) R. C. Harris in Vězda (*L. biformis*, of two forms; from the two unequal cells of the spores) = *Arthopyrenia gemmata* of North American authors, not (Ach.) A. Massal., but see also *Eopyrenula intermedia*; *Arthopyrenia biformis* (Borrer) A. Massal.; *Anisomeridium bifforme* (Borrer) R. C. Harris. Harris (14) says that this species is rare in the Great Lakes region. Wetmore (52) recognizes Calkins's report of *Arthopyrenia gemmata* as *Acrocordia gemmata* (Ach.) A. Massal. Calkins reported it from "oaks and hickories at River Forest and in all our territory." A Calkins specimen at NY, however, named *Acrocordia gemmata*, is a nonlichenized pyrenomycete with muriform spores. Wetmore's specimen from Porter County was collected on *Quercus alba*. Cook-1-14-49-MICH, Porter-INDU

**Ditremis nyssaegena** (Ell. & Ev.) R. C. Harris (*Nyssa*, a genus of tree + *L. genus*, a race, origin, offspring; apparently meaning "an inhabitant of or arising on Black Gum trees") = *Arthopyrenia willeyana* R. C. Harris; *Anisomeridium willeyanum* (R. C. Harris) R. C. Harris; *A. juistense* (Erichs.) R. C. Harris; *A. nyssaegenum* (Ell. & Ev.) R. C. Harris. We have records from *Crataegus* spp., *Quercus alba*, *Q. macrocarpa*, and *Populus deltoides*. There are several Cook County records from *Crataegus* that represent, according to Richard Harris (pers. comm.), the conidial state of this lichen. The macroconidia are held together by a colorless mucilage in packets that resemble polysporous asci filled with 1-septate spores. This has been called *Sarcinulella banksiae* Sutton & Alcorn, an anamorphic form known from Australia. Berrien-14-49, COOK-NY, DE KALB, DU PAGE, KANE, KANKAKEE, WILL

**ENDOCARPON** Hedwig (VERRUCARIACEAE. Photobiont: *Trebouxia* and *Myrmecia*. Gr. *endon*, within, inside + *karpos*, fruit; from the immersed perithecia. Spores 2, hyaline to brownish, muriform)

**Endocarpon pusillum** Hedwig (*L. pusillus*, very small, little; from the tiny squamules) Including *E. pusillum* Hedwig var. *garovaglii* Kemp., as rendered by Fink (13); *Dermatocarpon pusillum* of Fink (12). This is a ubiquitous species, growing with *Caloplaca feracissima*, *Lecanora dispersa*, and *Verrucaria calkinsiana* on weathered concrete and flagstone. It also grows on gravel and on both granitic and dolomitic erratics. One of the Grundy County specimens is from old wood. BOONE, COOK-1-NY, DE KALB, DU PAGE-1, GRUNDY, JASPER, KANE-12-13-ILL, KANKAKEE, KENDALL, LAKE IL, LAKE IN-INDU, NEWTON, Porter-35, STARKE, WALWORTH, WILL-1

**EOPYRENULA** R. C. Harris (PYRENULACEAE. Photobiont: *Trentepohlia*. Gr. *eos*, dawn, early; meaning a primitive or inchoate relative of the genus *Pyrenula*, which see. Spores 8, brown, 3–6 septate)

**Eopyrenula intermedia** Coppins ex Aptroot (*L. inter*, between, among + *medius*, middle; from its equivalent similarities to two related species) The Cook County specimen was identified as *Pyrenula gemmata* by Calkins. See also *Ditremis biformis*. COOK-F

**EVERNIA** Ach. (PARMELIACEAE. Photobiont: chlorococcoid. Gr. *evernes*, sprouting well; probably from its often sumptuous, branched thalli. Spores small, 8, hyaline, simple)

**Evernia mesomorpha** Nyl. (Gr. *mesos*, middle, intermediate + *morphe*, form, shape; perhaps from a supposed appearance intermediate between related genera) Thomson (32) mapped this species from extreme southeastern Wisconsin. Some of our material appears to be adventive in that it is found on planted trees, and usually is represented only by tiny thalli. It grows commonly, however, on *Larix laricina* in Walworth County, and we have one specimen, possibly native, from *Juniperus horizontalis* at Illinois Beach State Park. [divaricatic acid, usnic acid] COOK, DU PAGE-24-47, LAKE IL-24, PORTER-35, WALWORTH, WILL

**FLAVOPARMELIA** Hale (PARMELIACEAE. Photobiont: *Trebouxia*. L. *flavus*, yellow; a yellow *Parmelia*, which see. Spores 8, hyaline, simple)

Thallus with pustular isidia, saxicolous. . . . . F. baltimorensis  
Thallus finely sorediate, corticolous. . . . . F. caperata

**Flavoparmelia baltimorensis** (Gyeln. & Főriss) Hale (after Baltimore, Maryland) = *Pseudoparmelia baltimorensis* (Gyeln. & Főriss) Hale. Our only specimen is from an igneous erratic on a kame near Campton Hills. It does not have gyrophoric acid. [protocetraric acid, ± gyrophoric acid, atranorin, usnic acid, caperatic acid] KANE

**Flavoparmelia caperata** (L.) Hale (L. *caperatus*, wrinkled, drawn into folds; probably from the more or less wrinkled upper cortex) = *Parmelia caperata* (L.) Ach.; *Pseudoparmelia caperata* (L.) Hale. Although this species is nowhere near as common as it appears to have been in Calkins's day, it grows on a wide variety of corticolous substrates, including fallen logs and old stumps. It is most frequent locally on *Quercus alba* and *Q. velutina*, probably because these species are more likely to be found in open woods. As woods close in from fire suppression, most of our regional lichens disappear, so it is rare on *Q. rubra*, *Tilia americana*, and *Fraxinus americana*. We also have specimens from *Carya ovata*, *C. cordiformis*, *Q. palustris*, *Q. macrocarpa*, and *Populus deltoides*. [protocetraric acid, usnic acid, caperatic acid] BERRIEN, BOONE, COOK-1-11-NY, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, McHENRY, NEWTON, PORTER-35, RACINE, ST. JOSEPH, STARKE-US, WALWORTH, WILL-ILL

**FLAVOPUNCTELIA** (Krog) Hale (PARMELIACEAE. Photobiont: *Trebouxia*. L. *flavus*, yellow; a yellow *Punctelia*, which see. Spores 8, hyaline, simple)

Thallus with white pores or maculae on the upper cortex. . . . . F. flaventior  
Thallus without white pores. . . . . F. soredica

**Flavopunctelia flaventior** (Stirt.) Hale (L. *flaventior*, yellower) = *Parmelia flaventior* Stirt.; *P. andreana* Müll. Arg.; *Punctelia flaventior* (Stirt.) Krog. This is a northern species that may have extended its range southward into the Midwest with the immense increase in corticolous substrate that has occurred since settlement. It is difficult to describe a habitat for it other than to note that it grows on trees in parks and pastures throughout the area. We have specimens fairly evenly distributed among the following trees: *Acer negundo*, *Fraxinus*, *Juglans nigra*, *Larix laricina*, *Populus deltoides*, *Quercus macrocarpa*, *Q. palustris*, and *Salix* spp. The Starke County record is from a weathered fence rail in Koontz Lake. Both this species and the next commonly grow together, particularly on *Populus deltoides*, just north of our region. [lecanoric acid, usnic acid] BERRIEN, COOK, DU PAGE-24-47, GRUNDY, JASPER, KANE-24, KANKAKEE, KENDALL, KENOSHA, LAKE IL-24, LAKE IN-35, McHENRY, PORTER-35, RACINE-21, ST. JOSEPH, STARKE, WALWORTH, WILL

**Flavopunctelia soledica** (Nyl.) Hale (Gr. *soredion*, a little heap (soredium) L + *-icus*, belonging to, or emphasis on a certain character; from its production of soredia) = *Parmelia ulophyllodes* (Vain.) Sav.; *P. soledica* Nyl. This species appears to have an autecology similar to that of *F. flaventior*, though it is less frequent. We have specimens evenly distributed among the following species: *Acer rubrum*, *Carya cordiformis*, *Fraxinus pennsylvanica* var. *subintegerrima*, *Populus deltoides*, *Quercus macrocarpa*, *Q. palustris*, *Q. rubra*, *Q. velutina*, and *Salix nigra*. [lecanoric acid, usnic acid] BERRIEN, COOK, DE KALB, DU PAGE-24-47, JASPER, LAKE IL-24, La Porte, McHENRY, RACINE, ST.-JOSEPH, STARKE, WALWORTH, WILL

**GONOHYMENIA** J. Steiner (LICHINACEAE. Photobiont: *Gleocapsa*. Gr. *gonos*, progeny, generation, seed + *hymen*, membrane; probably from the nature of the small membranous-gelatinous thallus with the spore-bearing portion included within. Spores 8, hyaline, simple)

**Gonohymenia nigritella** (Lettau) Henssen (*L. nigritus*, blackened + *ellus*, diminutive; from the tiny blackened thalli) = *Licheinella nigritella* (Lettau) Mareno & Egea. Our only specimen is from a shaded, argillaceous, silty dolomitic bluff south of Darrien. *G. cribellifera* (Nyl.) Henssen, with a more umbilicate thallus and rosulate-spreading lobes, grows farther south on limestone outcrops. DU PAGE

**GRAPHIS** Adans. (GRAPHIDACEAE. Photobiont: *Trentepohlia*. Gr. *graphis*, of line drawings; from the elongate, often branched apothecia that resemble written markings. Spores 4–8, hyaline to brownish, 3-many septate with lenticular cells)

**Graphis scripta** (L.) Ach. (*L. scriptus*, written; from the appearance of the apothecia) According to Calkins, this species was common in the region, but it is now only occasional on the smooth plates of *Quercus* species in the red oak group, and on the smooth barks of hickories, maples, lindens, and hackberries. Calkins's report of *Graphis (Phaeographis) dendritica* is almost certainly referable here inasmuch as specimens of his at the Field Museum that he called *G. dendritica* are actually *G. scripta*. *G. scripta* is quite similar to *G. elegans*, except that the latter contains norstictic acid in the thallus and typically has furrowed apothecial margins; both species vary tremendously in their appearance, from small asterlike forms to simple or branched, or even long connecting semicircular lirellae. There is a *Phaeographis* specimen of Calkins's from Cook County at the New York Botanical Garden, but the associated species, *Graphina abaphoides*, on the same chink suggests that the specimen came from Florida. BERRIEN-35-52, Cook-1-NY-F, DE KALB, JASPER, KENDALL, KENOSHA, LAKE IL, LA PORTE, McHENRY, PORTER, RACINE, WALWORTH, WILL

**HEPPIA** Naeg. in A. Massal. (HEPPIACEAE. Photobiont: *Nostoc* and *Scytonema*. After Johann Adam Philipp Hepp, 1797–1867, German physician, lichenologist, and political activist, exiled in Switzerland. Spores numerous, hyaline, simple)

**Heppia adglutinata** (Kremp.) A. Massal. (*L. ad*, to or toward + *glutinatus*, sticky; from its close adherence to its substrate) = *H. despreauxii* of Calkins; *H. lutosa* auct., non (Ach.) Nyl. Our specimens of this species are from dry gravelly hill prairies, where it grows on thin soil among carbonate pebbles where vascular vegetation is spare. Consistent lichen associates are *Catapyrenium lachneum* and *Psora decipiens*. Vascular vegetation is characterized by *Andropogon gerardii*, *A. scoparius*, *Arenaria stricta*, *Artemisia caudata*, *Bouteloua curtipendula*, *Comandra richardsiana*, *Euphorbia corollata*, *Liatrix cylindracea*, *Lithospermum incisum*, *Petalostemum purpureum*, *Scutellaria parvula* var. *leonardii*, *Silphium terebinthinaceum*, and *Solidago nemoralis*. It was collected in Will County, in a gladelike prairie at Joliet Junior College, with *Bacidia bagliettoana*, *Placynthium nigrum*, and *Catapyrenium lachneum*. This species was long known as *H. lutosa*, but Hensson (82) restricts that species to farther west; it has a I+ deep blue ascus, while that of *H. adglutinata* is I-. Specimens with gray pruinose thalli



and raised fragile margins are *H. conchiloba* Zahlbr., known from as nearby as Missouri. COOK-1, KANE-12, McHENRY, WILL

**HETERODERMIA** Trevis. (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *heteros*, other, different + *derma*, skin, leather; from the complex algal and medullary layers in the upper cortex. Spores 8, brown, 1-septate)

Thallus loosely ascending, the margins long-ciliate. . . . . H. echinata

Thallus appressed, the margins not long-ciliate.

Thallus beset with granular isidia over the surface; medulla K+ yellow turning red. . . . . H. granulifera

Thallus sorediate with fine, marginal soralia; medulla K+ yellow. . . . . H. speciosa

***Heterodermia echinata*** (Tayl.) W. Culb. (*L. echinatus*, prickly; from the stiff marginal cilia) Calkins & Huett cited this species from *Juniperus* in La Salle County under the name *Physcia comosa*, and is probably referable here. It grows on *Juniperus* in the Missouri Ozarks, so the report may well be valid. Sterile specimens of *Physcia adscendens* with projecting rhizines might key here, but it has a smooth lower cortex, and the upper cortex is duller than *H. echinata* and usually more scabrid. [atranorin, zeorin]

***Heterodermia granulifera*** (Ach.) W. Culb. (*L. granulus*, a small grain + *fero*, to bear, carry; from the numerous granules borne on the thallus) = *Physcia granulifera* of Calkins, who reported this species from "hickories near Elgin and at Lemont." [salazinic acid, atranorin, ± zeorin] Cook-1

***Heterodermia speciosa*** (Wulf.) Trevis. (*L. speciosus*, showy, beautiful; from the attractive thallus) = *Physcia speciosa* of Calkins. Our only modern record of this species is from the base of *Quercus alba* on a grazed kame near LaFox in Kane County. [atranorin, zeorin] Cook-1, KANE, McHenry-ILL

**HYPERPHYSICIA** Müll. Arg. (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *hyper*, beyond, over, very; evidently meaning quite a *Physcia*, which see. Spores 8, brown, 1-septate)

Thallus sorediate; lobes somewhat discrete. . . . . H. adglutinata

Thallus esorediate; lobes confluent. . . . . H. syncolla

***Hyperphyscia adglutinata*** (Flörke) Mayrh. & Poelt (*L. ad*, to or toward + *gluten*, glue + *-atus*, adjective ending; from the thallus lobes that appear glued to the bark) = *Physcia adglutinata* of Calkins; *Physciopsis adglutinata* (Flörke) M. Choisy. Small and inconspicuous, this species is frequent on roadside elms and ashes, and on planted trees in parks and landscape areas. COOK-1, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KENDALL, KENOSHA, LAKE IL, LAKE IN, LA PORTE, McHENRY, ST. JOSEPH, STARKE, WALWORTH, WILL-1

***Hyperphyscia syncolla*** (Tuck. ex Nyl.) Kalb (Gr. *syn-*, combined + *kolla*, glue; from the thallus lobes that appear stuck together) = *Physciopsis syncolla* (Tuck. ex Nyl.) Poelt. Possibly adventive from farther south, the Grundy County record is from *Populus deltoides* along a railroad in a strip mine area south of Dell Abbey; the Racine County specimen is from *Carya ovata* near Honey Lake. Cook-NY, GRUNDY, RACINE

**HYPOCENOMYCE** M. Choisy (BACIDIACEAE. Photobiont: chlorococcoid. Gr. *hypo*, under, beneath, less than usual + *Cenomyce*, an old generic name; from its apparent resemblance to *Cenomyce*. Spores 8, hyaline, simple)

***Hypocenomyce scalaris*** (Ach. ex Lilj.) M. Choisy (*L. scalaris*, pertaining to a ladder; perhaps from the imbricate lobes evocative of ladder rungs) = *Psora scalaris* (Ach.) Hook. f. Our only two records of this northern species are from the trunk and lower limbs of a large *Quercus macrocarpa* at the Middle Fork Savanna, in Lake County, Illinois, and on *Larix laricina* in a bog northwest of East Troy, Walworth County. [lecanoric acid] LAKE IL-24, WALWORTH

**HYPOGYMNA** (Nyl.) Nyl. (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *hypo*, under, beneath, less than usual + *gymnos*, naked, lightly clad; from the smooth, rhizine-free lower cortex. Spores 8, hyaline, simple)

**Hypogymnia physodes** (L.) Nyl. (Gr. *physa*, an air bladder, bubble + *-ode*, like, resembling; from the inflated appearance of the thallus) = *Parmelia physodes* (L.) Ach. Hale & Culberson (22) and some other recent authors, credit Walter Watson with having placed this species into *Hypogymnia*, but Hale (25) and Egan (41) credit Nylander. Rare, our few specimens of this common northern species are represented by small thalli about 2 cm in diameter. The Walworth County specimen is from *Larix laricina* in a bog northwest of East Troy; the La Porte County material is from *Fraxinus pennsylvanica* var. *subintegerrima* at Pinhook Bog. The Du Page County specimens are both from "bark" at the West Du Page Woods Forest Preserve. Calkins reported that it grew on "oaks in Cook and Du Page counties, and elsewhere." Farther north, in Allegan County, Michigan, we have collected it on scrubby trees of *Quercus velutina*. [atranorin, physodic acid, physodalic acid, protocetraric acid] Cook-1, DU PAGE-1-47, LA PORTE, WALWORTH

**HYPOTRACHYNA** (Vain.) Hale (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *hypo*, under, beneath, less than usual + *trachyno*, to roughen; probably from the somewhat roughened appearance of the densely squarrose-rhizinate lower surface. Spores 8, hyaline, simple)

**Hypotrachyna livida** (Tayl.) Hale (*L. lividus*, blue, bluish, leaden color; from?) = *Parmelia tiliacea* of Calkins and Berry. Culberson (19) showed no specimens north of Peoria. Calkins reported it from "oaks at Riverside, Lemont and Hanover." [lividic acid, atranorin, 4–0–methylphysodic acid] Cook-1, Lake IL-11

**IMSHAUGIA** S. L. F. Meyer (PARMELIACEAE. Photobiont: *Trebouxia*. After Henry A. Imshaug (b. 1925), American lichenologist recently retired from Michigan State University. Spores small, 8, hyaline, simple)

**Imshaugia aleurites** (Ach.) S. L. F. Meyer (Gr. *aleurion*, wheaten flour + *-ites*, having to do with, like; probably from the appearance of the tiny isidia, like the aleuron grains in certain wheat cells) = *Cetraria aleurites* of Calkins; *Parmeliopsis aleurites* (Ach.) Nyl. Calkins reported this species from "old rails near Lemont and Joliet." [thamnolic acid, atranorin] Cook-1, Will-1

**JULELLA** Fabre (PLEOMASSARIACEAE. Photobiont: Algae unknown. *L. iulus*, catkin + *-ella*, diminutive; probably from the shape of the ascus. Spores 4–8, hyaline, muriform)

**Julella sericea** (A. Massal.) Coppins (*L. sericeus*, pertaining to silk; perhaps from its intensely white thallus, evocative of silk) = *Polyblastiopsis fallaciosa* (Arnold) Zahlbr.; *Julella fallaciosa* (Arnold) R. C. Harris. Our modern records are from *Acer saccharum*, *Celtis occidentalis*, and *Quercus alba*. Although we have vouchers from only a few counties, this species and *Ditremis nyssaegena* are quite common locally on trees in savannas and closed woodlands. BERRIEN-14, Cook-14-NY, DU PAGE, KENDALL, KENOSHA, WILL

**KIRSCHSTEINIOTHELIA** D. Hawksw. (PYRENULACEAE. Photobiont: Algae unknown. *Kirschsteinia* + Gr. *thela*, nipple; a pyrenocarpous lichen evocative of *Kirschsteinia*, a Sphaerialian fungus named after Wilhelm Kirschstein, 1863–1946, German mycologist. Spores 8, brown, 1-septate)

**Kirschsteiniothelia aethiops** (Berk. & Curtis) D. Hawksw. (Gr. *aethiops*, appear unusual or irregular; perhaps from the spores with the constricted septum) The Cook County specimen, Calkins #162, "Ill., on oaks, etc. Glencoe," was identified by Calkins as *Pyrenula punctiformis*. This specimen has brown, 1-septate spores 21–34  $\mu$  long constricted at the septum and with the cells mostly notably unequal in the larger spores; the interthecial hyphae are massed and intertwined, but not deliquescent; spores are arranged more or less biserially in the asci. From what we can tell, this more or less fits the description of *Microthelia micula* Körb., as *per* Harris (14), which name Egan (41) refers here. We do not actually think that this specimen is *Kirschsteiniothelia*, but the oversized spores take it out of any *Mycomicrothelia* described by Hawksworth (83). Probably, we should just leave the thing out, since it is not even lichenized, as far as we can tell, but we are including it here under *K. aethiops* as a kind of "place holder" for the 1-septate, brown-spored, cylindrical-celled pyrenocarps with 8 spores *per* ascus and persistent pseudoparaphyses. The spores of *Arthopyrenia punctiformis* (see *Santessoniolichen punctiformis*) are hyaline, not much constricted, and up to 20  $\mu$  long. COOK-1-F

**LECANIA** A. Massal. (BACIDIACEAE. Photobiont: chlorococcoid. Gr. *lekane*, dish, pot; from the shape of the apothecia. Spores 8, hyaline, 1-septate)

Apothecia white pruinose; spores becoming 4-celled. . . . . L. spadicea  
 Apothecia without pruina; spores remaining 2-celled. . . . . L. perproxima

**Lecania perproxima** (Nyl. *in* Calk.) Zahlbr. (L. *per-*, denoting throughout, during, all over + *proximus*, the nearest, next; for what it is not clear, but Nylander seemed impressed by the IKI+ reaction of the hymenial gelatin, turning the hymenium blue throughout) = *Lecanora perproxima* Nyl. Note that Hale & Culberson (22) spelled the epithet "*perpromixa*." This species is occasional on dolomitic outcrops, and even on weathered concrete. Calkins stated that this species grew on "calcareous rocks at Joliet and elsewhere." His report of the European *Lecania erysibe*, as *Lecanora erysibe*, is referable here; the former species has spores no longer than 14  $\mu$ . BOONE, DE KALB, KENDALL, KENOSHA, WILL-1

**Lecania spadicea** (Flotow) Zahlbr. (L. *spadiceus*, deep reddish brown, date-colored; perhaps from the color of the moist epithecium) Not yet known from the Chicago region, it has been collected on shaded limestone in Jo Daviess County, Illinois.

**LECANORA** Ach. (LECANORACEAE. Photobiont: *Trebouxia*. Gr. *lekane*, dish, pot + *horos*, margin, limit; from the rimmed apothecia. Spores 8, hyaline, simple or rarely 1-septate)

Thallus or apothecia saxicolous.

Thallus distinctly white-pruinose.

Thallus placoid, the margins distinctly lobed; disc C-; usnic acid present. . . . . L. valesiaca

Thallus granular, the margins not distinctly lobed; discs C+ yellowish red; usnic acid absent. . . . . L. sp. #3

Thallus without pruina.

Thallus absent or endolithic. . . . . L. dispersa

Thallus present.

Thallus of aggregated or dispersed areoles. . . . . L. polytropa

Thallus distinctly placodioid or effigurate. . . . . L. muralis

Thallus or apothecia corticolous, or apothecia absent.

Usnic or isousnic acid present; thallus with yellowish tints.

Apothecial rim well developed.

Apothecial rims soredate or granular; usnic acid. . . . . L. strobilina

Apothecial rims smooth; isousnic acid. . . . . L. saligna

Apothecial rim scant, often disappearing, or apothecia absent.

Apothecia present. . . . . L. symmicta

Apothecia absent.

Thallus with a white fibrous prothallus apparent around the margins; apothecia absent. . . . L. thysanophora

- Thallus without a fibrous prothallus; apothecia present.
- Zeorin present. . . . . L. sp. #2
- Zeorin absent. . . . . L. sp. #1
- Usnic and isousnic acids absent; thallus without distinctly yellowish tints.
- Apothecia heavily pruinose, whitish, yellowish, or buff to light brown or roseate.
- Apothecia darker, flesh to brown; norstictic acid and atranorin absent. . . . . L. hagenii
- Apothecia whitish to buff or roseate; norstictic acid and/or atranorin present.
- Discs C+ yellow. . . . . L. caesiorubella ssp. prolifera
- Discs C-. . . . . L. caesiorubella ssp. caesiorubella
- Apothecia epruinose or only slightly frosted, buff, grayish, or reddish brown to nigrescent.
- Atranorin present; thallus and rims K+ yellow.
- Pannarin present. . . . . L. cinereofusca
- Pannarin absent. . . . . L. hybocarpa
- Atranorin absent; thallus and rims K-.
- Spores 12–32 per ascus. . . . . L. sambuci
- Spores 8 per ascus.
- Fumarprotocetraric acid present. . . . . L. conizaeoides
- Fumarprotocetraric acid absent.
- Thallus distinctly white and thick, areolate or even subplacodioid. . . . . L. albescens
- Thallus not apparent or mostly thin, sooty, and disorganized. . . . . L. umbrina

**Lecanora albescens** (Hoffm.) Branth & Rostrup (*L. alba*, white + *escens*, becoming or taking on the appearance of; from the color of the thallus) Our only record for this lichen locally is on the lower trunk and horizontal root of a small ash growing in rubble. Common in the area was *L. dispersa*, from which it may not be specifically distinct. BERRIEN

**Lecanora caesiorubella** Ach. ssp. *caesiorubella* (*L. caesius*, light gray + *rubeo*, to be red + *-ellus*, diminutive; from the reddish apothecia) A Calkins specimen of this species is cited from Illinois (48), so it likely was collected in or near the Chicago region. It is probable that Calkins's report of *Lecanora pallida* from Will County is referable here or to the next subspecies. [atranorin, virensic acid] Will-1

**Lecanora caesiorubella** Ach. ssp. *prolifera* (Fink in J. Hedrick) R. C. Harris (*L. proles*, offspring + *fero*, to bear; suggesting an exaggerated tendency to produce new thalli) = *L. c.* ssp. *lathamii* Imsh. & Brodo. This species is cited from Illinois (48). Inasmuch as most of Calkins's Illinois material was collected in northeastern Illinois, it likely was collected in or near the Chicago region. [norstictic acid, atranorin, protocetraric acid]

**Lecanora cinereofusca** H. Magn. (*L. cinereus*, ash-colored + *fuscus*, brown; perhaps from the color of the apothecia) Brodo (50) cites a Calkins (#61) specimen from La Salle County; he described the apothecia as: "*immersed in thallus, finally becoming sessile, 0.7–1.5 mm diameter; discs reddish orange, deep red, darkening to dark reddish brown or reddish black; margins at first thick, verrucose to ridged and rough, becoming discontinuous and thin in many specimens.*" This specimen is referable to the typical variety. [atranorin, pannarin, usually placodialic acid, ± roccellic acid]

**Lecanora conizaeoides** Cromb. (Resembling *L. coniza*, which comes from Gr. *konis*, dust + *-izein*, to make; probably from the dusty-granular thallus) This is one species that is almost certainly adventive from Europe. Our only record for this species is on the bark of *Pseudolarix kaempferi* at the Morton Arboretum. [fumarprotocetraric acid] DU PAGE

**Lecanora dispersa** (Pers.) Sommerf. (*L. dispersus*, scattered; from the numerous, but often remote apothecia) This species is the common associate of *Endocarpon pusillum* and *Caloplaca feracissima* on limestone, flagstone, and weathered concrete. Given its contemporary ubiquity and morphological distinctness, it is of some interest to note that Calkins did not record it in 1896. See also comments under *L. umbrina* and *L. albescens*. [ $\beta$ -sitosterol] BERRIEN, BOONE, COOK-10, DE KALB, DU PAGE, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN, La Porte-35, McHENRY, NEWTON, PORTER-35, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL-10

**Lecanora hagenii** (Ach.) Ach. (after Mark Gottfried Hagen, 1749–1829, Prussian botanist and pharmacist) A Lake County, Indiana, and a Porter County specimen are both from *Quercus velutina* in savanna. Another Lake County, Indiana, collection is from a planted specimen of *Ulmus pumila* in Highland. Cook-1, LAKE, IN-35-MIN, Porter-INDU-MIN

**Lecanora hybocarpa** (Tuck.) Brodo (Gr. *hybos*, hump-backed + *karpos*, fruit; from the tumescent apothecia) Including *L. subfusca*, *L. s. var. allophana*, *L. s. var. argentata*, and *L. s. var. distans* of Calkins. Brodo (50) mapped this species from what appears to be Cook County. His unpublished name, "*L. pseudo-chlarotera*" is referable here. Other Midwestern species in the *L. subfusca* group include *L. glabrata* (Ach.) Malme, which has small apothecia and no granules between the epithelial hyphae, and *L. argentata* (Ach.) Malme, which contains gangaleoidin. *L. allophana* Nyl., also known from the Midwest, contains atranorin only, but has many of its apothecia larger than 0.8  $\mu$  and no epihymenial granules. In the early 1970s, Irwin Brodo annotated specimens of this species, which he later referred here, *L. pseudo-chlarotera*, a herbarium name he used during his studies. Now rare on oaks, hickories, and ashes, Calkins indicated that it was a common corticolous species. [atranorin,  $\pm$  roccellic acid] Cook-1-50?-NY, Du Page-26, KANE-MICH, LAKE IL, McHENRY-ILL, WALWORTH

**Lecanora muralis** (Schreb.) Rabenh. (*L. muralis*, growing on walls; from its frequent occurrence on walls) Hale & Culberson (22) and Egan (41) credit Rabenhorst with having placed this species into *Lecanora*, but Hale (25) credits Acharius. Hafellner (40) places it into the genus *Protoparmeliopsis*. This species is characteristic of dolomitic outcrops and erratics in pastures and prairies; it is occasional on granitic and basaltic boulders. It also grows on weathered concrete and flagstone. Evidently a species native to the area, it is interesting that Calkins did not report it. [usnic acid, murolic acid, psoromic acid, atranorin, zeorin,  $\pm$  fumarprotocetraric acid] BOONE, COOK, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, McHENRY, RACINE, WALWORTH, WILL

**Lecanora polytrapa** (Hoffm.) Rabenh. (Gr. *poly*, many + *tropo*, change, turn; perhaps evoking its variable thallus development) This species occurs just to the north of our region on granitic boulders, particularly those that are commonly visited by perching birds. [usnic acid, zeorin, and fatty acids]

**Lecanora saligna** (Schrad.) Zahlbr. (*L. salignus*, like or of willow; from a supposed frequency of occurrence on *Salix*) Most of our specimens are from old wood; Wetmore's specimen from Lake County, Indiana, was from *Quercus rubra*, and the St. Joseph County specimen is from *Carya ovata*. Skorepa's (10) report of *L. symmicta*, which see, from Will County is referable here. [isousnic acid] COOK, DE KALB, DU PAGE, GRUNDY, KANE, LAKE IL, Lake IN-INDU, McHENRY, Porter-35, ST. JOSEPH, WILL

**Lecanora sambuci** (Pers.) Nyl. (*L.* Of the genus *Sambucus*; from its supposed inhabitation on elderberry) = *L. hageni* var. *sambuci* of Calkins, who listed this species as rare on elms and poplars in Will County. Will-1

**Lecanora strobilina** (Spreng.) Kieff. (Gr. *strobilos*, anything twisted + *inus* pertaining to; derivation uncertain) Not uncommon just outside the Chicago region on wooded fence rails and open-grown trees, it is rare locally. One of our specimens is from a planted specimen of *Betula pendula*, another from a planted specimen of *Gleditsia triacanthos*, and one from a planted tree of *Liriodendron tulipifera*. [usnic acid,  $\pm$  zeorin] COOK, DE KALB, WILL

**Lecanora symmicta** (Ach.) Ach. (Gr. *syn-*, combined + *miktos*, mixed, thrown together; from the irregular aggregations of apothecia) = *L. varia* var. *symmicta* of Calkins. It may also include Calkins's *L. varia*, from Cook, since we have yet to see that species in the Midwest. Calkins reported that there were "numerous varieties" in the region; it contains usnic acid  $\pm$  psoromic or fumarprotocetraric acids. Most early Illinois specimens called *L. varia* are referable to *L. strobilina*, but that species is rare this far north in the state. The specimen (SIU) upon which the report of *Lecanora symmicta* from Will County (Skorepa 10) is based is referable to *L. saligna*. Egan uses the name *Lecanora symmicta* and includes *L. symmictera* Nyl. as a synonym, even though Harris (36) and others recognize both taxa as distinct in North America. According to Harris, *L. symmicta* is confined to the coasts and has a thallus reaction of C+ orange because of the presence of xanthonenes. Our entity is fairly frequent on a wide

variety of corticolous and lignicolous substrates, particularly in disturbed or landscaped areas. [usnic acid, xanthone, zeorin, ± psoromic acid, ± fumarprotocetraric acid] BERRIEN-52, COOK, DE KALB, DU PAGE, JASPER, KANE, KENDALL, KENOSHA, LAKE IL, LAKE IN, La Porte, McHENRY, RACINE, ST. JOSEPH, STARKE

**Lecanora thysanophora** R. C. Harris (Gr. *thysanos*, a fringe, tassel + *phoros*, a bearing; from the possession of a white fibrous prothallus that emerges at the margins of the thallus resembling a fringe) Rare, we have one specimen from a white oak in a mesophytic ravine north of Fort Sheridan, one from an elm (*Ulmus americana*) in a hydromesophytic swamp at Grand Marais in Berrien County, and another from an ash in the hydromesophytic swamp at Indiana Dunes State Park. [atranorin, zeorin, usnic acid] BERRIEN, LAKE IL, PORTER-35

**Lecanora umbrina** (Ach.) A. Massal. (L. *umbros*, full of shade + *-inus*, pertaining to; from the dark color of the apothecia) Our records probably are not *L. umbrina*, but rather represent lignicolous forms of *L. dispersa*. All of them are from weathered lignin. Each of our specimens has an obscure but seemingly different chemistry in TLC. BERRIEN, COOK, GRUNDY, RACINE, STARKE

**Lecanora valesiaca** (Müll. Arg.) Stizenb. (from Valois, in northeastern France + L. *-iacus*, adjectival ending) This lichen, commoner in southern Illinois, is known from nearby Whiteside County, where it grew in full sun on a limestone boulder. It previously has been confused with *L. muralis* ssp. *versicolor*. [usnic acid, ± roccellic acid]

**Lecanora sp. #1**, *sensu* the Morton Arboretum herbarium. This lichen resembles strongly *Lecanora thysanophora*, which see, with algae mixed with hyphae forming a fine green patina over a white mycelial zone, but without the white fibrous prothallus. One should be alert for sterile thalli of *Arthonia caesia*, *Lecanora strobilina*, and *L. symmicta*. [usnic acid] McHENRY

**Lecanora sp. #2**, *sensu* the Morton Arboretum herbarium. This lichen is leprose and has the appearance of a *Lepraria*. Our specimens are from open-grown oaks, mostly in the section *Chrysobalanus*. It is occasional south and west of the Chicago region. [usnic acid, zeorin]

**Lecanora sp. #3**, *sensu* the Morton Arboretum herbarium. = *L. rupicola* of Wilhelm (84). Rare, one of our specimens of this species is from a shaded cliff face near Lemont; the other on dolomite near Joliet. In both cases, *Caloplaca citrina* is present nearby. [some substance at ?, 4-5, 5, C+ yellowish red] COOK, WILL

**LECIDEA** Ach. (LECIDEACEAE. Photobiont: *Trebouxia*. Gr. *lexis*, small shield + *eidōs*, form, a resemblance; from a supposed resemblance to a small shield. Spores 8, hyaline, simple)

Thallus esorediate; apothecia common. . . . . L. hypopta  
Thallus consisting of tiny scattered soralia, the soredia very fine and yellowish; apothecia rare. . . . . L. sp. #4

**Lecidia hypopta** Ach. (Gr. *hypo*, under, less than + ? *opter*, spy, lookout; probably something to do with the minute apothecia that are colored similarly to the substrate, and meaning overlooked) This is a rare species locally, or else it is overlooked! The Berrien County specimen was on *Populus grandidentata*, and the Lake County, Illinois, specimen was on old wood. Both were collected within a few hundred yards of Lake Michigan. BERRIEN, LAKE IL

**Lecidea sp. #4** *sensu* Harris We have two specimens from the Morton Arboretum on *Quercus alba* and *Q. rubra*; the Berrien County specimen is from *Tsuga canadensis*, and the Porter County specimens are from *Fraxinus nigra*. All were from closed forest. [usnic acid, zeorin] BERRIEN, DU PAGE, KENOSHA, LA PORTE, PORTER

**LECIDELLA** Körb. (LECANORACEAE. Photobiont: chlorococcoid. *Lecidea* + *-ella*, diminutive; evidently appears like a little *Lecidea*. Spores 8, hyaline, simple)

**Lecidella euphorea** (Flörke) Hertel (Gr. *euphoros*, healthy; perhaps from the relatively large, tumescent apothecia, appearing as though quite healthy) Our only record for this species from two Willey specimens (#47 & #51, ILL, as *Lecidea enteroleuca*), one collected on poplar bark, the other on sumac, both at Algonquin, Illinois. This species is characterized by spores mostly 10–14 × 6 μ, a dark blue green epithecium, yellowish brown hypothecium, and slender, branched, scarcely dilated paraphyses. The cortex is K+ yellow, KC– and C–. A similar species, *L. elaeochroma* (Ach.) M. Choisy, with a C+ orange thallus, is not yet known from our region. McHENRY

**LEPRARIA** Ach. ("STERILE LICHENS." *Trebouxia* and *Stichococcus*. Gr. *lepra*, leprosy + *-arius*, like or connected with; from the scurfy appearance of the thalli. Spores not seen)

Thallus with stictic acid, thick, typically pale greenish gray..... *L. lobificans*  
Thallus without stictic acid, thick or thin, but not usually pale greenish gray.

Atranorin present; thallus typically thin, bluish gray. .... *L. sp. #1*

Atranorin absent; thallus thick, bluish gray or not.

Divaricatic acid present; thallus bluish gray..... *L. incana*

Divaricatic acid absent; thallus bluish gray or not.

Alectorialic acid (3, 5–6, 4) present; thallus whitish gray, C+ rose..... *L. neglecta*

Alectorialic acid absent; thallus greenish gray, C–..... *L. lesdainii*

**Lepraria incana** (L.) Ach. (*L. incanus*, whitish or grayish hairy as in age; from the appearance of the thallus) Four of our specimens are from the bases of *Quercus*; another is from a shaded, north-facing sandstone ledge. [divaricatic acid, ± zeorin, ± usnic acid, ± atranorin] COOK, BOONE, JASPER, McHENRY

**Lepraria lesdainii** (Hue) R. C. Harris (after Maurice Bouly de Lesdain, 1869–1965, French lichenologist) Our three specimens are from shaded dolomitic cliff faces, as are all of our Illinois collections. [terpene with RF value just above zeorin] COOK, DU PAGE, KANKAKEE

**Lepraria lobificans** Nyl. (Gr. *lobos*, a lobe + *ikanos*, becoming, competent; having a tendency to form lobes) = *L. finkii* (de Lesd.) R. C. Harris. Older reports of *Pannaria lanuginosa* Ach. inevitably turn out to be some species of *Lepraria*, and specimens so named from this region usually are *L. lobificans*. Half of our material is from the bases of *Quercus* in partly shaded to fully shaded areas. Other corticolous substrates include *Tilia americana*, *Thuja occidentalis*, *Acer saccharinum*, and *Tsuga canadensis*. It also grows on shaded dolomite and on cliff faces, as well as on fallen logs, on soil, or among mosses in moist humid areas. [stictic acid, constictic acid, zeorin, atranorin] BERRIEN, COOK-NY, DE KALB, DU PAGE-24, GRUNDY, KANE-24, KANKAKEE-24, KENDALL-24, KENOSHA, LAKE IL-24, LAKE IN, LA PORTE-35, McHENRY, PORTER-35, RACINE, WALWORTH, WILL-24

**Lepraria neglecta** (Nyl.) Lettau (*L. neglectus*, neglected, not chosen; perhaps from its nondescript appearance) As yet unknown in the Chicago region, we have several specimens from exposed sandstone in Lee and Ogle counties. [alectorialic acid]

**Lepraria sp. #1** = *L. incana* of McKnight *et al.* (24). All but one of our specimens are from *Quercus*, and half of those are from *Q. velutina* in the black oak savannas of northwest Indiana. One specimen is from *Acer saccharum* at Warren Dunes State Park. [zeorin, atranorin] BERRIEN, COOK, DU PAGE, JASPER, KANE, KENDALL-24, LAKE IL-24, LAKE IN, LA PORTE, NEWTON, PORTER, WALWORTH, WILL

**LEPROPLACA** (Nyl.) Hue ("STERILE LICHENS." *Trebouxia*. Gr. *lepra*, leprosy + *plax*, a flat round plate, dish; from the scurfy thalli with rounded margins. Spores not seen)

**Leproplaca chrysodeta** (Vain. ex Räsänen) J. R. Laundon There is a specimen of what appears to be this species from a dolomitic cliff face along Cedarville Bluff in Stephenson County. It contains a

substance that is 7, 7, 7 in TLC; the thallus is composed of yellowish gray, pulverulent, spherical granules.

**LEPTOGIUM** (Ach.) Gray (COLLEMATACEAE. Photobiont: *Nostoc*. Gr. *leptos*, peeled, slender, thin, weak + *ge*, the earth, land; perhaps from the thallus lobes that appear as thin shavings on the ground in terricolous species. Spores 8, hyaline, septate to muriform)

- Lower surface of lobes whitish tomentose. . . . . *L. burnetiae*  
 Lower surface without tomentum.  
 Thallus lobes narrow, the margins finely dissected into dense isidioid or coralloid branches; lobe surfaces longitudinally wrinkled. . . . . *L. lichenoides*  
 Thallus without coralloid branches; lobe surfaces smooth or wrinkled.  
 Thallus without isidia.  
 Lobes smooth, dark gray, to 2.5 mm across. . . . . *L. juniperinum*  
 Lobes wrinkled, gray, many exceeding 2.5 mm across. . . . . *L. corticola*  
 Thallus isidiate.  
 Upper surface of thallus strongly wrinkled, the lobes becoming fused. . . . . *L. milligranum*  
 Upper surface of thallus smooth, the lobes distinct.  
 Thallus olivaceous to blackish brown; typically of carbonate rock. . . . . *L. dactylinum*  
 Thallus slate gray; of various substrates. . . . . *L. cyanescens*

**Leptogium burnetiae** Dodge (after ?) = *L. myochroum* of Calkins, a name that currently is synonymous with *L. saturninum* (Dicks.) Nyl., which grows farther north. Sierk (27) mapped *L. hirsutum* Sierk from extreme northwestern Indiana, but cited no specimens. Calkins reported the habitat as the same as for *L. millegranum*, which see. Will-1

**Leptogium corticola** (Tayl.) Tuck. (*L. cortex*, bark, cork + *colo*, to inhabit; from its habitat on tree bark) = *L. pulchellum* of Calkins, who reported that it grew on calcareous rocks in Will County and on elms in Cook County, and noted that it was "better developed" farther south in Illinois. Cook-1, Will-1

**Leptogium cyanescens** (Rabenh.) Körb. (Gr. *kyaneos*, dark blue + *-escens*, meaning beginning to, slightly; from the not quite dark blue thallus) Rare, our only specimens of this species are from shaded dolomitic cliffs and from shaded boulders in streams. Calkins did not mention it. COOK, DU PAGE-26-47, KANKAKEE, WILL

**Leptogium dactylinum** Tuck. (Gr. *daktylos*, a finger, toe + *-inus*, pertaining to; from the flattened isidioid marginal lobules that supposedly resemble fingers) There is a Calkins specimen at ILL (*LE-175*) from "Illinois" that he called *L. myochroum*, but it looks to us like *L. dactylinum*. All of our specimens are from shaded dolomitic boulders and cliffs. DU PAGE-47, KANE, KANKAKEE, WILL

**Leptogium juniperinum** Tuck. (*Juniperus*, juniper + *-inus*, pertaining to; perhaps from a resemblance of the thallus folds to the imbricated juniper leaves) Rare throughout the state, this lichen was collected in La Salle County on soil in moss patches on a wooded slope under *Pinus strobus*.

**Leptogium lichenoides** (L.) Zahlbr. (Gr. *leichen*, a lichen + *-oideos*, form of, type; with the form of a lichen) = *L. lacerum* of Calkins, who reported it from elms, although elsewhere in the Midwest, this species typically occurs on carbonate rocks with the moss, *Anomodon rostratus*. Our only contemporary record is from a dolomitic canyon near Lemont. COOK-1, Will-1

**Leptogium milligranum** Sierk (*L. mille*, a thousand + *granum*, a seed; from the numerous seedlike isidia) We are referring Calkins's report of *L. chloromelum* here inasmuch as *L. chloromelum* (Ach.) Nyl. is now considered to be confined to the outer coastal plain of the southeastern United States. His mention of apothecia is disturbing, however, inasmuch as fruiting structures are rare on *L. milligranum*. Calkins described his plant as: "*Thallus small to large; orbiculate, rigid; plumbeo-virescent, lobate, plicate, rugose; apothecia medium size, lecanorine, plane, rufous, the thalline margin granulate. Spores ovoid . . . On elms . . . The varieties are found further south.*" Cook-1, Will-1



**LEPTORHAPHIS** Körb. (ARTHOPYRENIACEAE. Photobiont: Algae unknown. Gr. *leptos*, peeled, slender, thin, weak + *rhaphis*, a needle, pin; from the acicular spores. Spores 4–8, hyaline, 3–7 septate)

Spores with pointed ends; restricted to *Betula*. . . . . L. *epidermidis*  
 Spores with blunt ends; restricted to *Populus*. . . . . L. *atomaria*

**Leptorhaphis atomaria** (Ach.) Szatala (L. *atomarius*, covered with atoms or spots; from the bespeckled appearance caused by the numerous black perithecia on the white thallus) Our only record for this species must be considered adventive, inasmuch as it is from a planted specimen of *Populus maximowiczii* at the Morton Arboretum. DU PAGE-24

**Leptorhaphis epidermidis** (Ach.) Th. Fr. (Gr. *epi*, on, over + *derma*, skin, leather; probably in reference to its inhabitation of the outer papery bark of birch) = *Sagedia oxyspora* of Calkins, who reported this species from *Betula papyrifera* along the lake shore near Glencoe; he noted further that the "few native birch will soon disappear and with them this species." There are still a couple of trees in the ravine near Fort Sheridan, and we have searched them in vain for fertile pyrenocarps. Cook-1-14

**LICHENOTHELIA** D. Hawksw. (LICHENOTHELIACEAE. Algae unknown. Gr. *leichen*, a lichen + *thele*, nipple; a peritheciate lichen. Spores 1–3 septate to submuriform)

**Lichenothelia** sp. Our only collection of this species is from a granitic boulder in Bemis Forest Preserve, but it is the common sterile (with us) black crust seen on HCl– boulders throughout our area. *Lichenothelia* is a poorly understood genus. Some have questioned its standing as a lichen, though its areolate thallus is clearly evocative of a lichen. The thallus is composed of compacted, pseudoparenchymatous brown cells 5–9  $\mu$  in diameter. Locally we have seen only green algae associated with it. Hawksworth (64) discusses two species: *L. metzleri* (Lahm) D. Hawksw., with mainly 1-septate spores 21–24  $\mu$  long and 9–11  $\mu$  wide, and *L. scopularia* (Nyl.) D. Hawksworth, with mainly 3-septate spores 14–18  $\mu$  long and mostly less than 10  $\mu$  wide. COOK, WILL

**LITHOTHELIUM** Müll. Arg. (PYRENULACEAE. Photobiont: *Trentepohlia*. Gr. *lithos*, stone + *thele*, a nipple; probably from the hard, carbonaceous perithecia. Spores 8, hyaline to brown, 3–7 septate)

Spores colorless, 3-septate; on *Acer saccharum*. . . . . L. *hyalospora*  
 Spores dark brown, 7-septate; usually on *Fraxinus*. . . . . L. *septemseptata*

**Lithothelium hyalospora** (Nyl.) Aptroot (Gr. *hyaleos*, glassy + *spora*, seed; from the colorless spores) = *Plagiocarpa hyalospora* (Nyl.) R. C. Harris. Harris (14) cited a specimen he collected at Warren Woods, presumably in beech-maple woods. Berrien-14

**Lithothelium septemseptata** (R. C. Harris) Aptroot (L. *septem*, seven + *saeptum*, wall, hedge, partition + *-atus*, adjective ending; from the 7-septate spores) = *Plagiocarpa septemseptata* R. C. Harris. Harris (14) cited a specimen he collected at Warren Woods, presumably in beech-maple woods. Berrien-14

**LOBARIA** Schreb. (PARMELIACEAE. Photobiont: *Trebouxia* or *Myrmecia*, or with *Nostoc* or *Scytonema*. L. *lobus*, a lobe + *-arius*, belong to; from the notably lobed thalli. Spores 8, hyaline to brownish, 1–3 septate)

**Lobaria quercizans** Michx. (*Quercus* + L. *-izans*, resembling; from its supposed similarity to oak leaves) = *Sticta quercizans* Michx. Calkins & Huett cited this species from an oak tree at Deer Park in La Salle County. [gyrophoric acid, atranorin]

**MELANELIA** Essl. (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *melaina*, black + *-elia*, a generic ending, probably from Gr. *eilo*, to roll up or collect, as in a collection or group; from the darkened thallus) According to Egan (41), the genus *Pleurosticta* Petrak is an earlier name for *Melanelia*, and Esslinger has proposed conservation of the latter. Egan is using *Melanelia* pending the disposition of that proposal. Spores 8, hyaline, simple)

**Melanelia subaurifera** (Nyl.) Essl. (L. *sub-*, below, almost, + *auris*, ear + *fero*, to bear; from its earlike appearance) = *Parmelia subaurifera* Nyl. There is a McHenry County specimen at ILL (*Willey 48*) named *Parmelia olivacea*; it is referable here. It is probable that Berry's report of the same species from Racine County is based upon a misidentification of *M. subaurifera*, particularly since he did not report this more common subsorediate species from the Chicago region. As it happens, none of our specimens are from the same substrates, which include species of *Quercus*, *Prunus*, *Carya*, old stumps, *Cephalanthus occidentalis*, *Rhus typhina*, and even old wood. [lecanoric acid, subauriferin] BERRIEN, COOK, DU PAGE-47, LAKE IL, LA PORTE, McHENRY-ILL, Porter-35, Racine-11, ST. JOSEPH, WALWORTH, WILL

**MICAREA** Fr. (MICAREACEAE. Photobiont: green. L. *mica*, a crumb, morsel + *area*, a space; perhaps from the scattered appearance of the tiny apothecia over the area of the thallus. Spores 8, hyaline, simple)

Thallus saxicolous; spores simple. . . . . M. erratica  
Thallus corticolous; spores 2-celled. . . . . M. prasina

**Micarea erratica** (Körb.) Hertel, Ramsold, & Pietschm. (L. *erraticus*, wandering to and fro; probably from its frequent occurrence on glacial erratic boulders) Our only record is from a sandstone boulder west of South Bend. The Calkins & Huett report of *Lecidea cyrtidia* Tuck. from rocks in La Salle County is probably referable here. ST. JOSEPH

**Micarea prasina** Fr. (L. *prasinus*, leek green; from the color of the thallus) We have a specimen at MOR from central Illinois. It was found on *Acer saccharinum* in Berrien County, an old log in Du Page County, and on *Quercus alba* in Porter County. BERRIEN, DU PAGE, Porter-35

**MYCOBILIMBIA** Rehm in Rabenh. (BACIDIACEAE. Photobiont: green. Gr. *mykes*, a fungus + the genus *Bilimbia*, a segregate of *Bacidia*. Spores 8, hyaline, (1)3–7 septate)

**Mycobilimbia sabuletorum** (Schreb.) Hafellner (L. *sabulum*, sandy; from its supposed frequent occurrence in sandy habitats) = *Bacidia sabuletorum* (Schreb.) Lettau. The Kankakee County record came from among mosses over dolomite at Kankakee River State Park; the Walworth record was from a decorticate log emergent in Beulah Lake. KANKAKEE, WALWORTH

**MYCOGLAENA** Höhn (PLEOMASSARIACEAE. Photobiont: Not lichenized. Gr. *mykes*, a fungus + *glenos*, the eyeball; probably from the perithecia, which have the appearance of a black pupil surrounded by a blue green iris, after the manner of an eye. Spores 8, 3–5 septate, 1-muriform)

**Mycoglaena meridionalis** (Zahlbr.) Szatala (L. *meridionalis*, southern, or of a meridian; probably from the longitudinal septum, which distinguishes it from other merely septate species, though it also

has a generally more southern distribution) Known from areas south, east, and west of the Chicago region, specimens we have seen come from smooth-barked trees, commonly *Gleditsia triacanthos*.

**MYCOPORUM** Flotow *ex* Nyl. (MYCOPORACEAE. Photobiont: *Trentepohlia*. Gr. *mykes*, a fungus + *poros*, callus; from the calluslike clusters of fungal ascomata. Spores large, 8, brown, muriform)

*Mycoporum compositum* (A. Massal.) R. C. Harris (*L. compositus*, put together, united; from the aggregated ascomata) = *M. pycnocarpum* Nyl. Harris (14) mapped this species from just south and east of the Chicago region, collected most commonly on *Acer rubrum*.

**MYELOCHROA** (Asahina) Elix & Hale (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *myelos*, marrow + *chroa*, superficial color; from the yellow-tinted medulla. Spores 8, hyaline, simple)

Thallus soorediate; apothecia very rare..... *M. aurulenta*  
Thallus esorediate; apothecia common..... *M. galbina*

**Myelochroa aurulenta** (Tuck.) Elix & Hale (*L. aurum*, gold + *oulos*, woolly, curly + *entos*, within, inside; from the yellow medulla) = *Parmelina aurulenta* (Tuck.) Hale. Hale (28) mapped this species from extreme southeastern Wisconsin as *Parmelia aurulenta* Tuck., but he does not cite specimens. Occasional, this species grows on a variety of open-grown trees or the upper trunks of forest-grown trees; we also have a specimen from wooden roof shingles. [atranorin, ± zeorin] BERRIEN-35-52, COOK, DE KALB, DU PAGE-47, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, NEWTON, STARKE-US, WALWORTH, WILL

**Myelochroa galbina** (Ach.) Elix & Hale (*L. galbinus*, yellowish; from the color of the medulla) = *Parmelia tiliacea* var. *sulphurosa* of Calkins; *Parmelina galbina* (Ach.) Hale. Calkins's report may be referable to *Myelochroa aurulenta*, which species was not treated by Calkins; his text, in fact, implied that apothecia were present. Berry (11) restricted the var. *sulphurosa* to Louisiana and Florida, though we now have specimens from as far north as central Illinois, and there is a specimen, collected by Willey in 1883, at ILL (called *Parmelia tiliacea*) from McHenry County. Culberson (19) showed three dots mapped from the immediate Chicago area. [galbinic acid, atranorin, zeorin] Cook-1-NY, McHenry-ILL

**OCHROLECHIA** A. Massal. (LECANORACEAE. Photobiont: chlorococcoid. Gr. *ochros*, pale, sallow + *lechos*, couch, bed, nest; probably from the cushionlike apothecia. Spores 8, very large, hyaline, simple)

**Ochrolechia arborea** (Kreyer) Almb. (*L. arboreus*, of trees; from its habitat) The only Chicago region record for this species was collected on an open-grown specimen of *Quercus macrocarpa*, in a dry, gravel-filled glacial crevice near Harmony Hills. One can infer from the distribution map in Brodo (76), that it is frequent just north of the Chicago region, with a few disjunct records in the southern Appalachians. We also have a few records from southern Illinois. [lichexanthone, lecanoric acid, gyrophoric acid] WALWORTH

**OPEGRAPHA** Ach. (OPEGRAPHIDACEAE. Photobiont: *Trentepohlia*. Gr. *ope*, a hole, chink, opening + *graphis*, of line drawings; from the partly open apothecia, rather than closed as in *Graphis*, which see. Spores mostly 8, hyaline to brown, 3–several septate)

Thallus thin to evanescent, smooth; spores 3-septate..... *O. atra*

Thallus thin to obscurely chinky or pulverulent; spores 3–15 septate.

Spores less than 5  $\mu$  wide, not including the outer hyaline sheath (perispore), if present. . . . . *O. vulgata*

Spores more than 5  $\mu$  wide.

Spores more than 7-septate, the larger more than 40  $\mu$  long. . . . . *O. viridis*

Spores 4–6 septate, less than 40  $\mu$  long. . . . . *O. varia*

***Opegrapha atra*** Pers. (*L. atra*, black; from the color of the apothecia) Once common in the Chicago region, this species is now quite rare. We have a specimen from *Quercus macrocarpa* and another from a fallen branch in upland woods, but the most common substrate is *Ulmus*. COOK-1, GRUNDY, JASPER

***Opegrapha varia*** Pers. (*L. varius*, different; probably from the variability in the openness of the apothecia) = *O. pulicaris* (Hoffm.) Schrad. Calkins reported it simply from "various trees." Our only modern records are from punky lignin from a fallen branch. COOK-1-F-NY, DU PAGE, Will-1

***Opegrapha viridis*** (Ach.) Nyl. (*L. viridis*, green; from the greenish thallus of some specimens) The only Chicago region record for this species was collected on *Ulmus americana* near Darrien. We also have a record from a stump of *Acer negundo* along the bluff of the Fox River near Sheridan in La Salle County. DU PAGE

***Opegrapha vulgata*** auct. (*L. vulgatus*, common; from a local ubiquity) There is a Calkins specimen of this corticolous species from La Salle County at the New York Botanical Garden.

**PARMELIA** Ach. (PARMELIACEAE. Photobiont: *Trebouxia*. *L. parma*, a small round shield + *-eilea*, circumclude, close on every side; perhaps from the notably lecanorine rim that surrounds the disc. Spores 8, hyaline, simple)

Thallus isidiate. . . . . *P. squarrosa*

Thallus sorediate. . . . . *P. sulcata*

***Parmelia squarrosa*** Hale (*L. squarrosus*, rough with stiff scales, bracts, leaves, or processes; from rough appearance of the short-branched rhizines) = *Parmelia saxatilis* of Calkins, who noted that it grew on trees in Cook County near Elgin and on recent sandstones and boulders at Lemont. Thomson (32) mapped *P. saxatilis* from as far south as Milwaukee; at the same time he restricts *P. squarrosa* to northern Wisconsin and northern Michigan. See Hale (6). Our only modern record came from bark at Elson's Hill Forest Preserve. Hinds (97) maps a record from northwestern Indiana. [salazinic acid, atranorin] Cook-1, DU PAGE-47

***Parmelia sulcata*** Tayl. (*L. sulcus*, furrow, groove + *-atus*, provided with; from the lined markings on the upper cortex) = *Parmelia saxatilis* var. *sulcata* of Calkins. There is a specimen at ILL (*Calkins LE-325*) from Cook County called *Parmelia saxatilis*; it is actually *P. sulcata*. A common substrate, especially in our Indiana counties, is *Quercus velutina*, but it is frequent on a wide variety of trees, including cultivated specimens in suburbs. In 1991 at the Morton Arboretum, a blue-gray gnatcatcher built its nest in *Syringa reticulata* exclusively of *Parmelia sulcata*. *Punctelia rudecta* is a similar foliose species common at the arboretum, but it is found low on the trunks of large oaks where gnatcatchers are seldom seen. *Parmelia sulcata* grows more often on the upper surfaces of branches where gnatcatchers are more likely to forage. [salazinic acid, atranorin] BERRIEN-35, COOK-1-NY, DE KALB, DU PAGE-26-47, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, La Porte, McHENRY-NY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL

**PARMELIOPSIS** (Stizenb.) Nyl. (PARMELIACEAE. Photobiont: *Trebouxia*. *Parmelia* + Gr. *opsis*, aspect, view, appearance; a segregate of *Parmelia*, which see. Spores 8, hyaline, simple)

**Parmeliopsis ambigua** (Wulfen in Jacq.) Nyl. (*L. ambiguous*, interchangeable, uncertain, doubtful; perhaps from an uncertainty as to its taxonomic position) The only record of this species is Calkins's *Lichenes Exsiccati* #88 at ILL. The specimen label states that it was collected on old fence rails in Cook County. [usnic acid, divaricatic acid] Cook-ILL

**PARMOTREMA** A. Massal. (PARMELIACEAE. Photobiont: *Trebouxia*. *L. parma*, a small round shield + *trema*, a hole, especially the female pudendum; probably after the perforated apothecia of *Parmotrema perforatum*. Spores 8, hyaline, simple)

Medulla C+ red.....	P. austrosinense
Medulla C-.	
Thallus sorediate.	
Salazinic acid present.....	P. margaritatum
Salazinic acid absent. ....	P. hypotropum
Thallus esorediate.	
Thallus isidiate.....	P. crinitum
Thallus without isidia.....	P. perforatum

**Parmotrema austrosinense** (Zahlbr.) Hale (*L. auster*, south, the wind out of the south + *Sinae*, the Chinese; from southern Asia) Our only local record for this species is on an open-grown *Fraxinus americana* on high dunes at Grand Marais, where it is much disjunct from its otherwise Appalachian/Ozarks distribution. [lecanoric acid, atranorin] BERRIEN

**Parmotrema crinitum** (Ach.) M. Choisy (*L. crinitus*, with long hair; from the marginal cilia) = *Parmelia crinita* of Calkins. Most early reports of this species from Illinois are referable either to *Rimelia reticulata* or to *R. cetrata*, but Calkins described isidia on the Chicago region specimens, and reported this lichen from oaks in Hanover Township and on a detached rock near Lemont. See also comments below under *Parmotrema margaritatum*. [stictic acid, atranorin] Cook-1, Walworth-11

**Parmotrema hypotropum** (Nyl.) Hale (Gr. *hypo*, under, beneath, less than usual + *tropos*, a turn, turning, direction; probably from the often turned up lobes exposing the under surface) More common farther south, it is rare locally. Our Cook County specimen was found on *Fraxinus* at Cap Sauer's Holding, and the Jasper County specimen is from *Quercus palustris* at the Jasper-Pulaski Wildlife Area. The Will County record is from *Prunus serotina*. [norstictic acid, atranorin] COOK, JASPER, WILL

**Parmotrema margaritatum** (Hue) Hale (Gr. *margarites*, pearl + *-atus*, provided with; probably from the appearance of the smooth white cortex) This species is known from as nearby as Sauk County, Wisconsin, where it grows on bark. There is a Calkins specimen at the New York Botanical Garden, collected at Glencoe and called *Parmelia crinita*. It is esorediate except for one soralium. Had this soralium been overlooked, the specimen may well have been called *P. eurysacum* (Hue) Hale., which is frequent farther south. If the maculae of the cortex are overlooked, *Rimelia reticulata*, which is sorediate, would key here. [salazinic acid, atranorin] Cook-NY

**Parmotrema perforatum** (Jacq.) A. Massal. (*L. perforatus*, perforated; from the perforated apothecia) = *Parmelia perforata* of Calkins. Modern records suggest that this species is now confined to southern Illinois. Calkins described the plant from the Chicago region and reported it as a common species on "various trees in Cook and Will counties." [norstictic acid, atranorin] Cook-1, Will-1

**PELTIGERA** Willd. (PELTIGERACEAE. Photobiont: *Nostoc* and *Coccomyxa*. *L. pelta*, small shield + *gero*, to carry, bear; apparently from the apothecia borne on the lobe margins. Spores acicular, 8, hyaline to brownish, 3–7 septate)

Thallus usually with laminal soralia, less than 3 cm across and typically with strongly ascending lobes. . . P. didactyla  
Thallus without soralia, usually broader and with mostly adnate or spreading-ascending lobes.

Thallus surfaces with cylindrical, peltate, or flattened isidia.

Isidia clavate, globular to cylindrical, or more or less flattened..... P. evansiana

- Isidia scalelike or peltate. . . . . *P. lepidophora*  
 Upper surface without isidia, or with only marginal isidia or lobules.  
 Upper cortex smooth to the margins.  
 Thallus margins, and particularly the cracks in the cortex, lined with isidia or isidioid lobules. . . *P. elisabethae*  
 Thallus margins and cracks entire, without or with only disparate isidia. . . . . *P. polydactyla*  
 Upper cortex tomentose, at least near the margins.  
 Thallus margins, and particularly the cracks in the cortex, lined with isidia or isidioid lobules. . . *P. praetextata*  
 Thallus margins and cracks entire, without or with only disparate isidia.  
 Thallus thin, the lobes broad, round, the lobe tips typically turned downward; margins as thick as the rest of  
 the thallus. . . . . *P. canina*  
 Thallus thick, with a strong tendency to split when pressed, the lobes ascending; margins typically thickened  
 . . . . . *P. rufescens*

***Peltigera canina* (L.) Willd.** (*L. caninus*, of or pertaining to dogs; from the fang-shaped apothecia evocative of dogs' teeth) Uncommon on shaded, weathered tills or loess, or on stable shaded sandy areas, or among mosses over sandstone or dolomite. DU PAGE-47, KANE, McHenry-ILL, PORTER

***Peltigera didactyla* (With.) J. R. Laundon** (Gr. *di*, two, double + *daktylos*, a finger, toe; apparently from the strongly ascending lobes) = *P. spuria* (Ach.) DC. Rare, this species is confined to stable shaded or moist sands in natural areas. JASPER, KANKAKEE, LAKE IL, LAKE IN, PORTER

***Peltigera elisabethae* Gyeln.** (? A chivalrous commemoration of an acquaintance of Gyelnik's) There is a Calkins specimen of this species collected in 1905 at Glencoe, where it grew on shady mossy clay in a ravine. We have modern records from Illinois south of the Chicago region. [tenuiorin, triterpenoids, zeorin, ± gyrophoric acid] Cook-NY.

***Peltigera evansiana* Gyeln.** (after Alexander William Evans, 1868–1959, American bryologist and lichenologist) As yet unknown from the Chicago region, it is known from nearby La Salle County, where it was collected on soil in moss patches on a wooded slope under *Pinus strobus*.

***Peltigera lepidophora* (Nyl. ex Vain.) Bitter** (Gr. *lepidos*, scale + *phoros*, a bearing; from the flattened, scalelike isidia) Our only record of this species is from a sandy interdunal prairie east of Ogden Dunes. PORTER

***Peltigera polydactyla* (Neck.) Hoffm.** (Gr. *poly*, many + *daktylos*, a finger, toe; from the numerous lobes) Calkins & Huett reported this species from La Salle County, and we have one modern collection from the bluff of the Fox River near Sheridan, where it grows under remnant *Pinus strobus*. The only Chicago region record is a mixed collection (*Willey 58*) from McHenry County, labeled *P. canina*, which is also in the packet. [tenuiorin, triterpenoids, ± gyrophoric acid] McHenry-ILL

***Peltigera praetextata* (Flörke ex Sommerf.) Zopf** (*L. prae-*, before, very + *textus*, weave + *-atus*, provided with; from the tight tomentum) = *P. canina* var. *rufescens* (Weis.) Mudd f. *innovans* (Körb.) J. W. Thomson. This species, only weakly distinct from *P. rufescens* or *P. canina*, is found in habitats similar to both. The Berrien County record is from a sandy cemetery, with *Arenaria serpyllifolia*, *Cardamine hirsuta*, *Danthonia spicata*, *Antennaria plantaginifolia*, *Stellaria media*, and *Veronica arvensis*. BERRIEN, Walworth-4

***Peltigera rufescens* (Weis) Humb.** (*L. rufus*, reddish + *-escens*, beginning to; from the reddish brown thallus) = *P. canina* var. *rufescens* (Weis.) Mudd. This species is occasional on open, dry, often sandy substrates. Berrien-35-52, COOK-1-2-NY, DU PAGE, JASPER, KANKAKEE, LAKE IL, Lake IN-2, NEWTON, Porter-INDU, Racine-4, WILL

**PERTUSARIA DC.** (PERTUSARIACEAE. Photobiont: chlorococcoid. *L. pertusus*, perforated, punctured + *-arius*, belonging to; from the punctured appearance of the thallus caused by the osteolate warts. Spores large, thick-walled, 1–8, hyaline, simple)

Thallus saxicolous or corticolous; medulla C+ red; spores mostly more than 150 μ long. . . . . *P. velata*  
 Thallus corticolous; medulla C–; spores mostly less than 150 μ long.

Apothecia becoming soreidiate; fumarprotocetraric acid present. . . . . *P. multipunctoides*

Apothecia not becoming soreciate; fumarprotocetraric acid absent.

Norstictic acid present; stictic acid absent; medulla K+ red.

Spores 1 or 2. . . . . P. neoscotica

Spores 4, 6, or 8. . . . . P. propinqua

Norstictic acid absent; stictic acid present; medulla K- or K+ yellow.

Spores (2) 4–6 per ascus. . . . . P. leucostoma

Spores 2 per ascus.

Cortex UV- or UV+ orange pink, C- or C+ weak yellow; inner spore wall strongly undulate and rayed. . . . .

. . . . . P. macounii

Cortex UV+ orange red, C+ deep yellow; inner spore wall smooth or essentially so. . . . . P. pustulata

**Pertusaria leucostoma** (Bernh.) A. Massal. (Gr. *leukos*, white + *stoma*, mouth; apparently from a supposed lightly colored osteole) = *P. leioplaca* of Calkins, who reported this species from "oaks near Elgin and elsewhere." A similar species, *P. tetrathalamia* (Fée) Nyl. is known from nearby; it differs in that the ostioles are notably white-ringed and the inner spore walls are rough rather than smooth. [stictic acid, ± constictic acid, 2,7-dichlorolichexanthone, ± un2] Cook-1

**Pertusaria macounii** (I. M. Lamb) Dibben (after John Macoun, 1831–1920, Irish-born Canadian naturalist and botanist) = *P. pertusa* of some authors; *P. communis* of Calkins. There are two specimens of *Pertusaria* from Cook County in Calkins's *Lichenes Exsiccati* at ILL named *P. communis*. His #128 looks more like *P. trachythallina* Erichs., while #285 resembles *P. paratuberculifera* Dibben. He annotated two collections from Mahomet, Illinois, (ILL) as *P. communis*, but both are referable to *P. velata*. There is a specimen (Calkins #78, NY) that he called *P. communis*, and it is *P. macounii*; it was collected in Glencoe, on oak. A similar species, *P. plittiana* Erichs., is known from nearby; it is saxicolous, and differs in that it contains norstictic acid, connorstictic acid, perlatolic acid, and stenosporic acid. [stictic acid, constictic acid, 2,7-dichlorolichexanthone, un1, un2, un3] Cook-1-NY

**Pertusaria multipunctoides** Dibben (L. *multus*, many + *punctum*, dot, spot + *-oideus*, form of, type; from the appearance caused by the numerous tiny warts) = *P. multipuncta* of Calkins, who reported it from oaks and hickories, stating that it was not rare. *Pertusaria amara* (Ach.) Nyl. is known from nearby, but differs from *P. multipunctoides* in that the medulla contains picrolichenic acid. *P. trachythallina* Erichs. is also in the area; it differs in that the apothecia are heavily pruinose rather than soreciate, and in that the medulla contains thamnolic acid. [fumarprotocetraric and succinprotocetraric acids, ± protocetraric acid] Cook-1

**Pertusaria neoscotica** Lam. (after Nova Scotia) Our only record of this species is from the trunk of a Bur Oak along Carpenter Creek. [norstictic acid, connorstictic acid, ± planaic acid] JASPER

**Pertusaria propinqua** Müll. Arg. (L. *propinquus*, near; alluding to what I do not know) Just to the east of the Chicago region, in La Grange County, Indiana, this species was collected on *Quercus velutina*. [norstictic acid, connorstictic acid]

**Pertusaria pustulata** (Ach.) Duby (L. *pustulatus*, blistered; from the corticate warts) This appears to be the most common *Pertusaria* in the region today. Most of our specimens are from *Carya*, but the Walworth County record was on *Quercus rubra*. [stictic acid, constictic acid, ± un1, ± un2, ± un3, ± un5] Cook-1-25-86-NY, KENDALL-86, LAKE IL-86, RACINE, WALWORTH

**Pertusaria velata** (Turner) Nyl. (L. *vellus*, a veil, covering + *-atus*, adjective ending; from the apothecia covered by soredia) Calkins reported this species from both rocks and trees. Most of our specimens from southern Illinois are from oaks; all lack lichexanthone. [lecanoric acid] Cook-1-86-NY

**PHAEOCALICIUM** A. F. W. Schmidt (MYCOCALICIACEAE. Photobiont absent. Gr. *phaios*, dusky, dark gray + *kalyx*, a cup; from the cup-shaped apothecia. Spores, uniseriate in the ascus, simple to 1-septate, brown)

**Phaeocalicium polyporaeum** (Nyl.) Tibell (*Polyporus*, a genus of fungus + L. *-eum*, denoting a place or source area; from its inhabitancy of polyporous fungi) Evidently rare in the Chicago region, this

species occurs fairly regularly farther south and east on polyporous fungi, particularly *Trichaptum biforme* (Fr.) Ryvarden. Our only local record is from an old trunk of *Betula papyrifera*. COOK, KENOSHA, WILL

**PHAEOPHYSCIA** Moberg (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *phaios*, dusky, dark gray + *Physcia*, which see; from the brownish gray thallus. Spores 8, brown, 1-septate)

Thallus esorediate.

Apothecia rare; margins of lobes dissected into lobulate fringes. . . . . *P. imbricata*

Apothecia common; margins of lobes entire.

Margins of apothecia smooth. . . . . *P. ciliata*

Margins of apothecia mostly with stiff spreading hairs. . . . . *P. hirtella*

Thallus sorediate.

Medulla red or deep orange nearly or quite throughout. . . . . *P. rubropulchra*

Medulla white.

Margins of apothecia and lobes beset with colorless cortical hairs.

Soralia labriform or capitate, often on terminal lobes; thallus black or blackish. . . . . *P. hirsuta*

Soredia in linear, usually marginal soralia; thallus light to dark gray. . . . . *P. cernohorskyi*

Thallus without colorless cortical hairs, though white-tipped rhizines may project profusely along the lobe margins.

Soredia granular, somewhat diffused in poorly delimited soralia. . . . . *P. adiaistola*

Soredia fine, confined to rounded soralia.

Soralia strongly capitate, almost stipitate, primarily terminal on main or secondary lobes. . . . . *P. pusilloides*

Soralia orbicular, but not capitate.

Larger lobes to 0.5 mm across; lower cortex white or pale throughout. . . . . *P. insignis*

Larger lobes more than 0.5 mm across; lower cortex black except near the margins. . . . . *P. orbicularis*

**Phaeophyscia adiaistola** (Essl.) Essl. (Gr. *adiaistolos*, mixed, joined, not separated; probably from the more or less coalesced soralia) This species is characteristic of shaded dolomitic erratics, cliff faces and ledges. BOONE, COOK, DU PAGE-47, KANE, KANKAKEE, KENDALL, LAKE IL, WILL

**Phaeophyscia cernohorskyi** (Nádv.) Essl. (after Zdenek Cernohorsky, 1910–, Austrian morphologist and lichenologist) This species is occasional on open-grown trees, usually in disturbed or cultural areas. We also have specimens from dolomitic and granitic boulders, and weathered concrete. BOONE, COOK, DU PAGE-47, GRUNDY, JASPER, KENDALL, McHENRY, PORTER-35, WILL

**Phaeophyscia ciliata** (Hoffm.) Moberg (*L. ciliatus*, furnished with cilia; from the projecting marginal rhizines) = *Physcia obscura* of Calkins. Commoner southward, this is an occasional species locally on open-grown trees, often in disturbed areas. Nearly a third of our specimens are from *Populus deltoides*, and we have three from dolomitic boulders in open areas. BERRIEN, COOK-1, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KENOSHA, LAKE IL, LAKE IN, NEWTON, PORTER-35, ST. JOSEPH, WILL-1

**Phaeophyscia hirsuta** (Mereschk.) Moberg (*L. hirsutus*, with bristly hairs; from the cortical hairs on the apothecial margins) Our only record for this species is from weathered concrete at the Chiwaukee Prairie. KENOSHA

**Phaeophyscia hirtella** Essl. (*L. hirtus*, stiffly hairy + *-ellus*, diminutive; from the small hairs around the rim of the apothecium) This species, which is weedy southward in the Midwest and common in Missouri, remains unknown from the Chicago region.

**Phaeophyscia imbricata** (Vain.) Essl. (*L. imbricatus*, covered with tiles or scales; from the marginal lobules) Our only record for this species is from *Ulmus americana* at Herrick Lake Forest Preserve. DU PAGE-47

**Phaeophyscia insignis** (Mereschk.) Moberg (*L. insignis*, unique, well marked; probably from the pale lower cortex that is rare in *Phaeophyscia*) The nearest record for this species is from an exposed limestone outcrop in Adams County, Illinois, but it is easily overlooked as a small *P. orbicularis*, so it should be sought on both saxicolous and corticolous substrates in the region.



**Phaeophyscia orbicularis** (Neck.) Moberg (*L. orbiculus*, a small circle + *-aris*, pertaining to; from the discrete circular soralia) Occasional on both corticolous and saxicolous substrates. See also comments under *P. rubropulchra*. COOK, DU PAGE-47, GRUNDY, NEWTON, RACINE

**Phaeophyscia pusilloides** (Zahlbr.) Essl. (from its original name, *Physcia pusilla*, an illegitimate name to which Zahlbruckner added *-oides*, like or resembling, to create a replacement name) Locally this species is frequent on open-grown, usually fast-growing trees such as *Populus deltoides*, *Ulmus* spp., *Salix* spp., and *Acer negundo*. In open areas it is occasional on boulders and fallen logs. BERRIEN, COOK, DE KALB, DU PAGE-47, GRUNDY, KANE, KENOSHA, LAKE IL, LAKE IN-35, McHENRY, PORTER-35, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL

**Phaeophyscia rubropulchra** (Degel.) Essl. (*L. ruber*, red + *pulcher*, beautiful; from the attractive red medulla) = *Physcia orbicularis* of Armstrong (26); all of her voucher material is referable to this species. This species is very common on the bases of trees in open areas, where it often grows with associates such as *Physcia millegrana*, and in shaded woods, where it often is the only lichen. [rhodophyscin] BERRIEN-35-52, BOONE, COOK, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, La Porte-35, McHENRY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL

**PHYSICIA** (Schreb.) Michx. (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *physke*, a blister, wart, sausage; from the well developed thalline apothecia. Spores 8, brown, 1-septate)

Thallus esorediate; apothecia common.

Medulla K–; zeorin absent. . . . . *P. stellaris*

Medulla K+ yellow; zeorin present.

Lobes up to 1 mm wide. . . . . *P. pumilior*

Lobes prevailingly more than 1 mm wide.

Thallus saxicolous. . . . . *P. phaea*

Thallus corticolous. . . . . *P. aipolia*

Thallus sorediate.

Thallus lobes narrow and finely branched; soredia granular.

Lobes notably longer than wide; saxicolous. . . . . *P. subtilis*

Lobes about as broad as wide; corticolous, rarely saxicolous. . . . . *P. millegrana*

Thallus lobes broader, not finely divided; soredia fine and powdery.

Tips of lobes hooded, the soralia nearly or quite concealed; long white marginal cilia conspicuous. . . . . *P. adscendens*

Tips of lobes not concealing the soralia; cilia absent

Lower surface pale brown; soralia grayish; on granitic rock. . . . . *P. caesia*

Lower surface white; soralia white; corticolous, or on carbonate rock. . . . . *P. americana*

**Physcia adscendens** (Fr.) H. Olivier (*L. adscendens*, ascending; from the elevated thallus lobes) This northern species is frequent on a wide variety of corticolous substrates, as well as weathered concrete and dolomitic boulders. [atranorin] Berrien-35-52, BOONE, COOK, DE KALB, DU PAGE-47, GRUNDY, KANE, KENOSHA, LAKE IL, LAKE IN, La Porte-35, McHENRY, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WILL

**Physcia aipolia** (Ehrh. ex Humb.) Hampe in Fürnröhr (Gr. *aei*, ever, always + *polios*, hoary, gray; perhaps from the whitish gray maculae present throughout the upper cortex) = *P. stellaris* var. *aipolia* of Calkins. According to Skorepa (10), northern Illinois populations of this lichen are represented by larger thalli, but some of the smaller southern material is no doubt referable to *P. pumilior*, which see. Occasional, half of our specimens are from *Quercus alba*; the others are from *Ulmus americana*, *Populus deltoides*, *Juglans nigra*, and even *Rhamnus cathartica*. Curiously, Calkins listed the habitat as "boulders of the prairies and on stones at Lemont." [atranorin, zeorin] Berrien-35-52, BOONE, Cook-1, GRUNDY, JASPER, KANE, KENDALL, KENOSHA, LAKE IL, LAKE IN, McHENRY, NEWTON, STARKE, WALWORTH, WILL

**Physcia americana** G. Merr. (of America) Farther south, this is a common corticolous species; locally it is uncommon, known from *Fraxinus americana*, *Juglans nigra*, and *Quercus velutina*; two of our specimens are from shaded dolomitic cliff faces. [atranorin, unknown terpene] COOK, DU PAGE-47, KANE-US, KENDALL, NEWTON, WILL

**Physcia caesia** (Hoffm.) Fürnr. (*L. caesia*, bluish gray; from the color of the soralia) This species occurs just to the north of our region on granitic boulders, particularly those that are commonly visited by perching birds. [atranorin, zeorin]

**Physcia millegrana** Degel. (*L. mille*, a thousand + *granum*, a seed; from the numerous seedlike soredia) = *P. tribacia* of Calkins. This species is not treated by Moberg (7). This is the commonest lichen in the Chicago region. It grows on virtually all corticolous substrates, often without associates, but more often with *Candelaria concolor*. It also grows on weathered concrete and flagstone. [atranorin] BERRIEN-35-52, BOONE, COOK-1-5-NY, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL-5, LAKE IN-35, La Porte-35, McHENRY-NY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE-US, WALWORTH-5, WILL-10

**Physcia phaea** (Tuck.) J. W. Thomson (*Gr. phaios*, dark, dusky; a seemingly inappropriate epithet for the whitish gray lichen) Unknown as yet from the Chicago region, we have one collection from a sandstone outcrop west of Covil Creek in La Salle County. [atranorin, zeorin]

**Physcia pumilior** R. C. Harris (*L. pumilus*, dwarfish + *-ior*, a comparative ending; from the tiny lobes, much narrower than those of its closest relative, *Physcia aipolia*) Rare, our only specimens are from *Populus deltoides* and *Fraxinus americana*. This is the *P. alba* of Midwestern authors. [atranorin, zeorin] DE KALB, DU PAGE, WALWORTH

**Physcia stellaris** (L.) Nyl. (*L. stellaris*, starry, speckled; perhaps from the often radiate silver thallus lobes) Including *P. stellaris* f. *tuberculata* (Kernst.) DT. & S. Thomson (5) refers a Lake County, Illinois, specimen to *P. stellaris* f. *stellaris*. This species is common on a wide variety of corticolous substrates, though nearly half of our specimens are from *Fraxinus pennsylvanica* var. *subintegerrima*, *Populus deltoides*, and *Quercus velutina*. It is frequent on fallen branches, the source trees of which are sometimes difficult to determine. [atranorin] BERRIEN-35-52, BOONE, COOK-1-NY, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL-5, LAKE IN-35, La Porte, McHENRY-NY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL-10

**Physcia subtilis** Degel. (*L. subtilis*, slender, minute, delicate; from the very narrow thallus lobes) This species is rare to occasional on granitic and basaltic erratics in pastures and old fields. [atranorin] COOK, GRUNDY, KANE, KENDALL, McHENRY, WILL

**PHYSCELIA** Essl. (PYXINACEAE. Photobiont: *Trebouxia*. *Physcia*, which see + *L. -ellus*, diminutive; supposedly smaller than many *Physcia* species. Spores not seen, but presumably like those of *Phaeophyscia*)

Many of the soredia in crescent-shaped soralia at the lobe tips. . . . . *P. chloantha*  
Soredia all, or nearly all in laminal soralia. . . . . *P. melanhra*

**Physciella chloantha** (Ach.) Essl. (*Gr. chloanthes*, budding; perhaps from the abundant sorediate lobe tips) = *Physcia chloantha* Ach.; *Phaeophyscia chloantha* (Ach.) Moberg. This is a frequent species of disturbed and landscaped areas. It grows on tombstones with *Xanthoria* spp., on concrete with *Endocarpon pusillum*, on *Ulmus* spp., and other fast-growing species such as *Populus alba* and *Celtis occidentalis*; we have one specimen from *Malus pumila*. In natural habitats it occurs on open-grown *Quercus alba*. Berrien-35-52, BOONE, COOK, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE, LAKE IL, Lake IN-35, McHENRY, NEWTON, PORTER-35, ST. JOSEPH, STARKE, WILL

**Physciella melanchra** (Hue) Essl. (Gr. *melaina*, black + *chroa*, color of the skin, superficial color; perhaps from the darkened color of the upper cortex) This species is occasional on fast-growing, open-grown trees in the counties just west of the Chicago region. Our only local record is from a weathered fence rail. McHENRY

**PHYSCONIA** Poelt (PYXINACEAE. Photobiont: *Trebouxia*. ?? Spores not seen, but presumably like *Phaeophyscia*)

Medulla C+ rose. . . . . P. kurokawae  
Medulla C-. . . . . P. deterosa

**Physconia deterosa** (Nyl.) Poelt (*L. detersus*, cleansed, removed; the application here is uncertain) = *Physcia grisea* (Lam.) Zahlbr. f. *grisea* of Thomson (5). Though not nearly so common, this species grows on substrates similar to those of *Candelaria concolor* and *Physcia millegrana*, which are its nearly constant associates. BERRIEN-52, BOONE, COOK, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KENDALL, LAKE IL-5, LAKE IN, McHENRY, NEWTON, PORTER, ST. JOSEPH, STARKE, WALWORTH, WILL

**Physconia kurokawae** Kashiw. (after Syo Kurokawa, 1926-, director of the department of botany at the National Science Museum in Tokyo) Relatively rare throughout the lower Midwest, but easily overlooked since, so far as we can tell; it differs from *P. deterosa* only in that it contains gyrophoric acid. Our only specimen is from *Quercus alba*, but in nearby counties it grows on a variety of substrates, commonly *Fraxinus* and occasionally on rock. [gyrophoric acid] KANKAKEE

**PLACYNTHIELLA** Elenkin (TRAPELIACEAE. Photobiont: *Chlorella*? The genus *Placynthium* + *-ellus*, diminutive; from the minute dark-colored, isidioid thallus. Spores 8, hyaline, simple)

Thallus C+ pink; thallus corticolous or lignicolous. . . . . P. icmalea  
Thallus C-; thallus arenicolous or lignicolous.  
Wet thallus granules dark brown to black, less than 0.1 mm across. . . . . P. uliginosa  
Wet thallus granules distinctly greenish, mostly more than 0.1 mm across. . . . . P. oligotropha

**Placynthiella icmalea** (Ach.) Coppins & P. James (Gr. *icmas*, moisture + *aleo*, warmed or exposed to the sun; perhaps from the dark color of the thallus on weathered wood that gives the appearance of a moist stain) = *Saccomorpha icmalea* (Ach.) Clauzade & Roux. Skorepa's report of *Lecidea uliginosa* from Will (his #5217, SIU) is referable here. It is occasional on dead limbs, decorticate logs, and old wood. Even though this species contains gyrophoric acid, which typically reacts C+ pink, it is a fast-fading pink, and sometimes difficult to discern from a simple C test. Negative results should be confirmed with TLC before concluding the specimen is not *P. icmalea*. [gyrophoric acid, ± lecanoric acid] COOK, DU PAGE-24, JASPER, LAKE IL, LAKE IN-INDU, LA PORTE, Porter-35, WALWORTH, Will-10-24

**Placynthiella oligotropha** (J. R. Laundon) Coppins & P. James (Gr. *oligos*, few, small + *trophis*, well nourished; from its tendency to grow in areas where nutrients are scarce, such as on sand) = *Saccomorpha oligotropha* (J. R. Laundon) Clauzade & Roux. The Porter County specimen was collected on sand north of Furnessville Road along the horse trail south of the visitor center at the Indiana Dunes National Lakeshore. Porter-35-MIN

**Placynthiella uliginosa** (Schr.) Coppins & P. James (*L. uliginosus*, full of moisture; perhaps the dark thallus appears soaked from a distance) Our only local records for this species are in black oak savannas, but it is a frequent sand binder in sandy prairies farther south and will certainly be documented more regularly in our sand counties. BERRIEN, WILL

**PLACYNTHIUM** (Ach.) Gray (LICHINACEAE. Photobiont: *Dichothrix* and *Scytonema*.  
?? Spores 8, hyaline, 1–3 septate)

**Placynthium nigrum** (Huds.) Gray (*L. niger*, black; from the color of the thallus) = *Pannaria nigra* of Calkins. This species is rare on weathered dolomitic erratics and outcrops. BOONE, Cook-1, DU PAGE-47, KANE-8, KANKAKEE, WILL-1

**POLYSPORINA** Vězda (ACAROSPORACEAE. Photobiont: *Trebouxia* and *Myrmecia*. Gr. *poly*, many + *spora*, seed + *L -inus*, pertaining to; from the numerous spores in each ascus. Spores numerous, minute, simple)

Substrate granitic or siliceous; thalli commonly 0.4 mm or more in diameter. . . . . Polysporina simplex  
Substrate dolomitic; thalli less than 0.4 mm. . . . . Polysporina urceolata

**Polysporina simplex** (Davies) Vězda (*L. simplex*, simple; perhaps from its simple form, having tiny apothecia and no thallus) Our only records of this species are from granitic boulders. COOK, GRUNDY

**Polysporina urceolata** (Anzi) Brodo (*L. urseolus*, a little urn or pitcher) Our only record for this species is from dolomitic gravel on a hill prairie near Elgin. COOK

**PORPIDIA** Körb. (PORPIDIACEAE. Photobiont: chlorococcoid. Gr. *porpe*, a buckle or pin, a brooch + *-idion*, diminutive; conceivably from the apothecia, evocative of little pins or brooches. Spores 8, hyaline, simple)

Apothecia densely gray pruinose. . . . . *P. albocaerulescens*  
Apothecia epruinose, black. . . . .  
Apothecial rim finely but distinctly radiately cracked or wrinkled. . . . . *P. tahawasiana*  
Apothecial rim smooth or essentially so. . . . . *P. macrocarpa*

**Porpidia albocaerulescens** (Wulfen) Hertel & Knoph (*L. albus*, white + *caeruleus*, dark blue + *-escens*, beginning, becoming, slightly; from the color of the apothecia) Yet unknown from the Chicago region, we have a collection from near Serena, in La Salle County, where it grew on a granite boulder.

**Porpidia macrocarpa** (DC. in Lam. & DC.) Hertel & A. J. Schwab (Gr. *makros*, long, large + *karpos*, fruit; from the large apothecia) This species grows on sandstone cliffs and ledges in nearby La Salle and Ogle counties, just to the west of the Chicago region. Armstrong (26) reported *Porpidia crustulata* (Ach.) Hertel & Knoph (as *Lecidea crustulata*) from the Morton Arboretum in Du Page County, but her specimen was sterile and collected from oak. *Porpidia crustulata* is saxicolous, and is similar to *P. macrocarpa*, except that the apothecia are smaller (to 0.75 mm) and it has a better-developed thallus. Apothecia in the latter range from 0.5 to 2.0 mm in diameter and the thallus is obscure or absent.

**Porpidia tahawasiana** Gowan (Named after Mount Tahawasia in the Berkshires of Connecticut) Known from as nearby as Lee County, Illinois, this species is common in southern Illinois and Indiana on HCl– rocks. It is very similar in appearance to *P. macrocarpa*, and there are some specimens that are discouragingly ambiguous in their identity. In some cases, unlike with *P. macrocarpa*, the hymenium of *P. tahawasiana* reddens a bit with moisture.

**PROTOBLASTENIA** (Zahlbr.) J. Steiner (LECIDEACEAE. Photobiont: chlorococcoid. Gr. *protos*, first, primary + *blastos*, a germ, bud, shoot + *-enos*, pertaining to; from the simple spores. Spores 8, hyaline, simple)

**Protoblastenia rupestris** (Scop.) J. Steiner (*L. rupestris*, growing on rocks; from its habitat) Our only records of this species are from exposed dolomitic bedrock at the Flora Prairie northwest of Irene

and from Cap Sauers Holding near Palos Park, and a dolomitic boulder near Bollingbrook. Calkins & Huett reported *Biatora calcivora* (= *Clauzadea immersa*) from nearby La Salle County, but Richard Harris (pers. comm.) believes this report is likely to be referable here. Notwithstanding the K+ purple apothecium, which is evocative of *Caloplaca*, the anatomy of the ascoma and spores are more *Psora*-like. [parietin] BOONE, COOK, WILL

**PSORA** Hoffm. (LECIDEACEAE. Photobiont: *Trebouxia* and *Myrmecia*. Gr. *psora*, the itch, scurvy; from the scurfy or scablike thalli. Spores 8, hyaline, simple)

Thallus saxicolous; squamules brown. . . . . *P. pseudorussellii*  
Thallus terricolous; squamules pink. . . . . *P. decipiens*

**Psora decipiens** (Hedwig) Hoffm. (*L. decipiens*, deceiving; perhaps from its superficial resemblance to another species) = *Biatora decipiens* of Fink (12). Our specimens are without substances, which circumstance refers them to "strain I" of Timdal (43). He places those specimens with norstictic acid into "strain II" and those with hyposalazinic acid into "strain III". Most of our specimens are from open kames and other prairies where dolomite is exposed and shallow pockets of calcareous soils have developed in cracks or among the pebbles. We have one specimen from the calcareous stable sands of the antedunal prairies of Illinois Beach State Park. *Catapyrenium lachneum* is a constant associate. BOONE, COOK, KANE-12, LAKE IL, McHENRY, WALWORTH, WILL

**Psora pseudorussellii** Timdal (Gr. *pseudes*, false, deceptive + *russellii*; resembling *Psora russellii*, named after John Lewis Russell, 1808–1873, American cryptogamist and naturalist) Our only record of this species is from exposed dolomitic bedrock at the Flora Prairie northwest of Irene. BOONE

**PSOROTICHIA** A. Massal. (LICHINACEAE. Photobiont: *Gleocapsa*. Gr. *psora*, the itch, scurvy + *teichos*, wall around a city; probably from its frequency on concrete walls and rails. Spores 8–32, hyaline, simple)

**Psorotichia schaeferi** (A. Massal.) Arnold (after Ludwig Emanuel Schaefer, 1785–1853, Swiss clergyman and lichenologist) Our only record of this species is from a sandstone boulder along the old E. J. & E. Railroad right-of-way in a strip mine area south of Dell Abbey. GRUNDY

**PUNCTELIA** Krog (PARMELIACEAE. Photobiont: *Trebouxia*. L. *punctum*, a prick, puncture, or dot + *-elia*, a generic ending, probably from Gr. *eilo*, to roll up or collect, as in a collection or group; from the numerous pseudocyphellae. Spores 8, hyaline, simple)

Thallus lacking isidia and soredia; medulla C–. . . . . *P. bolliana*  
Thallus with either isidia or soredia; medulla C+ red.  
Thallus isidiate. . . . . *P. rudecta*  
Thallus sorediate.  
Soredia coarse and pustular, often coalescing into large areas and becoming lobulate. . . . . *P. missouriensis*  
Soredia farinose, in round delimited soralia. . . . . *P. subrudecta*

**Punctelia bolliana** (Müll. Arg.) Krog (after Ernst Friedrich August Boll, 1817–1868, German botanist who collected the type in Texas) = *Parmelia bolliana* Müll. Arg. Culberson & Culberson (20) map several dots from the Chicago area. *Parmelia borrieri*, from Cook County (*Calkins LE #323*, ILL) is referable here, as well as Lake County, Illinois, and McHenry County specimens by the same name. In our Indiana counties, *Quercus velutina* is the substrate of choice; elsewhere *Q. alba*, *Q. macrocarpa*, and *Q. rubra* are the preferred substrates. Other frequent substrates include *Carya ovata* and *Juglans nigra*. In most cases the trees are open-grown and relatively large. [atranorin, protolichesterinic acid] BERRIEN-52, COOK, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE,

KENDALL, KENOSHA, LAKE IL-ILL, LAKE IN, La Porte-35, McHENRY-ILL-NY, NEWTON, PORTER-INDU, RACINE, STARKE, WALWORTH, WILL

**Punctelia missouriensis** G. Wilh. & Ladd (after the state of Missouri) The only substrate from which we have this species locally is *Quercus*, but farther downstate and across southern Illinois into Missouri it grows on a wide variety of trees, often in highly disturbed areas. [atranorin, lecanoric acid] BERRIEN-75, JASPER-75, LAKE IL, NEWTON-75, WALWORTH

**Punctelia rudecta** (Ach.) Krog (L. *rudis*, rough, raw, wild + *ecto-*, out of, from; probably from the rough appearance of the upper cortex caused by the pseudocyphellae) = *Parmelia rudecta* and *P. borrieri* var. *rudecta* of Calkins. Culberson & Culberson (20) show several dots mapped from the Chicago area. Three-fourths of our specimens are from open-grown oaks, but we have specimens from *Juglans nigra*, *Larix laricina*, *Maclura pomifera*, and *Ostrya virginiana*; there is also a specimen from a basaltic boulder in an open pasture. [lecanoric acid, atranorin] BERRIEN-35, BOONE, COOK-1-NY, DE KALB, DU PAGE-26-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN-35, LA PORTE-35, McHENRY, NEWTON, PORTER-INDU, RACINE, ST. JOSEPH, STARKE-US, WALWORTH, WILL-1

**Punctelia subrudecta** (Nyl.) Krog (L. *sub*, below, almost, near + *rudecta*; resembling *Punctelia rudecta*, which see) = *Parmelia subrudecta* Nyl.; *P. borrieri* of Calkins and Berry, not Turner. All of our specimens are from *Quercus alba*, though in the Shawnee Hills and in the Missouri Ozarks it has a high degree of incidence on old-growth *Juniperus virginiana* and oaks in natural areas. Calkins regarded this species as common in the region at the turn of the century. [lecanoric acid, atranorin] Cook-1, DE KALB, Du Page-47, JASPER, KANE, NEWTON, Will-1

**PYCNOTHELIA** Dufour (CLADONIACEAE. Photobiont: chlorococcoid. Gr. *pyknos*, dense, thick + *thele*, nipple; from the tiny, clustered apothecia atop the podetia. Spores not seen)

**Pycnothelia papillaria** Dufour (L. *papilla*, nipple, teat + *-arius*, belonging to; probably from the swollen, apothecia-tipped podetia) As yet unknown from the Chicago region, this rare little lichen has been collected on sandy soil on a sandstone cliff at the Nachusa Grassland. [usually atranorin, ± fatty acids, such as protolichesterinic acid]

**PYRENOCOLLEMA** Reinke (VERRUCARIACEAE. Photobiont: *Gleocapsa*. Gr. *pyren*, kernel + *Collema*, which see; because of the perithecia on an otherwise collemataceous thallus. Spores 8, hyaline, 1–2 septate)

**Pyrenocollema prospersella** (Nyl.) R. C. Harris (L. *prospargo*, to sprinkle + *-ellus*, diminutive; probably in reference to the well scattered, nonaggregated perithecia) = *Verrucaria prospersella* Nyl.; *Arthopyrenia prospersella* (Nyl.) Zahlbr. Fink (29) lists this species as a northern Illinois endemic. Harris (49) described this species as: "*Thallus gray, continuous to rimose, epilithic. Photobiont with cells blue green in color, in small groups but without an obvious sheath. Ascocarps globose, 0.2–0.25 mm in diameter. Asci slightly ovate to elliptical. Spores 17–23 × 8–11 μ. Habitat on calcareous rocks, possibly more or less aquatic. It is known from a Belgian collection in addition to the type locality.*" Tucker & Harris (56) cite the type 16 km from Chicago (H-NYL 991) and list the substrate in Louisiana as "sandstone outcrops." Cook-1-49-56-F-NY

**PYRENULA** Ach. (PYRENULACEAE. Photobiont: *Trentepohlia*. Gr. *pyren*, kernel + *-ulus*, diminutive; from the perithecia that are thought to resemble small kernels or grains. Spores 8, brown, mostly 3-septate)

Thallus UV+ yellow; spores pale yellowish brown; hymenium I+ greenish blue. . . . . P. pseudobufonia

Thallus UV–; spores lavender brown; hymenium I+ or pinkish..... P. subelliptica

**Pyrenula pseudobufonia** (Rehm) R. C. Harris (Gr. *pseudes*, false, deceptive + ?) = *P. neglecta* R. C. Harris; *P. nitida* of North American authors, not (Weigel) Ach. Harris (14) lists trees of mesophytic forests as the substrate for this species; it is common south and east of the Chicago region. It is probable that the reports of *P. glabrata* (= *P. laevigata* of Calkins) are referable here, even though Calkins described the thallus as whitish and thin, features that do not suggest *P. pseudobufonia*. Harris (14) asserted that *P. laevigata* is rare in the Great Lakes region, and that it occurs mostly on *Betula* and occasionally on *Fraxinus*, and cited a specimen of *P. pseudobufonia* from Cook County. See also comments under *Arthopyrenia cinchonae*. [lichexanthone] Cook-14-F-NY

**Pyrenula subelliptica** (Tuck. in Lea) R. C. Harris (L. *sub*, below, almost, near + *ellipsis*, lack, imperfection + *-icus*, belonging to or emphasizing a character; from the elongate or imperfectly-formed median lumina of the spores) = *P. imperfecta* (Ell. & Ev.) R. C. Harris. Harris (14) mapped this species from just south of the Chicago region; he listed its substrates as *Carpinus*, *Fagus*, *Fraxinus*, and *Quercus*. A Calkins specimen from Cook County listed *Quercus* as a substrate. The specimens we have seen too often have spore lumina evocative of *P. macounii* R. C. Harris, but the hymenium is usually notably, if not abundantly, interspersed with oil droplets and granules, and the white spots characteristic of *P. subelliptica* are occasionally evident. COOK

**PYRRHOSPORIA** Körb. (LECIDEACEAE. Photobiont: *Trebouxia*. Gr. *pyrrhos*, flame-colored; from the reddish apothecia of the type species. Spores 8, hyaline, simple. Anthraquinones in the apothecia)

**Pyrrhospora varians** (Ach.) R. C. Harris (L. *varians*, changing; perhaps from the various shapes and degrees on confluence of the apothecia) = *Biatora varians* of Calkins, who reported it from oaks and hickories. This species is weedy in and around St. Louis, Missouri. Cook-1

**PYXINE** Fr. (PYXINACEAE. Photobiont: *Trebouxia*. L. *pyxis*, a box + *-inus*, pertaining to; probably the apothecia reminded Fries of coin boxes. Spores 8, brown, 1–3 septate)

Medulla yellow; cortex K– and UV+ bright yellow; lobes typically with a conspicuous patch of dense pruina just back from of the tip..... P. subcinerea  
Medulla salmon orange; cortex K+ yellow and UV–; lobes without pruina, or with a diffuse patch near the tips..... P. soredata

**Pyxine soredata** (Ach.) Mont. (Gr. *soredion*, a little heap + *-atus*, an adjective ending; from the numerous soredia) In Newton County, we have two specimens from *Quercus velutina*. At Warren Woods in Berrien County it grew on a fallen ash, and at the Morton Arboretum it grew on the surface of a limb of an open-grown *Crataegus*; the Will County record is from *Populus deltoides*. [atranorin] BERRIEN, DU PAGE-47, NEWTON, WILL

**Pyxine subcinerea** Stirt. (L. *sub*, below, almost, near + *cinereus*, ash-colored; from the grayish thallus) = *P. caesiopruinosa* of previous North American authors, not Nylander. Commoner farther south, our only records are from a cultivated elm at the Morton Arboretum, where it is presumed to be adventive, and from *Crataegus* at Paw Paw Woods in Cook County. According to Harris, *P. caesiopruinosa* (Nyl.) Imsh. is confined to the southeastern coastal plain, from where we have numerous specimens. It differs in that the medulla is K + purple. [atranorin, lichexanthone] COOK, DU PAGE-47

**RAMALINA** Ach. (PARMELIACEAE. Photobiont: *Trebouxia*. L. *ramus*, a branch + *linum*, thread, rope; perhaps from the cordlike or lined appearance of the surface of the thallus branches. Spores 8, hyaline, 1-septate)

Thallus sorediate. . . . .	R. intermedia
Thallus esorediate.	
Thallus lobes up to 5 mm wide. . . . .	R. americana
Larger lobes greater than 5 mm wide. . . . .	R. subampliata

**Ramalina americana** Hale (of America) Including *R. calicaris* and *R. calicaris* var. *fastigiata* of Calkins. Riefner (63) seemed to restrict *R. fastigiata* (Pers.) Ach. to the west coast of the United States, and described it as having narrower lobes and evernic acid. See Brodo (18). There is a modern Cook County record, from *Populus deltoides*, represented by a very small thallus, which, if imagined in full development, might more aptly be placed with *R. unifolia*. There is also a small ort of a specimen, which must be defaulted here, from a weathered fence rail at the Lockport Prairie. [usnic acid] COOK-1, WILL-1

**Ramalina intermedia** (Delise ex Nyl.) Nyl. (*L. inter*, between, among + *medius*, middle; from its resemblance to two similar species) Not known from the twenty-two county Chicago region, there is a population of this rare lichen in Apple River Canyon State Park, in Jo Daviess County, where it grows on a limestone cliff near the center of the park. [usnic acid]

**Ramalina subampliata** (Nyl.) Fink (*L. sub-*, under, below, or not quite there + *ampliata*, enlarged, increased; from its resemblance to *R. ampliata*, in which the lobes are greatly expanded) = *R. calicaris* var. *fraxinea* of Calkins; *R. fastigiata* var. *subampliata* Nyl. Calkins reported it from oaks and old fences near Lemont. A Calkins Cook County specimen (*Lichenes Exsiccati* I-2), called *R. calicaris* var. *fastigiata* is referable here. The proper name for this species has me completely at sea. Although Egan (41) included it, rendering the epithet "*subampliata*," Bowler & Rundel (61) reported that *R. subampliata* is not known from North America; the latter authors, however, do not give our material a name. Hale (6) limits the lobe width of *R. americana* [*R. fastigiata* of Howe (59)] to 5 mm. Howe separated *R. subampliata* from *R. fastigiata* by indicating that the lobes are generally wider in the former, so reports of *R. subampliata*, or the locally misapplied name *R. fraxinea* (L.) Ach., should stand alone under some other name, perhaps *R. sinensis* Jatta. But, the latter species, like *R. americana*, has its apothecia mostly terminal, while our material, or at least all that we have seen, has an abundance of laminal apothecia, like *R. celastri* (Sprengel) Krog & Swinsow, which has been called *R. ecklonii* in North America. A. H. Magnusson annotated two broad-lobed Illinois specimens (MICH) as *R. confusa* H. Magn. in 1958, but Egan did not carry this name, even as a synonym; evidently it is simply a "herbarium name." Howe had annotated these specimens *R. fastigiata* var. *subampliata* in 1912. Hale (6), however, pointed out that *R. sinensis* is prevailingly southwestern and has decorticate areas on older portions of the thallus, a feature that does not describe Illinois material. He also noted that there is a northern Great Lakes form with broad lobes that has been referred to as *R. subampliata*, but does not speculate as to what its valid name might be. Bowler & Rundel noted that Nylander originally described *R. fastigiata* var. *subampliata* as having lobes 6–12 mm wide, but they did not explain why there "is no question that North American reports of *R. subampliata* are incorrect," or even how it differs from similar broad-lobed North American specimens. Thomson (62) referred some of these broad-lobed "prairie-forest" border species to *R. unifolia* J. W. Thomson, which appears fairly distinctive in that it as strong longitudinal ridged intercalated with decorticate zones and curved spores. Lacking a decisively better name, we are exploiting the name *R. subampliata* for the broad-lobed species in Illinois that do not look like *R. unifolia*. One might be tempted to use the name *R. fraxinea*, but it has curved spores. All of the Illinois and Chicago region material we have seen has laminal apothecia, straight spores, and lacks the decorticate zones and longitudinal ridges as seen in more northern or western material. [usnic acid] Cook-I-ILL, KANE-59-MICH, Lake-59, McHenry-ILL



**RHIZOCARPON** Lam. ex DC. (RHIZOCARPACEAE. Photobiont: chlorococcoid. Gr. *rhiza*, root + *karpos*, fruit; from what feature of the ascocarp is unclear. Spores 8, hyaline to colored, septate to muriform)

***Rhizocarpon obscuratum*** (Ach.) A. Massal. (L. *obscuratus*, having the quality of difficult-to-detect; from the dark gray to dark brown or black prothallus and areoles) Yet unknown from the Chicago region, there is a specimen (Calkins #43, NY) collected presumably in northeastern Illinois; it was originally called *Pannaria nigra*.

**RHIZOPLACA** Zopf (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *rhiza*, root + *plax*, a flat round plate, dish; perhaps from the roundish thallus sometimes attached by a short "root," or umbilicus. Spores 8, hyaline, simple)

***Rhizoplaca chrysoleuca*** (Sm.) Zopf (Gr. *chrysos*, gold + *leukos*, white; from the yellowish to buff apothecial discs) As yet this species is unknown from the Chicago region, but it is common on sandstone in the Nachusa Grassland areas of Lee and Ogle counties, and at Castle Rock and Pine Rock in Ogle County. The thalli of all of our material, including that from southern Illinois, are characterized by crowded, stalked, bullate areoles (McCune, 69), and are therefore referable to *R. subdiscrepans* (Nyl.) R. Sant. They contain pseudoplacodiolic acid and usnic acid, a feature that is common to all eastern United States representatives of the complex.

**RIMELIA** Hale & A. Fletcher (PARMELIACEAE. Photobiont: *Trebouxia*. L. *rima*, fissure + *-elia*, a generic ending, probably from Gr. *eilo*, to roll up or collect, as in a collection or group; from the reticulate cracks in the upper cortex. Spores 8, hyaline, simple)

Thallus sorediate..... R. reticulata  
Thallus esorediate..... R. cetrata

***Rimelia cetrata*** (Ach.) Hale & A. Fletcher (L. *cetra*, a sort of leather shield + *-atus*, an adjective ending; from the form of the thallus) = *Parmelia cetrata* Ach. Were it not for the fact that Berry was a monographer of the genus *Parmelia*, I would be disposed to include this report under the following taxon. We have numerous modern records from Missouri, but none as yet from Illinois. [salazinic acid, atranorin] Cook-11

***Rimelia reticulata*** (Tayl.) Hale & A. Fletcher (L. *reticulatus*, made like a net; from the connected cracks in the upper cortex) Including Calkins's report of *Parmelia perlata*. Calkins report of *P. cetrata* must also be included here inasmuch as he described his specimens as having "sorediferous" lobes. Very common farther south, we have only a few modern records, all from different corticolous substrates. Calkins considered this species common in the Chicago region a century ago. [salazinic acid, atranorin] COOK-1, DE KALB, DU PAGE-47, GRUNDY, NEWTON, WILL-1

**RINODINA** (Ach.) Gray (PYXINACEAE. Photobiont: *Trebouxia*. Gr. *rhine*, a file or rasp + *dinos*, rotation, eddy, a large round goblet or cup; perhaps from the apothecia and their often dry or rough-appearing discs. Spores 8, brown, 1(3)-septate. Caution: As *Rinodina* spores pass maturity, they become very brown and much like *Buellia* spores. Look for the grayer spores that still display the characteristic lumen development. As with genera like *Caloplaca*, we are flying blind with respect to most of the species concepts, so do not in the least bit assume that we have it right. We are all waiting for John Sheard, of Saskatchewan, to publish his North American monograph on the genus.)

Thallus corticolous.

- Thallus with isidioid papillae. . . . . *R. papillata*  
 Thallus without papillae.  
 Spore lumina remaining rounded, nearly or quite without sharp angles. . . . . *R. pachysperma*  
 Spore lumina becoming sharply angled and anvil-shaped.  
 Apothecial rims pale gray. . . . . *R. subminuta*  
 Apothecial rims brown. . . . . *R. archaea*
- Thallus saxicolous.  
 Spore lumina with equally thick walls on all sides (milvina type), but the septum strongly thickened and often obscured by a darkened band; substrate HCl+ or HCl-.  
 Spores more than 25  $\mu$ ; substrate HCl- or HCl+. . . . . *R. ascociscana*  
 Spores less than 25  $\mu$ ; substrate HCl+.  
 Spores less than 18.5  $\mu$  long. . . . . *R. bischoffii*  
 Spores more than 18.5  $\mu$  long. . . . . *R. calcigena*  
 Spore lumina with unequal or angular walls, the septum scarcely or not at all obscured by a darkened band; substrate HCl-.  
 Thallus K+ yellow.  
 At least many of the areoles and apothecia more than 0.5 mm across. . . . . *R. verrucosa*  
 Areoles and apothecia all less than 0.5 mm across. . . . . *R. oxydata*
- Thallus K-.  
 Spore lumina remaining rounded, nearly or quite without sharp angles. . . . . *R. tephraispis*  
 Spore lumina becoming sharply angled and anvil-shaped.  
 Apothecia sessile, the margin becoming concolorous with the disc. . . . . *R. oxydata*  
 Apothecia innate, or more or less immersed in thallus verrucae. . . . . *R. cana*

***Rinodina archaea*** (Ach.) Arn. (Gr. *archae-*, old, ancient; perhaps from the brown, aged appearance of the thallus and apothecial rims) Our only record of this species is from Somme Prairie Grove, where it was collected on *Carya ovata*. COOK

***Rinodina ascociscana*** (Tuck.) Tuck. (Gr. *askos*, leather bottle or bladder + *L. cis*, on this side + *canus*, gray, white, hoary, aged; from what is unclear to us) The only records we have seen in the lower Midwest for this species are from trees, such as the Calkins specimen from nearby La Salle County, Illinois, but some current literature sources indicate that it grows on rocks as well.

***Rinodina bischoffii*** (Hepp) A. Massal. (after Gottlieb Wilhelm Bischoff, 1797–1854, German botanist, lexicographer, and glossographer) Calkins reported this species from "calcareous rocks at Joliet and Lemont" and described it as a little-known species that occurred more abundantly farther south and west. A specimen at NY from La Salle County was identified accurately by Calkins as *R. bischoffii*, and it is indeed more frequent farther south and west, where it grows in limestone glades and on outcrops. Cook-1, Will-1

***Rinodina calcigena*** (Th. Fr.) Lynge (*L. calx*, lime + *genos*, race, kind; from its inhabitancy of carbonate rocks) Very similar to *R. bischoffii*, but has spores regularly a little larger, and is said to have apothecia sometimes more than 0.5 mm across. Our only record of it is from farther south, where it grows in limestone glades.

***Rinodina cana*** (Arnold) Arnold (*L. canus*, gray, hoary, white, or appearing as if aged; probably from the color of the thallus) Occasional on granitic or sandstone boulders, or sometimes on chert in glades. Calkins reported a lichen he called *R. sophodes* (Ach.) Nyl. from boulders near Lemont and stated that he had never "met with it elsewhere so far north." He described it thus: "*Thallus gray or cinereo-fuscescent; apothecia small, appressed; disc flat, fuscous black; margin entire.*" He may well have been referring to this species. John Sheard has annotated a specimen from central Illinois at NY, originally labelled as *R. sophodes*, as *R. cana*. Cook-1, DU PAGE, GRUNDY, KENDALL

***Rinodina oxydata*** (Mass.) Mass. (Gr. *oxys*, sharp + *dateomai*, to divide; from the sharply divided spore lumina) Infrequent locally on granitic boulders in pastures, this species is widespread in the Midwest on numerous HCl- rocks. [traces of atranorin] McHENRY

***Rinodina pachysperma*** H. Magn. (Gr. *pachys*, thick + *sperma*, seed; from the thick-walled spores) Yet unknown from the Chicago region, this species is rare south of our area.

***Rinodina papillata*** H. Magn. (*L. papilla*, nipple, pimple + *atus*, an adjective ending; from the isidioid thallus) Yet unknown from the Chicago region, this species is occasional in counties just west and south of our region, where it is collected most often on oaks.

***Rinodina subminuta*** H. Magn. (*L. sub-*, under, below, near, almost + ? *minutus*, tiny; perhaps from its similarity to other small lecanorine crusts.) Our only local record for this species is from Messenger Woods Forest Preserve, where it was collected on *Quercus alba*; farther south and west it is occasional on poplars along streams. WILL

***Rinodina tephrae*** (Tuck.) Herre Our only local record for this species is from Starved Rock State Park, in La Salle County, Illinois. There it grows on weathered sandstone.

***Rinodina verrucosa*** Sheard (*L. verruca*, wart + *-osus*, denoting full of; from the thick, usually warty areoles) Infrequent on granitic boulders in open or partly shaded areas. GRUNDY, KENDALL

**SANTESSONIOLICHEN** Tomas. & Cif. (ARTHOPYRENIACEAE. Photobiont: Evidently not lichenized. Named for either Carl Gustaf or Rolf Santesson, or maybe both. Spores hyaline, mostly 2-celled)

**Santessoniolichen punctiformis** (Pers.) Tomas. & Cif. (*L. punctum*, a prick, puncture, or dot + *-formis*, denoting taking the shape of; from the appearance of the tiny perithecia as little dots) = *Pyrenula punctiformis* auct.; *Arthopyrenia padi* Rabenh.; *Naetrocymbe punctiformis* (Pers.) R. C. Harris. Our only record of this species is a specimen (Calkins #211, NY), originally named *Pyrenula analepta*, from Elgin, Illinois, where it was collected "on shrubs." Kane-1-NY

**SARCOGYNE** Fée (ACAROSPORACEAE. Photobiont: *Trebouxia* and *Myrmecia*. Gr. *sarx*, flesh + *gyne*, a woman; probably from the tendency of a moistened hymenium to turn red. Spores numerous, hyaline, simple)

Thallus on carbonate-rich rock; apothecia pruinose; exciple dark brown..... S. regularis

Thallus on noncarbonate rock; apothecia epruinose; exciple black.

Many of the apothecia more than 1 mm across, mostly round-margined except when aggregated and forming pie-shaped clusters. .... S. clavus

Apothecia less than 1 mm across, notably angular-margined..... S. privigna

***Sarcogyne clavus*** (DC. in Lam. & DC.) Kremp. (*L. clava*, club; from the shape of the ascus) Yet unknown from the Chicago region, this species is known from neighboring Ogle County, where it grows on exposed sandstone at Castle Rock. It has an unfortunate resemblance to *Porpidia macrocarpa*, which see, from which it must be distinguished by the numerous tiny spores and the fact that the disc, as in all *Sarcogyne*, turns vinaceous when wet.

***Sarcogyne privigna*** (Ach.) A. Massal. (*L. privus*, individual, peculiar + *igneus*, fiery; from the peculiar tendency of the disc to turn red when moistened) = *Lecanora privigna* (Ach.) Nyl. The *Lecanora cervina* [excluded from North America by Hale & Culberson (20)] of Calkins probably should be referred here inasmuch as he said it was scarcely distinguishable from *L. privigna* and that it grew on siliceous rocks. Calkins, however, attributed the pruinose forms of *privigna* to siliceous rocks, an observation that is contrary to what is generally observed. Cook-1, Will-1

***Sarcogyne regularis*** Körb. (*L. regularis*, regular; perhaps regarded by Körber to occur routinely) = *Biatorella pruinosa* Ach. Probably including *Lecanora privigna* var. *pruinosa* of Calkins. Occasional on a wide variety of carbonate-rich substrates, including tufa rock, gravel, concrete, shale, and exposed dolomite. COOK, DU PAGE, GRUNDY, JASPER, KANE-12, KANKAKEE, LAKE IL, LAKE IN, RACINE, WALWORTH, WILL-1

**SCOLICIOSPORUM** A. Massal. (BACIDIACEAE. Photobiont: chlorococcoid, often forming goniocysts. Gr. *skolekos*, of a worm + *spora*, seed; from the elongate, curved spores. Spores 8, hyaline, 3–7 septate)

Thallus corticolous..... S. chlorococcum  
Thallus saxicolous..... S. umbrinum

**Scoliciosporum chlorococcum** (Graewe ex Stenh.) Vězda (Gr. *chloros*, green + *kokkos*, a kernel, grain; from the green granular thallus) = *Bacidia chlorococca* (Graewe ex Stenh.) Lettau. Wetmore's specimen from Porter County is from *Acer rubrum*. We also have specimens from old wood and the trunks of *Pinus banksiana*, *Larix laricina*, and *Tilia americana*. Armstrong (26) reported *Bacidia chlorantha* (as "*B. chlorocantha*") from Du Page County, but her specimen is referable to this species. *B. chlorantha* (Tuck.) Fink is similar, but has more than 8 spores per ascus and conspicuous oil droplets in the hymenium. BERRIEN-35-52, JASPER, La Porte-35, PORTER-INDU

**Scoliciosporum umbrinum** (Ach.) Arnold (L. *umbros*, full of shade + *-inus*, pertaining to; probably from the dark color of the nigrescent thallus granules) Our only record of this species is from a granitic erratic in open pasture north of LaFox. KANE

**STAUROTHELE** Norman (VERRUCARIACEAE. Photobiont: *Trebouxia* and *Protococcus*. Gr. *stauros*, a cross + *thele*, a nipple; perhaps an allusion to the muriform spores. Spores 8, hyaline, muriform)

**Staurothele diffractella** (Nyl.) Tuck. (L. *dis-*, away from + *fractus*, broken; probably from the tendency of the thallus to break up into small, sometimes remote areoles) Rare locally on shaded or sheltered dolomitic boulders or cliff faces. COOK, KANKAKEE

**STEREOCAULON** Hoffm. (STEREOCAULACEAE. Photobiont: *Trebouxia* in the algal layer; *Gleocapsa*, *Nostoc*, *Scytonema*, and *Stigonema* in the cephalodia. Gr. *stereos*, solid, firm + *kaulos*, stalk, stem; from the solid podetia. Spores acicular, 8, hyaline, 3–7 septate)

**Stereocaulon saxatile** H. Magn. (L. *saxatilis*, among the rocks; from its rocky habitat) Yet unknown from the Chicago region, this species grows in Ogle County, where it has been collected in an open pasture, on sandy soil, east of Pine Rock Nature Preserve. [lobaric acid, atranorin]

**STRIGULA** Fr. (STRIGULACEAE. Photobiont: *Trentepohlia*. L. *strigula*, a scraper, flesh brush; perhaps from the brushlike appearance of the hymenium. Spores 8, hyaline, 1–8 septate to submuriform)

Spores 2-celled..... S. americana  
Spores 5–8 celled..... S. submuriformis

**Strigula americana** R. C. Harris (of America) Harris (49) mapped this species from just west and south of the Chicago region. We have a specimen from Effingham County collected on *Quercus velutina*.

**Strigula submuriformis** (R. C. Harris) R. C. Harris (L. *sub*, below, almost, near + *muriformis*, having the appearance of brick walls; from the occasional 1–2 muriform spore) Yet unknown from the Chicago region, this species is known from nearby Winnebago County, collected on *Gleditsia triacanthos*.

**TELOSCHISTES** Norman (TELOSCHISTACEAE. Photobiont: *Trebouxia*. Gr. *telos*, end + *schistos*, split, divided; from the polaribilocular spores, the two end cells divided and rendered remote by an isthmus. Spores 8, hyaline, polaribilocular)

**Teloschistes chrysophthalmus** (L.) Th. Fr. (Gr. *chrysos*, gold + *ophthalmos*, eye; from the deep yellow or orange apothecia, particularly primordial ones, against the grayish background of the thallus) = *Theloschistes chrysophthalmus* of Calkins. There is a specimen at the Chicago Academy of Sciences, collected at Lemont by Calkins. He reported it from "Lemont, on old rails in woods. Also on old oak trees near the lake shore, Lake View." [anthraquinones] Cook-1, Will-1

**THELIDIUM** A. Massal. (VERRUCARIACEAE. Photobiont: *Trebouxia* and *Protococcus*. Gr. *thele*, a nipple + *-idion*, diminutive; from the tiny perithecia. Spores 8, hyaline, 1–3 septate)

**Thelidium microcarpum** (Leight.) A. L. Sm. (Gr. *mikros*, small + *karpos*, fruit; from the tiny perithecia) This is a poorly understood genus in North America, so our use of the name *T. microcarpum* must be regarded as tentative. It fits the description of that species in Purvis *et al.* (80). Our specimens have an olivaceous, epilithic, thin, continuous to dispersed areolate thallus, with superficial perithecia to 0.3 mm across, which I interpret as lacking an involucrellum. The spores are about 25–35  $\mu$ , mostly 4-celled, and resemble exactly those depicted in Duncan (44); they key to *T. microcarpum* in Orange (72) as well. In all likelihood, the specimen that Calkins called *Verrucaria pyrenophora* is referable here; although there is a specimen in Calkins's bound *Lichenes Exsiccati*, we have not examined it. There is also a specimen at F, that was distributed by Calkins (#199) as *Verrucaria prosepersella*, which is referable here. Our records are from shaded dolomitic cobble and HCl– building rubble. COOK-1, DE KALB, LAKE IN, WILL

**THELOCARPON** Nyl. *ex* Hue (ACAROSPORACEAE. Photobiont: chlorococcoid. Gr. *thele*, a nipple + *karpos*, fruit; from the tiny yellow apothecia evocative of nipples. Spores numerous, hyaline, simple)

**Thelocarpon laureri** (Flotow) Nyl. (after Johann Friedrich Laurer, 1798–1873, German pharmacist, physician, and lichenologist) One of our records is from a granitic erratic on a gravelly kame, another is from an old fence rail at the Lockport Prairie. The Porter County record was collected from a log of *Populus deltoides*. [pulvinic acid derivatives] COOK, Porter-INDU, WILL

**THYREA** A. Massal. (LICHINACEAE. Photobiont: *Nostoc*. Gr. *thyreos*, a large, oblong, door-shaped shield; from the form of the thallus. Spores 8, hyaline, simple)

**Thyrea pulvinata** (Schaer.) A. Massal. (L. *pulvinus*, cushion, pad, pillow + *-atus*, adjective ending; from the form of the thallus) = *Omphalaria pulvinata* Nyl. Calkins & Huett report this species from La Salle County, but it is possible or even likely that the report may be based on *Gonohymenia*.

**TRAPELIA** M. Choisy (TRAPELIACEAE. Photobiont: chlorococcoid, or with *Protococcus* and *Chlorella*. Gr. *trapelos*, easily turned, changeable; perhaps from the variable, irregular morphology of the exciple. Spores 8, hyaline, simple)

Thallus C–..... T. mooreana  
 Thallus C+.  
 Thallus soresdiate..... T. placodioides  
 Thallus esoresdiate.  
 Thallus thick, distinctly effigurate with marginal lobes..... T. involuta  
 Thallus thin, of dispersed or continuous areoles, without marginal lobes..... T. coarctata

**Trapelia coarctata** (Sm.) M. Choisy (*L. coarctatus*, confined, drawn close together, perhaps from the commonly cohering areoles) = *Biatora coarctata*. Most of our specimens are from granitic erratics or sandstone cobbles or outcrops, sometimes partly shaded. Calkins reported it from both calcareous and arenaceous rocks. [gyrophoric acid] BERRIEN, COOK-1, JASPER, ST. JOSEPH, WILL-1

**Trapelia involuta** (Tayl.) Hertel (*L. involutus*, complex, intricate; perhaps from the irregular morphology of the disc and exciple) The only specimen of this species we have seen locally is from HCl- rock on the campus of Joliet Junior College, along the nature trail. [gyrophoric acid] Porter-35, WILL

**Trapelia mooreana** (Carroll) P. James (? Perhaps named for the mycologist Justin Payson Moore, 1841–1923). The only specimen of this species we have seen anywhere is from the Des Plaines Fish & Wildlife Area, near Wilmington, where it grows on sandstone. Only the apothecia are C+ red. [gyrophoric acid] WILL

**Trapelia placodioides** Coppins & P. James (*Placodium* + *-oideos*, form shape; probably from a superficial resemblance to *Placodium*) Our only local records are from partly shaded igneous boulders in remnant savannas. [gyrophoric acid] BERRIEN, COOK, DU PAGE, KENDALL, LAKE IL

**TRAPELIOPSIS** Hertel & Gotth. Schneid. (TRAPELIACEAE. Photobiont: chlorococcoid and *Pseudochlorella*. ~ Schmitt and Lumbsch (88) report the photobiont as *Chlorella ellipsoidea* Gerneck. *Trapelia* + Gr. *opsis*, aspect, view, appearance; a segregate of *Trapelia*, which see. Spores 8, hyaline, simple)

Apothecia plane, with persistent margins; thallus gray-green to dark green, thin. . . . . *T. flexuosa*  
Apothecia typically convex, the margins disappearing; thallus gray, thick and convex to granular warty.. *T. granulosa*

**Trapeliopsis flexuosa** (Fr.) Coppins & P. James (*L. flexuosus*, with many bends, winding; from forms of the thallus that sometimes passes into a wrinkled, areolate crust, a rare manifestation in the Chicago region and perhaps no longer attributable to this species) = *Lecidea flexuosa* (Fr.) Nyl.; *L. aeruginosa* Borrer. This species is occasional on decorticate logs, dead limbs, old wood, fence rails, burnt wood, and over moss; we have several records from the limbs of trees, including willows. [gyrophoric acid] COOK, DU PAGE, GRUNDY, JASPER, KANE, KENDALL, LAKE IL, LAKE IN-35-MIN, LA PORTE-35-MIN, NEWTON, Porter-35-MIN, WALWORTH, WILL-10

**Trapeliopsis granulosa** (Hoffm.) Lumbsch (*L. granulus*, a small grain + *-osus*, having the nature or quality of; from the granular thallus) = *Lecidea granulosa* (Ehrh.) Ach. Without seeing the specimens, of course, it is difficult to know where to dispose of Calkins's report of *L. enteroleuca* from Will County. From his description, however, it is probable that some of the material is referable here. Egan (41) noted that reports of *L. enteroleuca* often refer to what are now recognized as various species of *Lecidella*. This species grows on substrates similar to those of the preceding entry. It is also known locally from stable sand in sand prairies. [gyrophoric acid] BERRIEN, DU PAGE, JASPER, KANE, La Porte, McHENRY, PORTER, ST. JOSEPH, STARKE, Will-1

**TRYPETHELIUM** Spreng. (TRYPETHELIACEAE. Photobiont: *Trentepohlia*. (Gr. *trypa*, hole + *thele*, nipple; from the perithecia imbedded in the pseudostroma. Spores 8, hyaline, 3–several septate)

**Trypethelium virens** Tuck. (*L. virens*, becoming green; from the color of the green, endophloeic thallus) We have yet to voucher mature ascocarps from the Chicago region, but we have seen thalli on beech trees and on *Carpinus* in Berrien County. Harris (14) cites specimens from as nearby as Tippecanoe County, Indiana.

**TUCKERMANNOPSIS** Gyeln. (PARMELIACEAE. Photobiont: *Trebouxia*. An attempt to honor Edward Tuckerman, 1817–1886, the noted American botanist, but in recognition that *Tuckermannia* already had been used illegitimately for two vascular plants. The rendering of the epithet with two *ns* may have been to keep the antepenultimate syllable short. Spores small, 8, hyaline, simple)

**Tuckermannopsis americana** (Spreng.) Hale (of America) = *Cetraria ciliaris* of Calkins, who reported it from "old rails in Lemont Township; on old birch at Glencoe." Thomson (32) maps *C. halei* W. L. Culb. & C. F. Culb. from nearly throughout Wisconsin, local reports of which probably should be referred here. There is a specimen from McHenry County (Willey #69), originally called *Cetraria ciliaris*, which is referable here. [atranorin, alectoronic acid] Cook-1, McHenry-ILL

**USNEA** Dill. *ex* Adans. (PARMELIACEAE. Photobiont: *Trebouxia*. Ar. *oshnah*, moss; from its superficial resemblance to mosses. Spores small, 8, hyaline, simple)

Thallus jet black at the base. . . . . U. subfloridana  
Thallus yellowish green throughout, the base concolorous with the upper portions.

Thallus abundantly isidiose-soresiate, the branches angled. . . . . U. hirta  
Thallus non-isidiose, the branches terete, smooth or with corticate fibrils. . . . . U. strigosa

**Usnea hirta** (L.) F. H. Wigg. (*L. hirtus*, stiffly hairy; from the isidiose soredia) Our only record for this northern species is from Thompson (85), who reports it from Walworth County. [usnic acid] Walworth-85

**Usnea strigosa** (Ach.) Eaton (*L. strigosus*, thin, lean, meager; from the slender, stringy thallus) Armstrong's report of *Usnea* from the Morton Arboretum probably should be referred here, though no specimen was preserved. The photograph on page 31 of her article could just as easily be *Evernia mesomorpha*, which is known from the Morton Arboretum, also on *Fraxinus*, but which she did not mention. Calkins & Huett reported *Usnea barbata* and *Usnea barbata* var. *florida* from La Salle County; probably they both should be referred here. One modern record is from a flatwoods in Jasper County, where it grew on *Q. palustris*; it contained usnic acid and an unknown. Another is from Illinois Beach State Park, where it grew on a dead limb of *Quercus macrocarpa*; it contained usnic acid and an unknown; the Will county specimen contained usnic acid only. COOK, Du Page-26-47, JASPER, LAKE IL, WILL

**Usnea subfloridana** Stirton (resembling *U. floridana*) Our only record for this species is from the fallen branch of a large tree of *Prunus serotina* near Lemont. [usnic acid] COOK

**VERRUCARIA** Schrad. (VERRUCARIACEAE. Photobiont: *Trebouxia*, *Myrmecia*, and *Protococcus*. *L. verruca*, wart + *-arius*, like or connected with; from the wartlike appearance of the ascoma. We have little confidence that the specimens upon which the following names are based look much like their type material. Most of the *Verrucariae* listed below are morphologically distinct, but there appear to be more morphs than available descriptions. Spores 8, hyaline to brownish, simple)

Hypothallus thick or thin, black.

Each areole appearing to have numerous black dots (osteoles), the black hypothallus more than 0.25 mm high. . . .

. . . . . V. fayettensis

Areoles with only 1-few osteoles; hypothallus rarely more than 0.25 mm high.

Perithecia less than 0.17 mm across, several per areole. . . . . V. fuscella

Perithecia mostly more than 0.17 mm across, 1 or rarely 2 per areole. . . . . V. nigrescens

Hypothallus pale or not evident.

Thallus white, thin or endolithic or absent.

- Perithecia adnate or only slightly imbedded, the larger ones commonly more than 0.3 mm across.  
 Spores mostly more than 25  $\mu$  long; aquatic in clean-water springs. . . . . *V. elaeomelaena*  
 Spores rarely as much as 25  $\mu$  long; not aquatic.  
 Exciple hyaline, the black involucrellum not completely encircling the perithecium. . . . . *V. muralis*  
 Exciple black, fused to the involucrellum above, extending around the bottom of the perithecium. . . . .  
 . . . . . *V. calkinsiana*
- Perithecia deeply imbedded in the substrate, to 0.3(4) mm across.  
 Purlieus of perithecia stained violet. . . . . *V. marmorea*  
 Violet stains absent.  
 Exciple hyaline to brownish around the perithecium, the perithecium capped by a flat involucrellum marked  
 by distinct, radiate fissures around the osteole. . . . . *V. baldensis*  
 Exciple black all around the perithecium; osteole not or only inconspicuously radiate-fissured. *V. calciseda*
- Thallus thin to thick, evidently epilithic and corticate, sordid to grayish or olive green, or brownish to black, or if white  
 then areolate.  
 Thallus thin, the medulla essentially absent or so minuscule as to be invisible at 40 $\times$ , or the perithecia on tiny,  
 dispersed areoles.  
 Perithecia more than 0.23 mm across, the exciple black below. . . . . *V. calkinsiana*  
 Perithecia less than 0.23 mm across, the exciple hyaline below.  
 Thallus pale gray. . . . . *V. illinoensis*  
 Thallus dark-brown to olive-brown. . . . . *V. sordida*
- Thallus thick, a white medulla at least thinly developed beneath the cortex.  
 Areoles sorediate along the margins. . . . . *V. macrostoma*  
 Areoles esorediate.  
 Perithecia to 0.2 mm across, usually 2 or more per areole. . . . . *V. vires*  
 Perithecia commonly more than 0.2 mm across, rarely more than 1 per areole. . . . . *V. nigrescentoidea*

***Verrucaria baldensis*** A. Massal. (Perhaps after Castelbaldo, Padua, Italy) Farther south, this species is rare on hard limestones in glades and along bluffs.

***Verrucaria calciseda*** DC. (*L. calx*, lime + *sedeo*, to sit; probably from the tendency of the perithecia to seat themselves in depressions in limy rock) Yet unknown from the Chicago region, there are several specimens from calcareous rock in La Salle County at the Field Museum and the New York Botanical Garden; most of them were called *V. integrella*, one was annotated *V. submuralis* by Fink, and another was called *Staurothele diffractella*.

***Verrucaria calkinsiana*** Servít (after Col. William Wirt Calkins, 1842–1914, American amateur mycologist and lichenologist) This is our most common *Verrucaria*. It grows on all manner of carbonate rocks, such as dolomite, limestone, weathered concrete, calcareous pebbles and cobbles, and even tufa rock. The thallus can vary from appearing wholly endolithic to rather thick and creamy or sordid white, but a few cuts through the perithecia reveal a black, globular exciple. The spores are 14–25  $\mu$  long. Usually, early collectors called this lichen *V. muralis* or *V. rupestris*, but occasionally it was called *V. pyrenophora* or *V. inundata*. BOONE, COOK, DE KALB, DU PAGE, GRUNDY, KANE, KANKAKEE, KENDALL, LAKE IL-24, LAKE IN, STARKE, WALWORTH, WILL

***Verrucaria elaeomelaena*** (A. Massal.) Arnold (Gr. *elaion*, oil + *melaina*, black; from the black perithecia heavily interspersed with oil droplets) This species is confined locally to the tufa runs and flats in our calcareous fens, where associates include *Carex sterilis*, *Eleocharis rostellata*, and *Rhynchospora capillacea*. KANE

***Verrucaria fayettensis*** Servít (after Fayette County, Iowa) = *V. iowensis* Servít. This species is uncommon locally on weathered dolomite. It was most commonly called *V. fuscella* by early collectors, although Calkins called a Cook County specimen *V. viridula*. COOK-F, DU PAGE, WILL-NY.

***Verrucaria fuscella*** (Turner) Winch (*L. fuscus*, brown + *-ellus*, diminutive; from the color of the thallus) This species, if we are interpreting it properly, is rare, our only local record being from a basaltic erratic in Kendall County. Elsewhere in Illinois it grows mostly on dolomite or limestone. BOONE, Cook-F, KANE-12, KENDALL, McHENRY, Will-1



**Verrucaria illinoisensis** Servít (after the state of Illinois) This species was described from calcareous rocks in La Salle County by Servít (60). Our only local record is a Calkins specimen from Riverside, in Cook County. Interestingly enough, he called this specimen *Verrucaria (Pyrenocollema) prosperella*, to which it has a superficial resemblance. Evidently a rare species, our only modern record is from Woodford County, Illinois. Cook-F

**Verrucaria macrostoma** DC. (Gr. *makros*, long, large + *stoma*, mouth; presumably from an enlarged osteole) Rare, our only local specimens are from carbonate rock. This is the name applied to Old World specimens that have areolate to subsquamulose, pale brown to olive-green thalli, sterile forms of which are sorediate along the margins of the areoles. Whether our specimens are this species is yet to be determined, but they strongly resemble the photograph in Dobson (74) that has been called *V. tectorum auct.*, now regarded by Purvis *et al.* (80) as a synonym of *V. macrostoma*. BOONE, LAKE IL

**Verrucaria marmorea** (Scop.) Arnold (L. *marmor*, marble; probably from the substrate of type collections) An interesting and uncommonly distinct species yet unknown from the Chicago region, but a characteristic species of limestone glades farther south.

**Verrucaria muralis** Ach. (L. *muralis*, growing on walls; from the habitat, often on rock walls) Including *V. rupestris* Schrad., which Egan (41) recognizes as a distinct species. This species is occasional on a variety of carbonate-rich substrates, including weathered concrete, flagstone, and even small pebbles. Cook-1-F, DU PAGE, LAKE IL, WILL-1

**Verrucaria nigrescens** Pers. (L. *nigrescens*, blackening; from the color of the thallus) Our only local record for this species, if we are interpreting it properly, is from a calcareous pebble in a kame in McHenry County. It is otherwise uncommon in the lower Midwest. Calkins reported this species from limestone along streams, but several older specimens under this name we have referred elsewhere. Early specimens have been called *V. fuscella*, *V. viridula*, and even *Lecidea tessellata*. Cook-1-54, McHENRY

**Verrucaria nigrescentoidea** Fink (from *V. nigrescens*, + *-oideus*, form, type; resembling *Verrucaria nigrescens*) This species is occasional on a variety of carbonate-rich substrates. It resembles *V. nigrescens* in general appearance, but the hypothecium is white. COOK, KANKAKEE, KENDALL

**Verrucaria sordida** Fink (L. *sordidus*, dirty, foul; from the dirty brown color of the thallus) Uncommon locally, this species occurs on carbonate-rich rock, although we have a specimen from a chert pebble in Ralls County, Missouri that looks like this species. This appears to be a little-known species, and we are calling it *V. sordida*, not particularly because it closely fits Fink's description, but because it looks like specimens we have seen that Fink himself called *V. sordida*. Most of the specimens Calkins called *V. aethiobola* are referable here. We are also referring here a specimen (NY) he called *V. nigrescens*. COOK, WALWORTH

**Verrucaria virens** Nyl. (L. *virens*, greenish; perhaps from the sometimes greenish brown color of the thallus) An occasional species from carbonate rocks, most of the specimens in our herbarium are from the Chicago region. It looks a bit like *V. fayettensis* or *V. fuscella*, but lacks the black hypothallus. GRUNDY, KANE, KANKAKEE, McHENRY, RACINE

**XANTHOPARMELIA** (Vain.) Hale (PARMELIACEAE. Photobiont: *Trebouxia*. Gr. *xanthos*, the various shades of yellow + *Parmelia*; a segregate genus of *Parmelia*, which see, with strong tints of yellow. Spores 8, hyaline, simple)

Thallus without isidia.

Thallus jet black below except near the margins.

Medulla K-..... X. hypomelaena

Medulla K+ yellow to red..... X. tasmanica

Thallus tan to brown below.

Salazinic acid present; medulla K+ red. .... X. somloensis

Salazinic acid absent; medulla K+ yellow or very slowly turning reddish yellow. .... X. cumberlandia

Thallus isidiate.

Medulla K-..... X. subramigera

Medulla K+ yellow or red.

- Lower cortex black except near the margins. . . . . X. australasica  
 Lower cortex tan or brown nearly throughout.  
     Salazinic acid present. . . . . X. mexicana  
     Salazinic acid absent. . . . . X. plittii

**Xanthoparmelia australasica** D. Galloway (of southern Asia) = *Parmelia conspersa* of Calkins, who indicated that his specimens were often isidiate, "fuscous-black" beneath, and grew on stones in Lemont and Will County. We have taken the liberty of including these reports here inasmuch as all modern records of isidiate morphs with black lower surfaces in northern Illinois are referable to *X. australasica*. Recent specimens of this species have been collected in nearby Ogle County on sandstone outcrops in open pasture west of Pine Rock Nature Preserve. Calkins's assertion that it grew on old wood near Elgin is inexplicable. This species was called *X. tinctina* (Maheu & A. Gillet) Hale in Hale (6). [usnic acid, salazinic acid, norstictic acid] Cook-1, Will-1

**Xanthoparmelia cumberlandia** (Gyeln.) Hale (after Cumberland, Maine, in the United States) Perhaps Berry's (11) report (Cheney #3485, WIS) of *Parmelia conspersa* should be referred here. He described it as having no isidia and a black or brown lower surface. One of our records is from a quartzite boulder along the east side of the Mazon River southeast of Morris. Another is from the Chicago Botanic Garden, where it is common on HCl- landscape boulders. [usnic acid, stictic acid, norstictic acid] COOK, GRUNDY, McHENRY

**Xanthoparmelia hypomelaena** (Hale) Hale (Gr. *hypo*, under, beneath, less than usual + *melaina*, black; from the color of the lower cortex) Our only record of this species is from a west-facing basalt boulder nestled in the bank of a drainage way in a pastured valley on the Waish Kee Shaw Reservation. [usnic acid, fumarprotocetraric acid] KENDALL

**Xanthoparmelia mexicana** (Gyeln.) Hale (of Mexico) Just west of the Chicago region this species is occasional on sandstone and granite. Our only local record is from a large granitic erratic in a pastured fen. [usnic acid, salazinic acid, norstictic acid] McHENRY

**Xanthoparmelia plittii** (Gyeln.) Hale (after Charles C. Plitt, 1869–1933) This species is known from HCl- rock just to the west of the Chicago region. It is frequent on sandstone at Nachusa Grasslands and Pine Rock in Ogle County. [usnic acid, stictic acid]

**Xanthoparmelia somloensis** (Gyeln.) Hale (after Mt. Somlo, near Doba, Hungary) Yet unknown from the Chicago region, this species is known from nearby Ogle County, where it grows on a sandstone cliff at the Nachusa Grasslands. [usnic acid, salazinic acid, norstictic acid]

**Xanthoparmelia subramigera** (Gyeln.) Hale (L. *sub*-, below, almost, near + *ramus*, branch + *gero*, to carry, bear; from the branched thallus) This species, common in southern Illinois, is known from La Salle County, where it grew on a granite boulder south of Sheridan along the Fox River. [usnic acid, fumarprotocetraric acid]

**Xanthoparmelia tasmanica** (Hook. f. & Taylor) Hale (after the island of Tasmania) This species, common in southern Illinois and the Missouri Ozarks, is known from as near as Sauk County, Wisconsin. [usnic, salazinic, norstictic acids]

**XANTHORIA** (Fr.) Th. Fr. (TELOSCHISTACEAE. Photobiont: *Trebouxia*. Gr. *xanthos*, the various shades of yellow + L. *orius*, a place suitable for something; from yellow portion of the spectrum. Spores 8, hyaline, polaribilocular; anthraquinones, particularly parietin)

Thallus esorediate.

- Thallus saxicolous. . . . . X. elegans  
 Thallus corticolous.  
     Thallus small to 2 cm across, the lobes notably divided and incised. . . . . X. polycarpa  
     Thallus large, often exceeding 2 cm across; lobes broad, broadly crenate, but not notably divided or incised. . . . . X. parietina

Thallus sorediate.

Soredia pustular to isidioid, confined to the lamina near the center of the thallus. . . . . X. sorediata

Soredia granular, often on the lobes and even below the lobes.

Soredia nested in slit-like soralia surrounded by cortical margins; larger lobes commonly more than 0.5 mm wide . . . . . X. fallax

Soralia marginal or situated beneath the lobes; lobe width various.

Pycnidia conspicuous, surficial, orange to red; soralia on lobe tips or on the lower side of the tips. . . . X. fulva

Pycnidia immersed, not apparent from the surface; soralis marginal or submarginal. . . . . X. ulophylloides

**Xanthoria elegans** (Link) Th. Fr. (*L. elegans*, neat, elegant; from its comely appearance) Commoner in northwestern Illinois, our only local records are from weathered concrete. DE KALB, KENOSHA

**Xanthoria fallax** (Hepp in Arnold) Arnold (*L. fallax*, deceptive; probably from its disturbing resemblance to *Xanthoria* sp. #1) More than half of our specimens are from fast-growing roadside trees such as *Populus deltoides*, *Fraxinus* spp., and *Ulmus* spp. It also grows on open-grown oaks and walnuts, as well as on weathered concrete and old fence rails. Poelt has seen examples of this material and confirms that they do represent *X. fallax*. COOK, DE KALB, DU PAGE-47, GRUNDY, JASPER, KANE, KANKAKEE, KENDALL, KENOSHA, LAKE IL, LAKE IN, LA PORTE, McHENRY, PORTER-35, RACINE, ST. JOSEPH, STARKE, WALWORTH, WILL

**Xanthoria fulva** (Hoffm.) Poelt & Petutschnig (*L. fulvus*, reddish yellow, from the conspicuous pycnidia) Many of the specimens listed under *X. ulophylloides* are referable here.

**Xanthoria parietina** (L.) Th. Fr. (*L. parietis*, of a wall + *inus*, pertaining to; from its tendency to grow on walls) = *Theloschistes parietinus* of Calkins. This is one of only two or three records from the interior United States; there is a specimen of Calkins's at the Chicago Academy of Sciences. Calkins treated it matter-of-factly, stating that it grew "along the lake shore, on oaks and poplars; also in Lemont and elsewhere." A Cook County specimen (Calkins #16 NY), originally called *X. parietina*, is referable to *X. polycarpa*. Cook-1-30, Kendall-58

**Xanthoria polycarpa** (Ehrh. ex Hoffm.) Rieber (*Gr. poly*, many + *karpos*, fruit; from the numerous apothecia) Nearly all of our specimens are from *Populus* spp., though we have one record from a small ash tree in Berrien County. BERRIEN-35-52, COOK-30-LE-ILL, DU PAGE-47, GRUNDY, KENOSHA, McHenry-ILL, PORTER, WILL

**Xanthoria sorediata** (Vain.) Poelt (*Gr. soredion*, a little heap + *-atus*, an adjective ending; from the conspicuous soredia) Yet unknown from the region, this western species has been collected as near as Rock Island County, Illinois, where it grows on a limestone cliff north of Hillsdale.

**Xanthoria ulophylloides** Räsänen (*Gr. ulo*, a scar, curly + *phyl*, leaf + *ode*, like) Probably = *Theloschistes lychneus* of Calkins, at least in part. This species is occasional on a wide variety of corticolous substrates, mostly in disturbed areas. It also grows on exposed dolomitic boulders. This identity of this species remains a problem. Most of the specimens referred here can be, and routinely have been, called *X. candelaria* (L.) Th. Fr., but most contemporary students of the genus exclude that species from the interior of North America, noting only that our material is not described. Some of the following specimens have the soredia formed under the internal thallus lobes, and the soralia are minutely crescent-shaped and are referable to *X. fulva*, which see, but we have yet to re-evaluate these specimens. Cook-1, DU PAGE-47, GRUNDY, JASPER, KENOSHA, McHENRY, NEWTON, PORTER, RACINE, WALWORTH, WILL

#### INDEX OF SYNONYMS AND MISAPPLIED NAMES

The following is a listing of names that have been used or applied locally for Chicago region lichens. These names are not necessarily taxonomic synonyms or even routinely misapplied names; they may represent misidentifications or legitimate older names that are known now to have narrower distributions. In some cases, they are related species that appear in text where taxonomic problems are discussed. All of these names are indexed to the species under which they are listed or discussed.

*Acarospora cervina* var. *glaucocarpa* - *Acarospora strigata*  
*Acrocordia gemmata* - *Ditrems biformis*  
*Anaptychia palmatula* - *Anaptychia palmulata*  
*Anisomeridium biforme* - *Ditrems biformis*  
*Anisomeridium juistense* - *Ditrems nyssaegena*  
*Anisomeridium nyssaegenum* - *Ditrems nyssaegena*  
*Anisomeridium willeyanum* - *Ditrems nyssaegena*  
*Arthonia gregaria* - *Arthonia tumidula*  
*Arthonia lecideella* - *Arthonia caesia*  
*Arthonia polymorpha* - *Arthonia diffusa*  
*Arthonia spectabilis* - *Arthothelium spectabile*  
*Arthonia taediosa* - *Arthothelium taediosum*  
*Arthopyrenia biformis* - *Ditrems biformis*  
*Arthopyrenia finkii* - *Acrocordia megalospora*  
*Arthopyrenia gemmata* - *Ditrems biformis*  
*Arthopyrenia padi* - *Santessoniolichen punctiformis*  
*Arthopyrenia prospersella* - *Pyrenocollema prospersella*  
*Arthopyrenia punctiformis* - *Kirschsteiniothelia aethiops*  
*Arthopyrenia willeyana* - *Ditrems nyssaegena*  
*Bacidia chlorantha* - *Scoliciosporum chlorococcum*  
*Bacidia chlorocantha* - *Scoliciosporum chlorococcum*  
*Bacidia chlorococca* - *Scoliciosporum chlorococcum*  
*Bacidia cupreorosella* - *Bacidia granosa*  
*Bacidia fuscorubella* - *Bacidia polychroa*  
*Bacidia inundata* - *Bacidia egenula*  
*Bacidia luteola* - *Bacidia rubella*  
*Bacidia muscorum* - *Bacidia bagliettoana*  
*Bacidia sabuletorum* - *Mycobilimbia sabuletorum*  
*Bacidia trachona* - *Bacidia granosa*  
*Bacidina egenula* - *Bacidia egenula*  
*Biatora calcivora* - *Protoblastenia rupestris*  
*Biatora coarctata* - *Trapelia coarctata*  
*Biatora cyphalea* - *Biatorella cyphalea*  
*Biatora decipiens* - *Psora decipiens*  
*Biatora fusco-rubella* - *Bacidia polychroa*  
*Biatora inundata* - *Bacidia egenula*  
*Biatora rubella* - *Bacidia rubella*  
*Biatora suffusa* - *Bacidia suffusa*  
*Biatora varians* - *Pyrrhospora varians*  
*Biatorella pruinosa* - *Sarcogyne regularis*  
*Buellia alboatra* - *Amandinea dakotensis*  
*Buellia disciformis* - *Buellia stillingiana*  
*Buellia parasema* - *Buellia erubescens*, *Amandinea punctata*  
*Buellia punctata* - *Amandinea punctata*  
*Buellia schaeereri* - *Amandinea punctata*  
*Buellia zahlbruckneri* - *Buellia erubescens*  
*Caloplaca approximata* - *Caloplaca feracissima*  
*Caloplaca arenaria* - *Caloplaca feracissima*, *C. sp. #1*  
*Caloplaca aurantiaca* - *Caloplaca flavorubescens*  
*Caloplaca cinnabarina* - *Caloplaca subsoluta*

Caloplaca citrina v. flavocitrina - Caloplaca citrina  
 Caloplaca festiva - Caloplaca crenularia  
 Caloplaca irrubescens - Caloplaca squamosa  
 Caloplaca lactea - Caloplaca feracissima  
 Caloplaca lamprocheila - Caloplaca sp. #1  
 Caloplaca microphyllina - Caloplaca microphyllina  
 Caloplaca pyracea - Caloplaca lithophila  
 Candelariella efflorescens - Candelariella reflexa  
 Cetraria aleurites - Imshaugia aleurites  
 Cetraria ciliaris - Tuckermannopsis americana  
 Cetraria halei - Tuckermannopsis americana  
 Cladonia anomaea - Cladonia ramulosa  
 Cladonia bacillaris f. clavata - Cladonia bacillaris  
 Cladonia borbonica f. cylindrica - Cladonia cylindrica  
 Cladonia capitata - Cladonia peziziformis  
 Cladonia cariota - Cladonia cariosa  
 Cladonia cervicornis ssp. verticillata - Cladonia verticillata  
 Cladonia chlorophaea f. carpophora - Cladonia chlorophaea  
 Cladonia chlorophaea f. simplex - Cladonia chlorophaea  
 Cladonia clavulifera - Cladonia sobolescens  
 Cladonia coniocraea f. ceratodes - Cladonia coniocraea  
 Cladonia conista - Cladonia humilis  
 Cladonia conista f. simplex - Cladonia humilis  
 Cladonia decorticata - Cladonia rei  
 Cladonia delicata - Cladonia parasitica  
 Cladonia didyma f. subulata - Cladonia didyma  
 Cladonia dimorphoclada - Cladonia caroliniana  
 Cladonia fimbriata v. apolepta - Cladonia coniocraea  
 Cladonia fimbriata v. coniocraea - Cladonia ochrochlora  
 Cladonia fimbriata v. simplex - Cladonia chlorophaea, C. cryptochlorophaea, C. cylindrica, C. humilis  
 Cladonia fimbriata v. tubaeformis - Cladonia coniocraea, C. subulata  
 Cladonia floerkeana - Cladonia cristatella  
 Cladonia gracilis - Cladonia gracilis ssp. turbinata  
 Cladonia gracilis v. verticillata - Cladonia gracilis ssp. turbinata, C. verticillata  
 Cladonia grayi f. aberrans - Cladonia grayi  
 Cladonia invisita - Cladonia caespiticia  
 Cladonia macilenta - Cladonia bacillaris  
 Cladonia mitrula - Cladonia peziziformis  
 Cladonia mitrula f. squamulosa - Cladonia peziziformis  
 Cladonia ochrochlora - Cladonia coniocraea  
 Cladonia pityrea - Cladonia ramulosa  
 Cladonia pityrea v. zwackii f. squamulifera - Cladonia ramulosa  
 Cladonia pityrea v. zwackii f. subacuta - Cladonia ramulosa  
 Cladonia pulchella - Cladonia didyma  
 Cladonia pyxidata - Cladonia chlorophaea, C. grayi  
 Cladonia pyxidata v. pocillum - Cladonia chlorophaea  
 Cladonia rangiferina - Cladonia rangiferina  
 Cladonia rangiferina v. sylvatica - Cladonia subtenuis  
 Cladonia subapodocarpa - Cladonia petrophila  
 Clauzadea immersa - Protoblastenia rupestris

Collema bachmanianum - Collema tenax  
 Collema granosum - Collema auriforme  
 Collema microphyllum - Collema fragrans  
 Collema pulposum - Collema bachmanianum  
 Collema pycnocarpum - Collema conglomeratum  
 Dermatocarpon lachneum - Catapyrenium lachneum  
 Dermatocarpon pusillum - Endocarpon pusillum  
 Endocarpon arboreum - Catapyrenium tuckermanii  
 Endocarpon hepaticum - Catapyrenium lachneum  
 Endocarpon miniatum - Dermatocarpon miniatum  
 Endocarpon miniatum v. complicatum - Dermatocarpon miniatum  
 Endocarpon miniatum v. muhlenbergii - Dermatocarpon miniatum  
 Endocarpon pusillum v. garovaglii - Endocarpon pusillum  
 Endocarpon rufescens - Catapyrenium lachneum  
 Gasparinia microphyllina - Caloplaca microphyllina  
 Gonohymenia cribellifera - Gonohymenia nigritella  
 Graphina abaphoides - Graphis scripta  
 Graphis dendritica - Graphis scripta  
 Heppia conchiloba - Heppia adglutinata  
 Heppia despreauxii - Heppia adglutinata  
 Heppia lutosa - Collema tenax, Heppia adglutinata  
 Lecania erysibe - Lecania perproxima  
 Lecanora aipospila - Caloplaca atroalba  
 Lecanora allophana - Lecanora hybocarpa  
 Lecanora argentata - Lecanora hybocarpa  
 Lecanora caesiorubella ssp. lathamii - Lecanora caesiorubella ssp. prolifera  
 Lecanora calcarea - Aspicilia calcarea  
 Lecanora calcarea v. contorta - Aspicilia contorta  
 Lecanora cervina - Sarcogyne privigna  
 Lecanora contorta - Aspicilia contorta  
 Lecanora erysibe - Lecania perproxima  
 Lecanora glabrata - Lecanora hybocarpa  
 Lecanora hageni v. sambuci - Lecanora sambuci  
 Lecanora muralis ssp. versicolor - Lecanora valesiaca  
 Lecanora pallida - Lecanora caesiorubella ssp. caesiorubella  
 Lecanora perpromixa - Lecania perproxima  
 Lecanora perproxima - Lecania perproxima  
 Lecanora privigna - Sarcogyne privigna  
 Lecanora privigna v. pruinosa - Sarcogyne regularis  
 Lecanora pseudo-chlaro-tera - Lecanora hybocarpa  
 Lecanora rupicola - Lecanora sp. #3  
 Lecanora subfusca - Lecanora hybocarpa  
 Lecanora subfusca v. allophana - Lecanora hybocarpa  
 Lecanora subfusca v. argentata - Lecanora hybocarpa  
 Lecanora subfusca v. distans - Lecanora hybocarpa  
 Lecanora symmictera - Lecanora symmicta  
 Lecanora varia - Lecanora symmicta  
 Lecanora varia v. symmicta - Lecanora symmicta  
 Lecidea aeruginosa - Trapeliopsis flexuosa  
 Lecidea crustulata - Porpidia macrocarpa

Lecidea cyrtidia - Micarea erratica  
 Lecidea enteroleuca - Lecidella euphorea, Trapeliopsis granulosa  
 Lecidea flexuosa - Trapeliopsis flexuosa  
 Lecidea granulosa - Trapeliopsis granulosa  
 Lecidea uliginosa - Placynthiella icmalea  
 Lecidea tessellata - Verrucaria nigrescens  
 Lecidella - Trapeliopsis granulosa  
 Lecidella elaeochroma - Lecidella euphorea  
 Lepraria finkii - Lepraria lobificans  
 Leptogium chloromelum - Leptogium milligranum  
 Leptogium hirsutum - Leptogium burnetiae  
 Leptogium myochroum - Leptogium burnetiae, Leptogium dactylinum  
 Leptogium lacerum - Leptogium lichenoides  
 Leptogium pulchellum - Leptogium corticola  
 Leptogium saturninum - Leptogium burnetiae  
 Lichinella nigritella - Gonohymenia nigritella  
 Lichenothelia metzleri - Lichenothelia sp.  
 Lichenothelia scopularia - Lichenothelia sp.  
 Micarea peliocarpa - Bacidia granosa  
 Microthelia micula - Kirschsteiniothelia aethiops  
 Muellerella lichenicola - Caloplaca flavovirescens  
 Mycoporum pycnocarpum - Mycoporum compositum  
 Myrianagium duriaei - nonlichenized fungus  
 Naetrocymbe punctiformis - Santessoniolichen punctiformis  
 Omphalaria pulvinata - Thyrea pulvinata  
 Opegrapha pulicaris - Opegrapha varia  
 Pannaria lanuginosa - Lepraria lobificans  
 Pannaria nigra - Placynthium nigrum, Rhizocarpon obscuratum  
 Parmelia andreana - Flavopunctelia flaventior  
 Parmelia aurulenta - Myelochroa aurulenta  
 Parmelia bolliana - Punctelia bolliana  
 Parmelia borrieri - Punctelia bolliana, P. subrudecta  
 Parmelia borrieri v. rudecta - Punctelia rudecta  
 Parmelia caperata - Flavoparmelia caperata  
 Parmelia cetrata - Rimelia cetrata, Rimelia reticulata  
 Parmelia colopodes - Anzia colpodes  
 Parmelia conspersa - Xanthoparmelia australasica, X. cumberlandia  
 Parmelia crinita - Parmotrema crinitum  
 Parmelia flaventior - Flavopunctelia flaventior  
 Parmelia olivacea - Melanelia subaurifera  
 Parmelia perforata - Parmotrema perforatum  
 Parmelia perlata - Rimelia reticulata  
 Parmelia physodes - Hypogymnia physodes  
 Parmelia rudecta - Punctelia rudecta  
 Parmelia saxatilis - Parmelia squarrosa, P. sulcata  
 Parmelia saxatilis v. sulcata - Parmelia sulcata  
 Parmelia soledica - Flavopunctelia soledica  
 Parmelia subaurifera - Melanelia subaurifera  
 Parmelia subrudecta - Punctelia subrudecta  
 Parmelia tiliacea - Hypotrachyna livida, Myelochroa galbina

Parmelia tiliacea v. sulphurosa - Myelochroa galbina  
 Parmelia ulophyllodes - Flavopunctelia soledica  
 Parmelina aurulenta - Myelochroa aurulenta  
 Parmelina galbina - Myelochroa galbina  
 Parmeliopsis aleurites - Imshaugia aleurites  
 Parmotrema eurysacum - Parmotrema margaritatum  
 Peltigera canina v. rufescens - Peltigera rufescens  
 Peltigera canina v. rufescens f. innovans - Peltigera praetextata  
 Peltigera spuria - Peltigera didactyla  
 Pertusaria amara - Pertusaria multipunctoides  
 Pertusaria communis - Pertusaria macounii  
 Pertusaria leioplaca - Pertusaria leucostoma  
 Pertusaria multipuncta - Pertusaria multipunctoides  
 Pertusaria paratuberculifera - Pertusaria macounii  
 Pertusaria pertusa - Pertusaria macounii  
 Pertusaria plittiana - Pertusaria macounii  
 Pertusaria tetrathalamia - Pertusaria leucostoma  
 Pertusaria trachythallina - Pertusaria macounii, P. multipunctoides  
 Phaeographis dendritica - Graphis scripta  
 Phaeophyscia chloantha - Physciella chloantha  
 Physcia alba - Physcia pumilior  
 Physcia adglutinata - Hyperphyscia adglutinata  
 Physcia chloantha - Physciella chloantha  
 Physcia comosa - Heterodermia echinata  
 Physcia granulifera - Heterodermia granulifera  
 Physcia grisea f. grisea - Physconia detersa  
 Physcia obscura - Phaeophyscia ciliata  
 Physcia orbicularis - Phaeophyscia rubropulchra  
 Physcia pulverulenta - Anaptychia palmulata  
 Physcia pulverulenta f. venusta - Anaptychia palmulata  
 Physcia speciosa - Heterodermia speciosa  
 Physcia stellaris v. aipolia - Physcia aipolia  
 Physcia stellaris f. tuberculata - Physcia stellaris  
 Physcia tribacia - Physcia millegrana  
 Physciopsis adglutinata - Hyperphyscia adglutinata  
 Physciopsis syncolla - Hyperphyscia syncolla  
 Physconia distorta - Anaptychia palmulata  
 Placodium aurantiacum - Caloplaca flavorubescens, C. ulmorum  
 Placodium cinnabarinum - Caloplaca subsoluta  
 Placodium ferrugineum - Caloplaca ferruginea, C. cerina  
 Placodium microphyllum - Caloplaca microphyllina  
 Placodium vitellinum - Candelariella vitellina  
 Placodium vitellinum v. aurellum - Candelariella aurella  
 Plagiocarpa hyalospora - Lithothelium hyalospora  
 Plagiocarpa septemseptata - Lithothelium septemseptata  
 Pleurosticta - Melanelia  
 Polyblastiopsis fallaciosa - Julella sericea  
 Porpidia crustulata - Porpidia macrocarpa  
 Protoparmeliopsis muralis - Lecanora muralis  
 Pseudoparmelia baltimorensis - Flavoparmelia baltimorensis



*Pseudoparmelia caperata* - *Flavoparmelia caperata*  
*Psora scalaris* - *Hypocenomyce scalaris*  
*Punctelia flaventior* - *Flavopunctelia flaventior*  
*Pyrenodesmia variabilis* - *Caloplaca variabilis*  
*Pyrenula analepta* - *Santessoniolichen punctiformis*  
*Pyrenula gemmata* - *Eopyrenula intermedia*  
*Pyrenula glabrata* - *Pyrenula pseudobufonia*, *Arthopyrenia cinchonae*  
*Pyrenula imperfecta* - *Pyrenula subelliptica*  
*Pyrenula laevigata* - *Pyrenula pseudobufonia*  
*Pyrenula macounii* - *Pyrenula subelliptica*  
*Pyrenula neglecta* - *Pyrenula pseudobufonia*  
*Pyrenula nitida* - *Pyrenula pseudobufonia*  
*Pyrenula punctiformis* - *Kirschsteiniotelia aethiops*, *Santessoniolichen punctiformis*

*Pyxine caesiopruinosa* - *Pyxine subcinerea*  
*Ramalina calicaris* - *Ramalina americana*  
*Ramalina calicaris* v. *fastigiata* - *Ramalina americana*, *R. subampliata*  
*Ramalina calicaris* v. *fraxinea* - *Ramalina subampliata*  
*Ramalina celastri* - *Ramalina subampliata*  
*Ramalina confusa* - *Ramalina subampliata*  
*Ramalina fastigiata* - *Ramalina americana*, *R. subampliata*  
*Ramalina ecklonii* - *Ramalina subampliata*  
*Ramalina fastigiata* v. *subampliata* - *Ramalina subampliata*  
*Ramalina fraxinea* - *Ramalina subampliata*  
*Ramalina sinensis* - *Ramalina subampliata*  
*Ramalina subamplicata* - *Ramalina subampliata*  
*Ramalina unifolia* - *Ramalina subampliata*  
*Rhizoplaca subdiscrepans* - *Rhizoplaca chrysoleuca*  
*Rinodina sophodes* - *Rinodina cana*  
*Saccomorpha icmalea* - *Placynthiella icmalea*  
*Saccomorpha oligotropha* - *Placynthiella oligotropha*  
*Sagedia oxyspora* - *Leptorhaphis epidermidis*  
*Sarcinulella banksiae* - *Ditremis nyssaegena*  
*Sticta quercizans* - *Lobaria quercizans*  
*Theloschistes chrysophthalmus* - *Teloschistes chrysophthalmus*  
*Theloschistes concolor* - *Candelaria concolor* var. *concolor*  
*Theloschistes lychneus* - *Xanthoria* sp. #1  
*Theloschistes parietinus* - *Xanthoria parietina*  
*Urceolaria scruposa* - *Diploschistes muscorum*  
*Usnea barbata* - *Usnea strigosa*  
*Usnea barbata* v. *florida* - *Usnea strigosa*  
*Verrucaria aethiobola* - *Verrucaria sordida*  
*Verrucaria integrella* - *Verrucaria calciseda*  
*Verrucaria inundata* - *Verrucaria calkinsiana*  
*Verrucaria iowensis* - *Verrucaria fayettensis*  
*Verrucaria prosperella* - *Pyrenocollema prosperella*, *Thelidium microcarpum*, *V. illinoisensis*  
*Verrucaria pyrenophora* - *Thelidium microcarpum*, *V. calkinsiana*  
*Verrucaria rupestris* - *Verrucaria calkinsiana*, *V. muralis*  
*Verrucaria submuralis* - *Verrucaria calciseda*  
*Verrucaria tectorum* - *Verrucaria macrostoma*

Verrucaria viridula - Verrucaria fayettensis, Verrucaria nigrescens  
 Xanthoparmelia tinctina - Xanthoparmelia australasica  
 Xanthoria candelaria - Xanthoria sp. #1

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