

COMMON LICHENS

J. S. Erskine

Central Kings Rural High School, Cambridge, N. S.

Illustrations by JANE McNEILL

Fredericton, N. B.

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IF YOU examine a cliff or a boulder long undisturbed, or the bark of an old tree, you will find that it is covered with spreading stains or with crinkly rosettes of paper-thin growth, grey or yellow or white. These are lichens. (Many people call them "moss", but true mosses are green and have stems and leaves, whereas most of these are greenish only when wet and are usually in the form of sheets or tubes.) Lichens are the poor relations of the plant kingdom, living on the leavings of the world, occupying places too barren to attract rivals and growing with infinite slowness and patience.

Lichens are really communities rather than plants. They are an unwilling partnership between certain fungi and microscopic green algae. The algae can manufacture their food from air and water, but without water they die. The fungi cannot manufacture their own food, but their spongy bodies store water for the algae and they feed upon the food that the algae produce. The algae are wild species captured and tamed by the lichen; the fungi are never found without the algae but are the dominant partners in the community. The fungal partner produces spores, after the fashion of fungi, and the fruiting discs which carry the spores may be seen on the surface of most flat lichens or on the fingertips of the bushy ones. These spores hatch out into tiny threads which must capture an alga in their first weeks of life or die of starvation. This is a very hit-or-miss business, so many lichens bud off dusty fragments, known as *soredia*, which contain threads of fungus surrounding an alga. This is like sending a son out into the world with the equipment for making a living, a surer method than throwing him out, like a spore, to trust to luck.

Lichens are not commercially important. In the old days dyes were made from many of them, and this is still practised although only on a craft scale. At all periods lichens have been used as a "starvation diet". Explorers have kept alive by eating rock-tripe; in prehistoric Scandinavia a sort of bread was made of ground reindeer-moss; and the Arabs used to gather quantities of rock-lichens that grew along the wind-passes of the mountains, a custom which has been offered as one explanation of the manna of the Bible. But the only excuse for studying the lichens lies in the fact that they are interesting, though, of course, only to the interested.

Collecting and School Study

It may seem that so difficult a group would be a wholly unsuitable subject for school nature study, but this is only partly true. The common species of the lichen flora are easy to learn, and the abundance of lichens during the winter in all areas, and the ease with which they may be preserved, makes them a satisfactory group for collection if only a cheap guide to the species makes a start possible. That is the purpose of this article. It offers a non-technical grouping of some thirty of our commonest lichens, leaving out minor distinctions. This should be

enough to help the brightest pupil through an open winter, and for the rare enthusiast there are more complete volumes available.

In Nova Scotia our commonest type of lichen is that of frilly rosettes on rock or tree-trunk, and the larger sheets on ground and rock; the next commonest are grey beards hanging from branches or rising bush-like from poor soil; then there are innumerable erect lichens like goblets or candelabra; and finally there are crusts and stains on soil or rock or bark, but, because of their difficulty, only one of these is included.

English names for lichens are not very useful, for not more than three species have reached any popular recognition; but unhappily the scientific names are little more standardized. I offer English names, adopted or adapted from those used in *The Lichen Book* by G. G. Nearing, and I append the Latin names for anyone who may wish to follow these plants into other works.

KEY TO COMMON LICHENS

Flat Papery Lichens

- Large sheets, more than one inch undivided. 1
- Underneath smooth or with harsh rootlets. 2
- Dark brown to black. 3
- Circular smooth brown wafers 1
- Similar but blistered 2
- Grey to black, edged with yellow 3
- Grey—to yellow-green, a network of raised ribs with pits between 4
- Underneath soft felted. 5
- Brown to greenish, the lobes at edges tipped with fruits like brown dog-teeth 5
- Grey to green, large soft sheets with blackish studs scattered on them 6
- Divided rosettes, nowhere with an inch undivided. 7
- Whitish to shades of grey, 3 inches or more across. 7
- Small, much divided, applied to the bark or rock except at tip. 8
- Tips swollen, tan underneath when fruiting, grey. 8
- Olive-brown 9
- Orange to yellow-green 10
- Little divided, holding to twig only at base of lobe 11
- Blackish flabby masses of low frills, tree-trunks 12
- Under water, greenish lobes drying to grey 13
- Beards (on bark or rock, not soil) Hanging. 14
- Blackish 14
- Grey 15
- Standing up or out from bark. 16
- Grey with large discs of fruits 16
- Whitish, soft, thin stems much branched and split. 17
- Whitish, rather stiff, largish hollow stems 18

Shaped Like Bare Trees (on soil) Prickly to the touch.

- Whitish 19
- Blackish, on sand 20
- Stubby trees with branch tips like a hardened froth of grey bubbles 21
- Softish, grey to white, about 3 inches tall. 22
- With drooping finger-tips 23
- With finger-tips turned inward to form heads 23
- Shaped Like Cups and Candelabra
- Goblet-shaped 24
- Crowned with scarlet fruits 25
- Crowned with brown fruits 26
- Grey Crust on Soil, with Pink Mushroom. 27

SPECIES

1. Smooth Rock-tripe *Umbilicaria Dilleni*, is fairly common on granite boulders, especially near water.
2. Blistered Rock-tripe, *Umbilicaria pustulata*, is rather less common in the same habitat as No. 1.
3. Gold-edged Lichen, *Sticta crocata*, is frequent on tree trunks on the Atlantic slope of the province.
4. Lung Lichen, *Sticta pulmonaria*, is the commonest large lichen on tree trunks and is found throughout.
5. Dog Lichen, *Peltigera canina*, is abundant on the ground in hardwood forest.
6. Studded Lichen, *Peltigera aphthosa*, can be very ornamental, a broad leaflike thallus on shady rocks, clear green above when damp but fading to a nondescript grey when dry.
7. Shield Lichen, *Parmelia perlata*, is offered as an example of a group of flat, large, white to grey rosettes, common on trees and rocks. One common lichen will probably be put in here by mistake. It is rather large and little lobed, leathery, grey and has abundant bright-tan discs of fruits. This is Leather Lichen, *Sticta amplissima*, of smooth tree-trunks.
8. Puffed Lichen *Parmelia physodes*, is extremely common, furring dead twigs of spruce, covering bark and rocks, and even crawling on the sand of Sable Island. There are many nearly related species.
9. Olive Lichen, *Parmelia olivacea*, is frequent on fence posts and rails.
10. Wall Lichen, *Teloschistes parietina*, is common and conspicuous, decorating rocks and tree trunks and shingles with its orange rosettes which turn to a dingy yellow-green when wet.
11. Twig Lichens, of the genus *Cetraria*, form papery rosettes on the dead twigs of trees, but no one species is commoner than another.
12. Pulp Lichen, *Collema rupestre*, is one example of a group of black pulpy lichens fairly common on rocks and ash-trunks.

13. Brook Lichen, *Dermatocarpon aquatilis*, is not uncommon on boulders submerged in streams. Until it was pointed out to me, I had taken it for an alga, but it dries to grey.

14. Brown Mane Lichen *Alectoria jubata*, is particularly common on the dead branches of evergreens growing in bogs.

15. Old Man's Beard, *Usnea barbata*, hangs in woods and is short and scrubby in windy places, long and slender where sheltered. *Paruia* warblers nest in these beards.

16. Flowering Beard Lichen, *Usnea florida*, is stiffer and usually stands out or up from the trunks of trees and is decorated with whitish fruiting discs.

17. Oakmoss, *Evernia prunastri*, is fairly common on the trunks of shade trees, where it forms soft white patches two inches tall.

18. Ragged Lichen, *Ramalina pollinaris*, is superficially like the last but is smaller, with more trunk and usually has convex white fruiting discs. It is usually stiffer, but this character varies greatly with dampness and exposed position.

19. Thorn Lichen, *Cladonia uncialis*, is a common reindeer-moss which forms shrubby patches on poor soil. When dry, this is stiff and prickly to the touch, as its twigs are thorny and erect.

20. Spiny Lichen, *Cetraria aculeata*, has been found on barrens and sand-dunes from the Cape Breton Highlands to Shelburne County. It grows usually in isolated tufts.

21. Easter Lichen, *Stereocaulon paschale*, forms stiff frothy grey lumps an inch or so tall. When these are divided, they show a trunk and branches.

22. Reindeer Moss, *Cladonia rangiferina*, is usually greyer than No. 19 and the twigs of its branches are soft, and droop. It is abundant in woods and bogs and on poor soil.

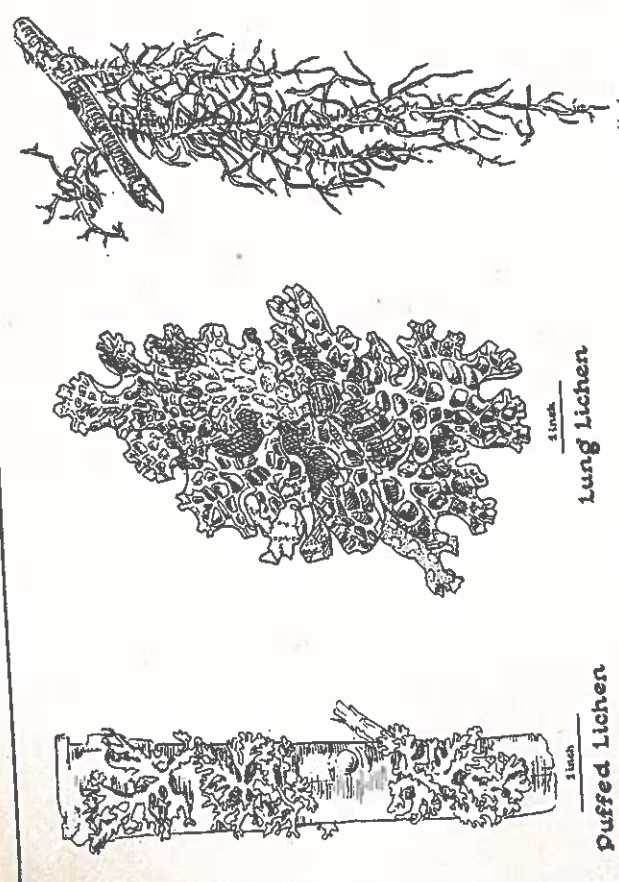
23. Alpine Reindeer-moss, *Cladonia alpestris*, is found in the same habitats as No. 22. The in-turned branch-tips form it into compact heads or columns which are conspicuous.

24. Pyxie-cups, *Cladonia pyxidata*, is a good enough name to cover a variety of greyish goblet-shaped lichens, usually about one inch tall. They are common on poor soil in woods.

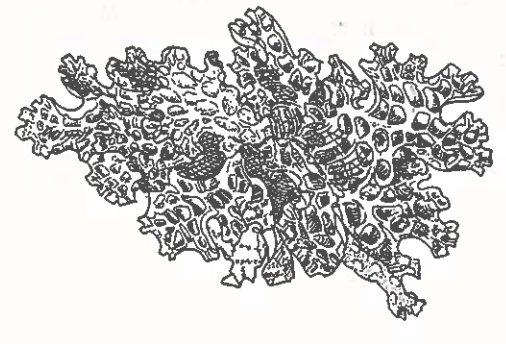
25. British Soldier, *Cladonia cristatella*, is so brilliantly scarlet on its fruiting tips as to have attracted public attention and to have secured it a popular name. It is abundant on poor soil, rocks and dead wood everywhere.

26. Funnel Lichen, *Cladonia squamosa*, is a common representative of a welter of species varying from two-tiered goblets to goblets with candelabra springing from their margins, and to quill-like and branching whitish species with green leaflike flakes. They are very abundant and difficult to separate.

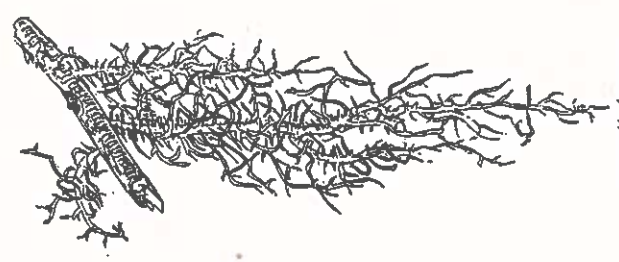
27. Pink Earth Lichen, *Baeomyces roseus*, is found on the poorest of soils as a greyish crust which can be identified with certainty only when it sprouts fruiting mushrooms, half an inch tall, of brilliant pink. Then it is unmistakable.



Puffed Lichen
1 inch



Lung Lichen
1 inch



Old Man's Beard
1 inch



Smooth Rock-tripe
1 inch



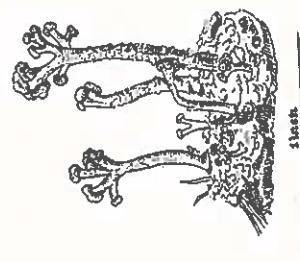
Dog Lichen
1 inch



Reindeer Moss
1 inch



Pink Earth Lichen
1 inch



British Soldier Lichen
1 inch

COMMON LICHENS OF NOVA SCOTIA