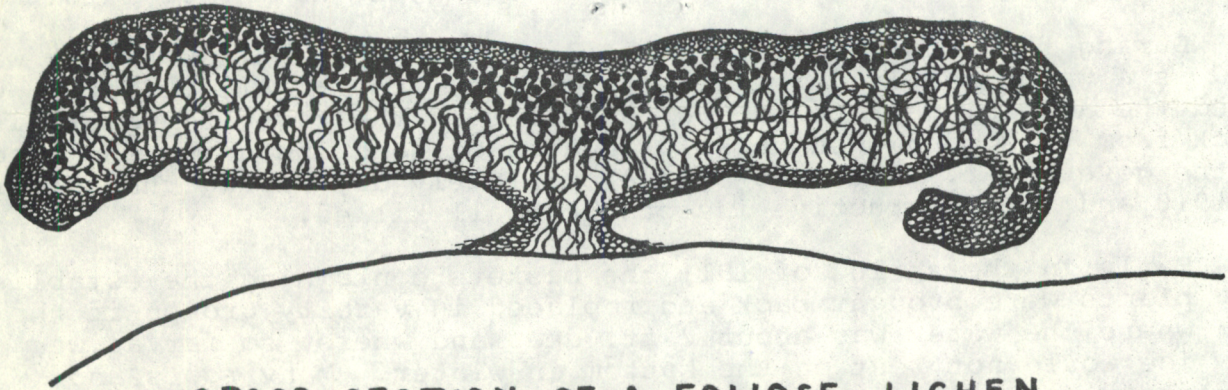


Many people regard lichens as agents of decay and decomposition but this is not generally true. While a bracket fungus on a beech tree penetrates the interior of the trunk and draws its nourishment from the trees' reserves, the fungal component of the lichen does not need to do this since its foodstuffs are already being supplied by the alga within the lichen. Thus lichens usually use a tree or stump merely as a place to anchor and do not penetrate it with roots or draw moisture or food from it. Tiny threadlike strands from the bottom of the lichen serve only to attach it to the substrate. Because of the lack of dependence on substrate for food, lichens are able to live on extremely inhospitable sites such as mineral soil, bare rock and tree bark. Lichens tend to become established on sites which are quite long-lasting since their slow growth pattern necessitates a substrate which will be around for some time.



CROSS SECTION OF A FOLIOSE LICHEN

Lichens obtain most of their nourishment from minerals and other substances dissolved in the moisture of the air. Thus the salt spray zone of rocky (i.e., igneous) shorelines is an ideal location because it provides a durable substrate as well as plenty of mineral-laden moisture. Other groups of lichens have specialized to fit into other available habitats. The large yellow patches of lichens sometimes seen on poplar trees around old farmyards thrive where ammonia is present, as it would be near any manure piles. Lichens are very sensitive to the chemical conditions in their environments and many have quite specific requirements and tolerances. One group of lichens may live on hardwood trees while another somewhat different group will live on the naturally more acidic bark of conifers. The chemical sensitivity of lichens makes them useful as indicators of air pollution. One of the first changes to occur when air pollution causes a slight increase in acidity is the disappearance of the acid-intolerant lichen flora from the bark of softwoods. This lichen flora on the bark of conifers can no longer tolerate the increased levels of acidity there and so these trees become lichen barren, while their former lichen complement moves on to the hardwood trees whose bark is now sufficiently acidic to provide a suitable substrate for lichens from the conifers. Further increases in acidity will result in lichens disappearing entirely from the area. Aside from sensitivity to acidity levels some lichen species are highly sensitive to specific chemicals. This sometimes makes them useful as indicator species; the state of health of a certain lichen species may provide a rough indication of the levels of a particular pollutant in the air.

Lichens have other uses as well. In areas of newly formed rock and mineral soil, lichens are often the earliest colonizers able to cope with such an environment. Drawing their nourishment from the air they gradually introduce a little organic material into the area which can later be used by succeeding generations of plant colonists. Acids secreted by these lichens help to break down rocks and mineral soils and make them more hospitable substrate for the higher plants to follow. In the far north the lichen known as reindeer moss forms the mainstay of the caribou diet. Man has also made use of lichens as a food source: in times of food shortage early pioneers and explorers sometimes supplemented meagre diets by teas made from lichens, most notably the rock tripe. Early settlers used lichens for the dying of