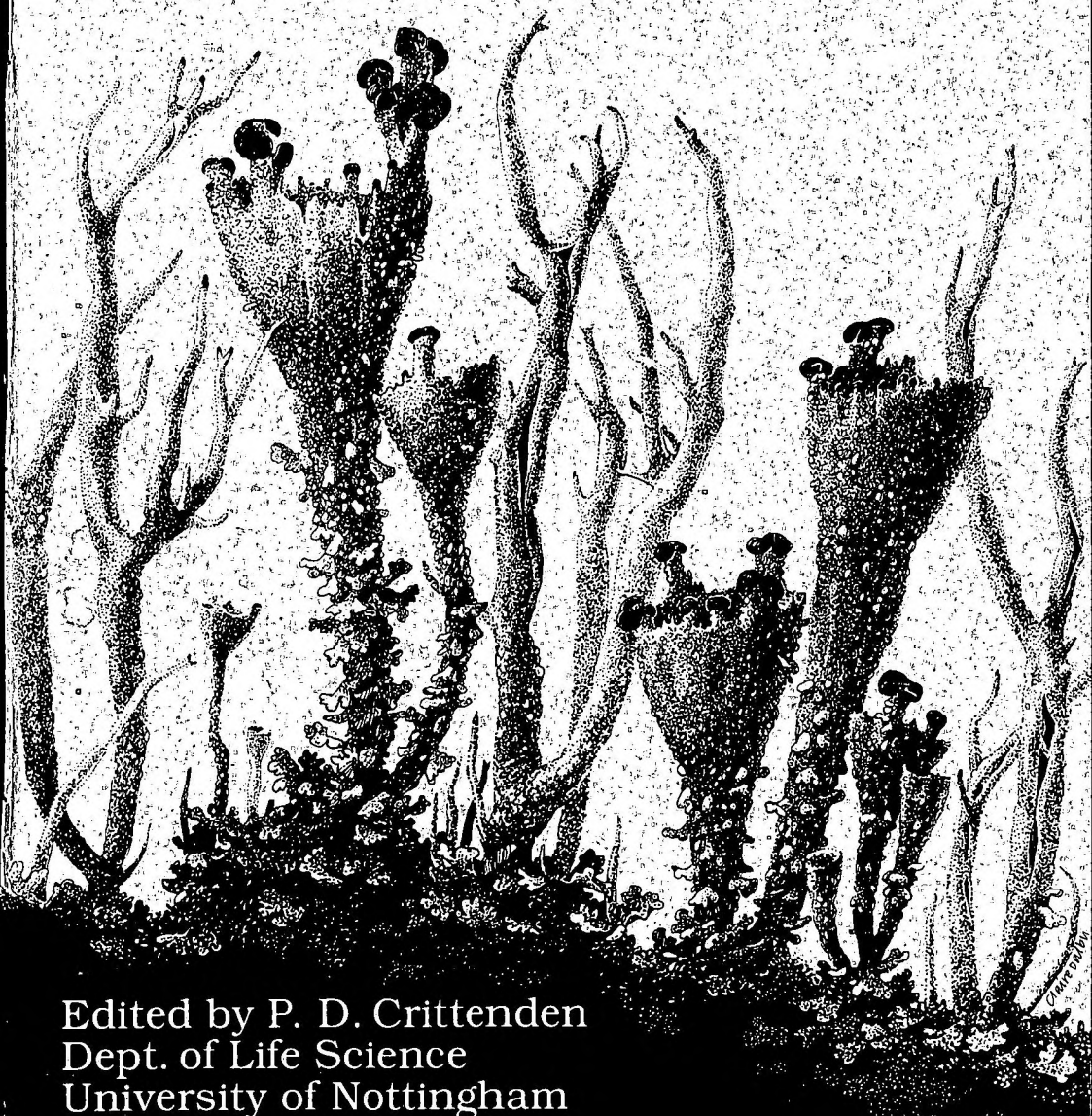


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LICHENS, LONG-TAILED TITS AND AIR POLLUTION

Michael Hansell's note on Lichen, Long-tailed Tits and "Velcro", although addressed to lichen experts, covered a subject in which I have been interested for some time. In preparing the text for "A Breeding Bird Atlas of Cheshire and Wirral", I was puzzled by the scarcity of Chaffinches in the Mersey valley eastward from Ellesmere Port. The penny dropped when the map for Long-tailed Tits became available. Both species build their nests from trailing mosses, decorating them with lichen fragments if these are available. Both species are surprisingly scarce not just in the Mersey lowlands, but also in a belt continuing eastward across Greater Manchester (Holland *et al* 1984). Air quality in this area was atrocious in the early part of this century. The anomaly in their distributions seemed to be an effect of air pollution. However both species were common over much of Cheshire where foliose lichens were effectively absent. Throughout lowland Cheshire, in some thirty disused or predated nests of the two species examined during the mid 1980s, I found no lichen whatsoever. In Macclesfield Forest, in Lyme Park and at Higher Disley however (sites in the Pennine foothills), Chaffinch nests contained fragments of *Hypogymnia physodes* and *Parmelia saxatilis*. At Wincle, on the Staffordshire border, I watched a pair of Long-tailed Tits placing fragments of these same two lichens on the outside of their nest.

Both bird species, so far as my limited experience suggests, collect mosses and lichens from the trunks and horizontal branches of trees rather than from the ground. Until very recently, lichens have been available in quantity only in the Pennine foothills. Over most of Cheshire there is no difficulty for the birds in finding suitable mosses, but in the Mersey valley shortage of epiphytic nest material seems to be a limiting factor. Savidge (1963) listed 67 moss species which had not been seen since 1900 in south Lancashire (to which the Mersey valley largely belonged prior to 1974), and the Bryophyte Atlas (Hill *et al*, 1991, 1992, 1994) shows gaps there in the distribution of many common species, e.g. *Lophocolea bidentata*, *Pellia epiphylla*, *Tortula muralis*, *Grimmia pulvinata*, *Schistidium apocarpum*, *Eurhynchium praelongum* and *Hypnum cupressiforme*. Absence of such species on a coarse grid of 10 km squares gives some idea of the likely scarcity of bryophyte species of structural value. Casual acquaintance with the area suggests that trees with epiphytic mosses remain scarce,

particularly the trailing pleurocarpous species useful to the birds. Oakes (1953) knew of no nesting by Long-tailed Tits in Lancashire south of the Ribble since 1912. In the 19th century there were records of Chaffinches in south Lancashire building their nests from cotton waste (Holland *et al*, 1984), this perhaps providing a more readily available substitute for moss in some localities even then.

Lichen and bryophyte floras are improving in the area, and already there are signs that the birds are responding. By 1990, willows at the Wildfowl and Wetland Trust site at Martin Mere were well covered in lichens including such pollution-sensitive species as *Parmelia caperata*, *P. revoluta*, *P. subrudecta* and *Physcia aipolia*. The mosses *Ulot* and *Orthotrichum* are now widespread on willows, elders and other trees in Cheshire, and even into the Manchester suburbs, while the liverwort *Frullania* is creeping across the Cheshire Plain from the south-west. The British Trust for Ornithology's Atlas showed Long-tailed Tits to have bred in some 17 Lancastrian 10 km squares south of the Ribble between 1968 and 1972. In 1987 there were several reports of Long-tailed Tits in Runcorn, where the species had long been uncommon or absent, and in 1984 a pair nested at Penington Flash, Leigh, for the first time on record. Birds have since returned to the Mersey valley around Sale. The New Atlas of Breeding Birds, which presents results of a repeat national survey between 1988 and 1991, contains fascinating abundance maps which show that both species remain uncommon in the Mersey valley. A map showing changes in distribution since 1968-1971 shows a cluster of new Long-tailed Tit breeding records in south Lancashire.

In 1990 the author was shown a Long-tailed Tit nest at Rostherne Mere National Nature Reserve which had various lichen fragments fastened onto its exterior. These included bits of *Parmelia sulcata* and the first record of *P. revoluta* from the reserve! Why should birds resume the use of lichens in an area which has lacked the appropriate species for so long? (It is possible that the birds had wandered in from elsewhere).

I too have been puzzled as to the purpose of the lichen covering. One Chaffinch nest built in a fork of a hawthorn at Higher Disley was conspicuously spotted with grey fragments collected from oak and ash trees nearby - very few lichens yet grow on hawthorn in the vicinity. The nest was ripped out by a predator within two days. An

acquaintance who found several tree nests near Northwich in 1980 reported that all, and several in the terminal shoots of pine branches, were ripped apart by predators. *Lecanora conizaeoides* was the only lichen present in any quantity in that wood.

While many Long-tailed Tits nest in thorny scrub in open country, their original habitat was probably in woodland, and nests in the fork of an oak or other tree are not uncommon. Campbell & Ferguson-Lees (1972:375) in their guide to birds' nests state "Watching necessary for tree-nesting pairs as lichen exterior beautifully blended to bark and nest looks like thickening of fork." I suspect that the use of lichen originated in ancient times when tree nests were the rule, lichen cover was more complete than in many areas today, and camouflage would have been effective.

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