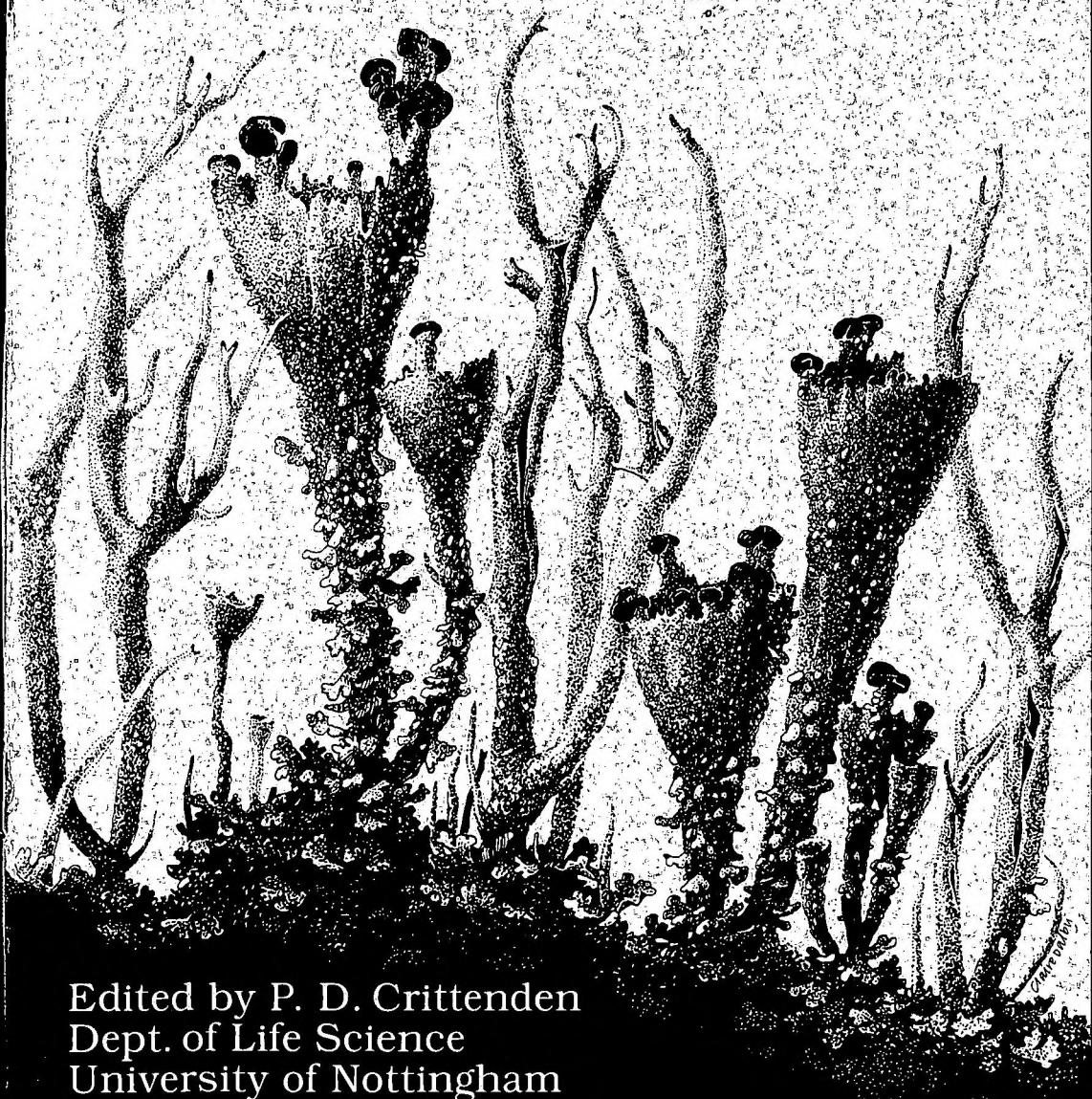


# BRITISH LICHEN SOCIETY BULLETIN

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## LICHENS AND RADIOACTIVE FALLOUT OVER NORTH WEST RUSSIA

A conference entitled *Arctic Town and Environment* was held in Vorkuta (Russian Federation) between 12-16 September 1994. It focused on the socio-economic and environmental problems of arctic communities across Russia, attracted about 100 scientists, administrators and politicians and received national media coverage. Vorkuta itself, situated at 67°N latitude in the north of the Komi Republic, is a tundra coal mining town currently with 13 productive mines and a population of c.230000 inhabitants.

Of interest to lichenologists were two papers discussing radioactive contamination in the Russian north. Prof. A.B. Tkachov from the Institute of Physiology in Arhangel'sk presented data on the distribution of radioactive fallout resulting from nuclear tests on the arctic island of Novaja Zemlja. Some ninety atmospheric tests were performed at this site between 1955-1962 after which there were about 42 underground tests up until 1992. Isolines of radiation dose rate measured at 1m above the ground 10h post-blast were shown for 3 tests in 1962. On these occasions dose rates  $>0.1 \text{ R h}^{-1}$  were confined to a narrow zone extending roughly from central Novaja Zemlja in the north to northern regions of the Komi Republic in the south. On one of the three occasions Vorkuta fell within the  $0.1 \text{ R h}^{-1}$  isoline while the small coastal community of Amderma in the Neneckaja Republic was within the  $5 \text{ R h}^{-1}$  isoline. Tkachov presented medical statistics indicating that indigenous people in this arctic coastal region had elevated incidence of cancers of the lung, throat and stomach compared to indigenous populations in Alaska, Greenland, Scandinavia and southern parts of the Komi Republic. Furthermore, the incidence of these diseases grew steadily between 1980-1992. The well known problem of radionuclide concentration on ascending the lichen-reindeer-man food chain is implicated as a compounding factor and a program of analysis of reindeer tissue and plants is now planned in the region.

Until recently, data of this kind on radioactive contamination resulting from the Soviet nuclear test programme were secret. It is evident that such information is now becoming available to research workers under various contractual arrangements. Thus the data for the Novaja Zemlja tests presented in map form by Tkachov was obtained from the archives of the Radium Institute in St Petersburg; he did not know the methods used to obtain the data (e.g. how rigorously the region was sampled).

Some 1000km to the south east of Novaja Zemlja, on the Kola Peninsular, current radioactive contamination remains close to background. Anatoly

Semenov of the Murmansk Area Department for Hydrometeorology & Environmental Monitoring reported that the radionuclide content of *Cladonia* lichens in the region is lower than in those further south in Scandinavia. Small areas c. 20 km in diameter with slightly higher levels of contamination were thought to be due to localised rainout of Chernobyl-derived products. Dr V. Krychkov from the Institute of Economic Problems, Apatity, confirmed that dose rates in the region are generally within the range 13-16 R h<sup>-1</sup>.

Peter Crittenden

### WE ARE STILL LOOKING FOR THE LARGEST LICHEN

In 1989 (Bulletin 65:22) Oliver Gilbert asked the question 'Where are Britain's largest lichens?' In this article he refers to a number of large lichens that he had seen in his travels as a lichenologist. These lichens included a *Caloplaca flavescens* 27 cm in diameter in the churchyard at Burford, Oxfordshire, an *Ochrolechia parella* 54 x 52 cm seen in Caenlochan Glen, Angus, and a *Lecidea fuscoatra* 35 x 33 cm at Melrose Abbey, Roxburghshire.

Prof. G. Degelius followed this with accounts of some large lichens he had found on the Island of Vega Norway (Bulletin 66:25). The largest of these being an *Anaptychia runcinata* 75 cm in diameter and a *Parmelia alpicola* about 70 cm in diameter.

All these lichens, being large, are almost certainly of some considerable age. This produces the problem of whether they are one large thallus or, at some time in the past, formed from two or more genetically similar thalli which have fused together. It is not possible to be certain and possibly the best that it is possible to do is to look for thalli that have roughly circular outlines. Obvious distortions in the outline may well be caused by thalli growing together.

Since the time of these articles there has been silence and I feel that it is now time to recommence the search. Since 1989 the lichens have had quite some time in which to grow larger! The largest lichen which I know about is the famous specimen of *Lobaria amplissima* found by Francis Rose near Lawrenny in Pembroke. I measured the thallus in 1993 when the greatest continuous width was 998 mm and the maximum depth 795 mm. Comparing the photograph below with one taken two years earlier it does appear to