

1969 Seabird Wreck: PCBs probably guilty

We still do not know what initially weakened and starved the thousands of guillemots (Uria aalge) and other seabirds washed up on the shores of the Irish Sea in the autumn of 1969. But, thanks to the strangely belated report issued by the Natural Environment Research Council (The Seabird Wreck of 1969 in the Irish Sea: culled by Dr M. W. Holdgate) we can be pretty certain what gave them the coup de grace.

More than 12 000 dead birds seem to have drifted ashore, and since many more probably sunk or were washed out into the Atlantic, the true death toll may have been as high as 50 100 000. Unlike the over publicised deaths of young seals off the Cornish coast at roughly the same time, such mortality among guillemots is not a frequent occurrence. There have been similar wrecks in the past, and the report mentions 11 for guillemots and the auks in the last century. One, of guillemots in the Solway Firth in autumn 1907, shares with the 1969 wreck the fact that most corpses found were obviously starved. Were we merely seeing in 1969 an unusual but not unprecedented avian catastrophe, or was increasing marine pollution the cause? In autumn, adult guillemots are moulting and flightless. There were severe storms in late September 1969, but by then some birds had already come ashore. Probably the harsh weather merely increased the stress on the birds, causing more corpses to be washed on shore; it cannot itself have been fatal. There seems to have been no sudden shortage of the fish species on which these birds depend, nor was there evidence of any toxic blooms of plankton. No pathogenic organisms could be found in the corpses, but this does not necessarily rule out an epidemic disease as the initial cause of starvation, since the tests took place some time after death.

The condition of the dead auks showed empty foreguts and stomachs, with less than half the normal body weight. Subcutaneous fat was absent, and the muscles were thin and wasted. All the livers were dark and full of blood, with unusual

internal lesions which resembled those in chicks fed experimentally with PCBs (polychlorinated biphenyls). See (New Scientist, vol 50, p 16). Again, most of the kidneys were pale and swollen, similar to those of finches killed in the lab with PCBs. Levels of mercury, lead, cadmium, arsenic and some other heavy metals were high, and so were concentrations of PCBs and organochlorine pesticides. However, the range of contamination by organochlorines was not markedly higher than that found in healthy birds shot at the same time; seawater concentrations of metals and organochlorines did not seem to be higher than usual.

What is significant, though, is the high concentrations of PCBs in the livers of the dead guillemots; the average was 111 ppm, ranging from 2 to 880 ppm. It seems clear that whatever led to the initial malnutrition, it caused the seabirds to draw on their fat reserves, which is where PCB and other organochlorine residues are normally carried. The PCB was metabolised and passed to the liver, kidney and brain. Thus five healthy guillemots analysed for PCB had 3.4 ppm in the whole body and only 0.4 ppm in the liver; five similar birds found dead had 3.2 ppm in their (half size) bodies and 56 ppm in their livers. While it cannot be proved that this was fatal, the lesions in kidney and liver were typical of birds deliberately poisoned with PCB.

The implications of this report are not reassuring. Pollutants seem to be present in the shallow seas around Britain at levels which do not, apparently, build up even at the head of food chains to overtly lethal levels. But they do, inferentially, increase the chances that a bird under stress from some other cause will die rather than recover. In this instance, PCBs seem to have made certain that the starved guillemots were poisoned before they could feed again. Sublethal pollution nibbles away at ecological safety margins, and can have a profound effect on the balance of whole populations.

Jon Tinker

Technicians and Irish industry

A shortage of skilled manpower and formidable competition from the industrial giants of Europe has always challenged the survival of Irish industry. In spite of this, the past decade was unprecedented for Ireland in terms of increasing prosperity and industrial growth. Much of this industrialisation, a mixed blessing in many Irish eyes, has been assisted by foreign investment and imported expertise. Now, as Ireland views the implications of possible EEC membership, many of the 3000 small manufacturing firms, which comprise more than 90 per cent of Ireland's industrial establishments, are facing the future with understandable apprehension. It is apposite, at a time when recent setbacks in the textile industry have made their impact, that "Irish technology in the 70s" should be the subject for the managerial symposium of the Irish Laboratory and Allied Technicians Association. Perhaps symbolically, the symposium was held in Donaghadee, a South-Dublin seaport from which many Irish emigrated to Britain in the past.

It is certainly true that the government recognises that a home-based supply of highly qualified manpower is a prerequisite for the further growth of science-based industries. Dr A. C. O'Sullivan, chairman of the Cork Scientific Council, stresses the importance of technicians in contributing to

industry is approximately one to one, as compared with a figure of four to one in Britain. To overcome an historical bias against technical education in Ireland, Dr O'Sullivan proposes that the professional standing of technicians should be radically improved. Moreover, maintenance grants and scholarships should be made available to students during the course of their technical education. Complementary to upgrading their status generally, Professor C. O'Leuca sees a role for technicians as advisers to the National Research Council. As such, technicians could serve in assessing those areas of the Irish economy which would benefit most from the input of science.

Technical training in Ireland is largely the responsibility of AnCo, the Industrial Training Authority, which was established in 1967 under the Industrial Training Act. Although still in its formative phases, AnCo aims to provide suitable training for all levels of staff in industry from management to operatives.

Undoubtedly AnCo will play a vital role in the future development of Ireland's many small industries. It is on these small industries, each employing less than 30 people, that much of Ireland's industrial future is based. Mr B. Connellan of the Irish Management Institute states that small firms which manufacture standard products will probably not survive.