Torpedo electric tissue and purified membrane fragments enriched 50–100 times in α-toxin sites and containing the cholinergic receptor as 10–30% of their protein.

Nevertheless, we were able to repeat the observation made by De Robertis when the proteolipid was measured by the method of Lowry as modified by Hess and Lewin. Starting from 1 ml of a suspension of membrane fragments of specific activity 890 nmol of toxin sites per g of protein (6.6 mg protein per ml) the C : M extract contained 17 μg protein after MPTA labelling as compared with 76 μg protein in the absence of DTT and MPTA.

If after ^{3}H-MPTA labelling, however, the membrane fragments are exposed to an oxidising reagent such as 1 mM 5,5′-diithio*bis*-(2-nitrobenzoic acid) (DTNB) C : M extracts 46 μg of protein from 1 ml of membrane suspension, a value closer to that found before DTT treatment. In both conditions, that is after ^{3}H-MPTA labelling and with or without DTNB treatment less than 2% of ^{3}H-MPTA (and not 6% and 14% as mentioned by De Robertis) is extracted into the C : M. Therefore, –SH reagents markedly modify the extractability of the proteolipids by C : M but show no effect on that of the radioactively labelled receptor.

During these control experiments, we noticed that DTT added to the C : M extract of proteolipid considerably enhances its transfer into an aqueous 1% Triton X-100 phase (the ratio of aqueous to organic phase of 2.6 : 13.0 becomes 16.0 : 1.6 μg protein per ml in the presence of 1 mM DTT). Nevertheless, the DTT-solubilised proteolipids extracted by Triton X-100 still do not bind ^{3}H-toxin from *N. nigricollis* in the presence of physiological Ringer solution in the conditions routinely used for receptor assay.

Finally, a comparison has been made between native receptor-rich membrane fragments and membranes which have been extracted with C : M. SDS–polyacrylamide electrophoretograms of both preparations reveal the presence of the 39,000–41,000 daltons band characteristic of the cholinergic receptor protein. Electrophoretograms of membranes labelled with ^{3}H-MPTA show this to be the only band to be radioactively labelled and confirm its identity as the receptor.

These observations give additional support to one of our initial conclusions; that the C : M-extracted cholinergic proteolipid shows little if any relationship to the now well identified cholinergic receptor protein in its detergent-extracted form.

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Climate in the 1970s

A FEW words near the end of our letter[1] headed "Climatic reversal in northern North Atlantic", seem to have resulted in our diagnosis of recent climatic shifts being so widely misrepresented elsewhere that some further statement is necessary.

Our letter gave a diagnosis of what had been happening in the North Atlantic–European sector between 1971 and 1975, and was explicitly not a forecast. That diagnosis was, and is, valid, though it was probably not advisable to use the words "little ice age" to describe two decades of colder climate, and it was certainly not advisable to suggest that that episode was over just because of a run of four or five mild winters in Europe, when the other seasons (in spite of August 1975!) continue mainly cold, and the generally lower level of temperatures over the Arctic above 70°N, which set in about 1961, persists.

What has happened since 1971 may be largely attributed to a change of the prevailing wave positions in the circumpolar vortex, even though we do not yet know what causes such shifts involving the centre of the polar cap itself. In 1971 the Canadian Arctic became, for the first time, involved in the cooling that set in sharply in other sectors of the far north in 1961, and, just as sharply, the coldest centre was transferred to the Canadian sector. This meant that, there was a great increase in the south to north thermal gradient between the western Atlantic and northern Canada, particularly in the winter months, resulting in a great increase in the energy of the atmospheric circulation over the North Atlantic, driving mild air towards Europe and more saline water to Iceland—as M. Rodewald (unpublished) has pointed out. But these conditions do not seem to have penetrated as far into the Arctic as during the general Arctic warming in the 1920s and 1930s, and it is not yet clear whether the mechanism described since 1971 is capable of restoring conditions there to what they were before 1960. Doubts on this are strengthened by observation that the centre of the polar cold regime and the waves in the circumpolar vortex returned to their 1960s' positions for about six months around late 1973 and again in 1975. The ice then again increased in the sector east of Greenland, and once more approached the coasts of Iceland in July and August 1975, perhaps for the first time this century in those months.

S.-A. Malmberg informs me that in June 1975 off north Iceland the salinity anomaly was slight, only $-0.03‰$, though the temperature anomaly was -1.60 °C. No influx of the Atlantic watermass into northeast Icelandic waters was observed in June 1975. The ice conditions were "relatively unfavourable", and by July 1975 there was ice in the East Iceland Current. In June 1975 both the polar and Atlantic currents were weak in the north Iceland region. Sometimes both these currents are strong (as in 1964 and 1968), and sometimes one is strong and the other weak: no relationship has been found between them.

Recent investigations[2–4] imply that the great variations to which the volume of polar water transported by the East Greenland Current and the southward penetration of this water in the East Iceland Current are prone, may be one of the most interesting and important aspects of climatic change, affecting alike the development of major ice ages, the little ice age of recent centuries, and the cooling since the 1950s.

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Lattice absorption in small particles

LUKES[1] has suggested that the width of the lattice absorption peak for small particles of ionic solids at very low temperatures would be dominated by collisions of phonons with the surfaces. The estimate given for the phonon collision time, $\tau \sim R/v$, where R is the particle radius and v is the velocity of sound in the bulk, is, however, applicable to acoustic phonons only. This collision time is not relevant to the phenomenon of lattice absorption, which is due to the long-wave optical phonons. The collision time τ enters the calculations of lattice thermal conductivities at very low temperatures, when all other possible scattering mechanisms become ineffective. This is a well known boundary effect which has been investigated extensively[2,3].

As regards lattice absorption by small particles, many experiments have shown the absorption peak to be considerably broader than that calculated by using the bulk value of the damping constant γ appearing in the expression for the dielectric constant[4,5]. For small NaCl and MgO crystallites ($R \lesssim 1\,\mu$m) it has been estimated[6] that the damping parameter increases beyond its bulk value by a factor of ~ 2.5. No fundamental calculations of γ in small particles, analogous to those which exist for bulk crystals[7]. have so far been performed.

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