BIRMINGHAM UNIVERSITY LOCH NESS EXPEDITION, 1961.

PRELIMINARY REPORT.

RESULTS

1. Echosounding

a) The presence of a scattering layer at 12-18 F (22-33m.) was confirmed. The presence, horizontal extent, thickness and depth varied from day to day, but it was normally found in the shallower waters of the bays (Foyers, Urquhart, Morriston). The layer at times extended upwards at night.

This layer did not necessarily coincide with any temperature discontinuity; on one occasion it was situated in the bottom of water at 10° lying on water at 8.5°, and both scattering layer and thermocline sloped slightly (deeper downwind). On at least 6 other occasions there was no correlation.

Vertical plankton hauls with a closing net gave no evidence of a greater concentration of organisms at the echo-layer depth.

The individual objects comprising this layer cannot be very large, because of the diffuse nature of the echo. The provisional identification is that they are small fish (less than 8"), possibly char.

b) Larger echos were obtained from objects in the top 20 F of the Loch. By comparison with dead fish lowered on a weighted line, these echos came from single 2 lb. fish or from very tight small shoals.

c) Other non-biological echos were also obtained. In places, especially off the mouth of a river, echos were seen rising off the bottom at a rate of about 12-27 cm/sec. The size of the echos was such as would be given by less than 5 cc gas at normal pressure and certainly no sign of the bubbles could be seen against the small waves at the surface.

A deep layer (at 45-50 F) extending for approx. 1.5 miles and 0.25-0.5 miles wide was found in the deep part of the Loch off Inverfarigaig. This layer had a smooth "hard" top and was probably quite narrow. It coincided with a temperature discontinuity of about 0.4° in 2 F (compare the thermal gradient of 0.1 per 10 F at similar depths elsewhere), and there are also indications from the oxygen analysis that there is a discontinuity. It is therefore possible that the layer is composed of detritus floating at the change in water density.

2. Oxygen

Oxygen concentrations ranged from 97% saturated at the surface, to 85% at 128 F just above the bottom. The latter value is given as a percentage of the amount of O_2 which could have been dissolved in water of the appropriate temperature, but at the surface.

3. Salinity

Sodium ion concentrations ranged from 0.17–0.18 mM/L at all depths, and potassium ion 0.010–0.013 mM/L.

4. pH

pH varied between 6.0 and 6.5.

5. Light penetration

The extinction coefficients for red and green light were 1.46/10 metres and 1.52/10 metres, (log reduction of light intensity).

6. Plankton

A horizontal tow with a 97 m.p. net gave the following as an average of the better hauls (individuals per metre^3) –

Copepods	1,500 - 1,900
Leptodora	0 - 19
Bythotrephes	6 - 60
Daphnia hyalina	6 - 30

Further analyses, including an estimate of total chlorophyll. and the extent of vertical migration, have still to be made.

7. Hydrophone Watch

No fish or other animal noises were heard, at frequencies up to 60 kc/s.

8. Bottom Dredging

Samples from the floor of the Loch showed little life, and no evidence of rotting vegetation.

9. No large animals were seen.