

The Floating Barnacle on the North Cornish Coast in the Summer of 1933

THE occurrence of the pelagic and planktonic floating barnacle, *Lepas fascicularis*, on the shore at New Train Bay, Trevone, near Padstow, Cornwall, in the summer of 1933, is an event sufficiently rare to be worthy of record along with other unusual marine events of that outstanding year.

About fifty individuals (with capitula 13–32 mm. in length) were taken alive on August 22 at about the time of high water (a.m.) at the beginning of a set of spring tides and within an hour or so of being stranded; some yielding living larvæ later. No others were found in the locality in the following week even after careful searching. In water most of them floated freely by means of their spherical peduncular secretion (diameter 11–20 mm.) containing gas-bubbles and vesicles, either singly, or in groups of two to five with their floating apparatus fused into one spherical mass (see Fig. 1). Two small ones with capitula 21 mm. and 22 mm. were attached—along with the tropical barnacle, *L. pectinata*—to floating fronds of *Fucus*, or to cinders, solely by means of a small

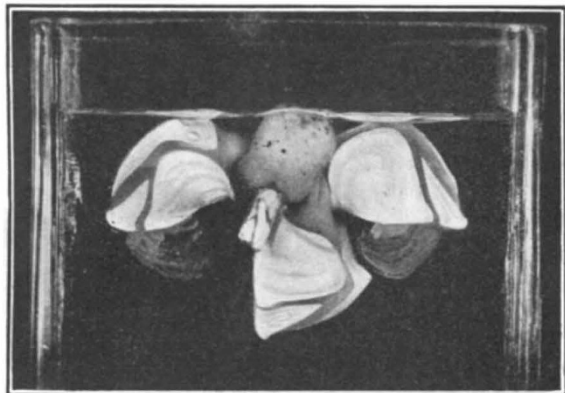


FIG. 1. A group of four barnacles, *L. fascicularis*, attached by short stalks to the common float seen in the centre. The group is photographed floating but held slightly submerged. \times about $\frac{1}{10}$. (Photo: P. Bond.)

flattened adherent expansion of the peduncle (thus confirming Ellis's original figure made in 1786), whereas others smaller and unattached (with capitula 14–20 mm.) had well-developed floats. Some of the larger individuals were attached to floating fronds of the seaweeds, *Fucus* and *Ascophyllum*, by extensions of the spherical float in such a way as to suggest that this organ may be adhesive and capable of expanding secondarily around a strange object, but simple experiments made under conditions normal for the species are required for further information. Darwin¹ has shown that the larval peduncle is always attached to some floating object, around which the float is formed later, presumably—we suggest—when the animal develops a tendency to sink and perhaps in response to increased pressure.

At various times the barnacles have been recorded as attached to a great variety of flotsam and jetsam, but the mode of attachment is rarely given. It would seem that a secondary attachment of the float would give a single animal greater mechanical efficiency in its feeding stroke, as no energy is required for or dissipated in maintaining a stable system; two animals on opposite sides of a free float with a body-

beat synchronised would, however, appear to give efficiency. In this regard it may be that the special form of the keel plate is correlated with modified muscular requirements in a floating habit of life.

This peculiar barnacle occurs in the open ocean and is recorded from all temperate and tropical waters², whence it is said to be blown ashore in various parts of the world by persistent winds. Damas³, however, has shown that it is carried normally into the Norwegian seas from the Atlantic along with other Atlantic plankton at about mid-summer. In a similar way Schmidt followed the gradual extension of the planktonic *Salpa* from the North Atlantic into the North Sea in 1905⁴. In some years, therefore, Atlantic plankton may be carried in the invading summer water, apparently independently of wind drift, into the North Sea, and there is evidence for a similar invasion of Atlantic water into the English Channel⁴. Whether the presence of the floating barnacle on the Cornish coast is an indication of an unusual offset of Atlantic water along the Cornish coast in the summer of 1933, or to a prevalent set of westerly winds, may perhaps be revealed later by hydrological observations.

Since 1786 only seven or eight records appear to have been made of the occurrence of *L. fascicularis* on the south coasts of England, and the same number for the west and north of Ireland^{1,5,6}. It has been found on the Northumberland coast on three occasions in the period between 1857 and 1894⁷. In the latter cases the barnacles would appear to have followed the route of *Salpa* mentioned above from the Atlantic and have been afterwards blown ashore; they are not infrequently found in the North Sea¹⁰.

L. pectinata has been recorded only about five times since 1803 from the coasts of the British Isles^{1,8,9}.

It would seem that the interesting floating barnacle may often serve as a useful indicator of important physical events, and is therefore worthy of being more widely known.

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- ¹ Darwin, "Monograph of the Cirripedes. Lepadidae", 1851.
- ² Gravel, "Monographie des Cirripèdes ou Thécostracés", 1905.
- ³ Murray and Hjort, "Depths of the Ocean", pp. 711 and 710, 1912.
- ⁴ Matthews, Int. Fish. Invest. Mar. Biol. Assoc., Cmd. 4641, 1909.
- ⁵ Vallentin, *J. Roy. Inst. Cornwall*, 55; 1907.
- ⁶ Nichols, *Irish Nat.*, 24, 10; 1915.
- ⁷ Norman and Brady, *Trans. Nat. Hist. Soc. Northumb., Durh. and Newcastle, N.S.*, 3, 2; 1909.
- ⁸ Cocks, Ann. Rep. Cornwall Poly. Soc., 1849–50.
- ⁹ Pillsbury, *Bull. U.S. Mus.*, 60; 1907.
- ¹⁰ Schaper, *Wiss. Meeresk.*, Kiel, 19, 1919–22.

Travel of a Pulse of Stress in a Steel Wire

A BRIGHT drawn steel wire $\frac{1}{4}$ in. diameter and 459 ft. long was arranged with one end lying in a solenoid which was excited with direct current. This end of the wire passed through a search coil placed near the central part of the solenoid, the search coil being connected through a valve set to an oscillograph. The other end of the wire was firmly clamped. When the clamped end was struck a sharp blow a pulse of stress was started and travelled along the wire with the speed of sound. On reaching the search coil the changes of permeability of the wire due to the changes of stress gave rise to an E.M.F. which was recorded by the oscillograph. This pulse of stress was reflected from the end of the wire near the search coil and travelled back to the clamped