

by a shallow sea since Pliocene times. Pemba, by contrast, has been separated from both Africa and Zanzibar since Miocene times by rift-faulting, and it has distinctly Indo-Malayan biological affinities<sup>4</sup>. It is tempting, therefore, to regard *M. acuminata* as long native to Pemba, and this view would find confirmation in the discovery that it was genetically and cytologically distinct from other forms of the species. An alternative view (which would be supported by the discovery that it had near Asian relatives) is that it is a comparatively recent introduction, presumably at the hands of Arab travellers about a thousand years ago. But why a seeded banana should be carried across the Indian Ocean, and why, if that did happen, the species is not also present in Zanzibar and the neighbouring continental coast (for example, the lower Usambara hills) is not obvious. There evidently is here an extremely interesting phytogeographical and evolutionary problem.

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<sup>1</sup> Cheesman, E. E., *Kew Bull.*, 17 (1948).

<sup>2</sup> Simmonds, N. W., *J. Genet.* (in the press).

<sup>3</sup> Tidbury, G. F. (personal communication).

<sup>4</sup> Stockley, G. M., Report on the Geology of the Zanzibar Protectorate (Zanzibar, 1928).

### Occurrence of *Fucus inflatus* L. forma *distichus* (L.) Børgesen on the North Coast of Scotland

WHILE carrying out an ecological survey of the north coast of Scotland during the summer of 1951, *Fucus inflatus* L. forma *distichus* (L.) Børgesen<sup>1</sup> was found along part of the north coast of Caithness. This subarctic species has not been recorded previously for the mainland of Britain.

In the north-east Atlantic area, *F. inflatus* is recorded from Iceland, Norway, Sweden, the Faeroes and the Shetlands; it is not recorded, however, from the Orkneys. Lund<sup>2</sup> has reported a recent immigration of a larger form of the species (*F. inflatus* L. f. *edentatus* (De la Pyl.) Rosenv.) into Danish waters; this form was not found anywhere on the north coast of Scotland.

In Caithness, *F. inflatus* f. *distichus* was found from a point three miles west of Holborn Head (near Thurso), westwards for about twelve miles only, to near the county boundary. It is restricted to very exposed, steep (30°–50° slope) reefs of Caithness flagstone, facing north-west or north. The range may extend slightly farther, both east and west, on similar reefs that are difficult to reach. On the most exposed reefs *F. inflatus* is often the only fucoid present and forms a distinct community (6 in.–18 in. vertical range) coincident with the upper limit of barnacles. With slightly less exposure the following two fucoids may be found, above and below the *F. inflatus* zone, respectively: (i) *F. spiralis* L. f. *nana* Kjellm., a dwarf form produced by severe exposure conditions; Børgesen<sup>1</sup> has described a similar 'eciform' from the Faerøes; (ii) *F. vesiculosus* L. var. *vesiculosus* Cotton, a sturdy evesiculate variety found commonly on exposed British coasts.

*F. inflatus* f. *distichus* is very well adapted for survival in habitats subjected to constant heavy surf. Good descriptions are given by Børgesen<sup>1</sup> and Printz<sup>3</sup>; but the Caithness plants are rather larger than those described by these authors. The plants are short and sturdy, usually 8–14 cm. in length, but with occasional fertile specimens up to 20 cm. long. The holdfast may be as much as 2 cm. in diameter and is attached very firmly to the rock; the stipe is short and thick and stands erect, and the distal branches arch over very characteristically. The thallus is narrow, entire and evesiculate, seldom more and usually less than 4 mm. wide, decreasing in width upwards, and consisting mainly of a stout midrib with very narrow lateral wings. The receptacles are typically terminal, linear, narrow and acuminate, round in section, undivided, usually 15–25 mm. long and 2–3 mm. broad, but occasionally up to 40 mm. long and 4 mm. broad. This species is hermaphrodite (monœcious), and during the first half of July was fruiting abundantly; by the end of August fruiting had virtually ceased.

Apart from Børgesen's<sup>4</sup> well-known record of the form *edentatus* at Lerwick (Shetland Isles), recent search has disclosed the following additional records of *F. inflatus* from various parts of the British Isles: (1) fertile specimens of genuine *F. inflatus* f. *distichus*, collected during April and May 1909 from the Island of Lewis, have been located in the Kew Herbarium (the fruiting period in Britain therefore appears to extend at least from the beginning of April to the end of July); (2) examination of old herbarium specimens of *Fucus anceps* Harv. and Ward, only recorded from Kilkee, Co. Clare, Eire (see Carruthers<sup>5</sup>), entirely confirms Børgesen's opinion (ref. 1, p. 725) that this small fucoid is simply a form of *F. inflatus* f. *distichus*; (3) Traill<sup>6</sup> records a single specimen of "*Fucus distichus* L." cast ashore in the Firth of Forth in 1882; unsuccessful efforts have been made to trace this doubtful specimen.

These confirmed records from Lewis and Kilkee suggest that *F. inflatus* f. *distichus* may be fairly widespread on exposed northern and western coasts of the British Isles. The rather restricted range on the north coast of Scotland suggests that the species may have become established there relatively recently; but, since the area has not been investigated critically before, the matter must remain in doubt.

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<sup>1</sup> Børgesen, F., "Botany of the Faerøes", 2, 339 (1903); 3, 683 (1905–8).

<sup>2</sup> Lund, S., *Nature*, 164, 616 (1949).

<sup>3</sup> Printz, H., *Skr. norske Vidensk.-Akad. Oslo* (1926).

<sup>4</sup> Børgesen, F., *J. Bot.*, 41, 300 (1903).

<sup>5</sup> Carruthers, W., *J. Bot.*, 1, 353 (1863); 2, 54 (1864).

<sup>6</sup> Traill, G. W., "A Monograph of the Algae of the Firth of Forth" (Edinburgh, 1885).