contained embryos that it is probable that this span represents first maturity. Since *L. hilli* achieved, in general, a length of 13–17 mm. in 30 days, 17–19.5 mm. at maturity and 17–21 mm. in 60 days it might be crudely assumed, given a constant increase in length during the second month, that maturity was achieved, on average, in the last two weeks of the second month. Comparing lengths at 30 and 60 days, however, it is seen that the average daily increase of about 0.5 mm. in the first month is not maintained in the second. This check in growth was no doubt due to the attainment of maturity at 17–19.5 mm. It would therefore seem more probable that the growth-rate of 0.5 mm. a day observed in the first month continued to maturity, which on these terms occurred in general on the thirtieth to forty-third day. Thereafter, a growth-rate near 0.03 mm. a day is indicated.

Throughout the voyage the sea temperature was high, ranging from 24.2° to 26.1° C. The conclusions advanced above concerning both growth-rate and the length of the juvenile phase must consequently be applied with caution to animals taken in cooler waters.

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¹ Anton, J. F., *Scot. Nat.*, **61**, 65 (1949).

² Evans, F., *J. Inst. Navig.*, **8**, 205 (1955).

Occurrence of Forms of *Fucus distichus* L. emend. Powell on North Rona and Sula Sgeir

Fucus distichus L. emend. Powell is an extremely polymorphic alga, widely distributed principally on arctic and sub-arctic coasts, and I have recently proposed¹ the recognition of four principal subspecies of this plant. Two of the subspecies—subsp. *edentatus* (De la Pyl.) Powell (a large plant of sheltered shores), and subsp. *anceps* (Harv. et Ward ex Carruthers) Powell (a small plant of exposed shores)—have southern limits in northern and western parts of Scotland and Ireland², and are the rarest fucoids in Britain.

As a member of the Glasgow University North Rona Expedition (June 23–July 23, 1958)³, I have recently been able to investigate the botany and littoral ecology of the small, remote Scottish islands of North Rona and Sula Sgeir which lie about 45 miles north-west of Cape Wrath. Subsp. *anceps* was found on both islands, in small quantity but at several sites in each case, at its usual high level on shores exposed to severe swell and wave action. Subsp. *edentatus* was found on North Rona only, in the moderately sheltered inner parts of two narrow geos facing north and north-east respectively, in the north-eastern part of the peninsula of Fianuis. In the north-facing geo, only a few young (non-fertile) plants were found on large mid-littoral boulders; but in the north-east-facing geo, subsp. *edentatus* formed a distinct belt (of varying depth) in the upper half of the mid-littoral zone, along about 25 m. of shore each side of the geo, and both young (non-fertile) and older (fully fertile) plants were present. The largest plant was 42 cm. in length. Several plants of both subspecies have been examined in detail; caecostomata¹ were present in all, and the conceptacles were hermaphrodite. The only other fucoid found was *F. spiralis* L. (mostly f. *nana*)—very scarce on North Rona only.

The present findings confirm previous observations² that subsp. *anceps* can survive more severe exposure conditions than any other fucoid in northern Britain; and these records from such small and isolated islands strengthen my belief² that subsp. *anceps* is a relict plant in Britain, a survivor from a period when the climate here was colder.

Subsp. *edentatus* has been reported previously from only three localities in Britain (in the harbours of Lerwick and Scalloway in the Shetland Isles, and in the North Haven on Fair Isle)²; the North Rona records therefore establish a new southern limit for the plant on the British side of the North Sea. I have suggested elsewhere² that subsp. *edentatus* may have been introduced to the Shetland and Fair Isle localities within recent centuries, perhaps by fishing boats; but it seems scarcely likely that it could have been introduced to North Rona in this way, even though we saw as many as four Norwegian fishing boats at a time anchored close inshore there during periods of rough weather. The possibility of introduction by floating plants cannot be ruled out, of course, but this seems not very likely in view of the prevailing winds and currents. There remains the possibility that subsp. *edentatus* has been present on North Rona, and perhaps at the other three Scottish localities, a very long time—a relict plant, as subsp. *anceps* appears to be; I now much incline to this view.

A detailed report on the littoral flora and fauna of North Rona and Sula Sgeir is being written in collaboration with my colleague Mr. T. B. Bagenal, and will be published elsewhere.

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¹ Powell, H. T., *J. Mar. Biol. Assoc. U.K.*, **36**, 407 (1957).

² Powell, H. T., *J. Mar. Biol. Assoc. U.K.*, **36**, 663 (1957).

³ Bagenal, T. B., and Powell, H. T., *Nature*, **182**, 775 (1958).

Selection of Cell Lines in Tissue Culture by the Use of Cytotoxic Antisera

THE cytotoxic action of antisera against nucleoproteins isolated from HeLa, H.Ep. No. 1 and MCN cells has been previously reported from this laboratory^{1,2}. Of particular significance was the observation that only cell lines exhibiting epithelial-like morphology (Ep. L) were destroyed by the HeLa and H.Ep. No. 1 antisera, while cells with fibroblast-like morphology (Fb. L) were affected only by the MCN antisera. Consistently, cultures of susceptible cells were completely destroyed by a 1:50 dilution of cytotoxic antisera in the presence of guinea pig complement. During the course of these investigations, an established strain of human amnion cells was encountered the behaviour of which toward HeLa and MCN antisera was different from that of cell lines previously examined. A fraction of the cell population was resistant to the MCN antiserum and a fraction was resistant to the HeLa antiserum, even when the antisera were employed at 1:4 dilution. It is the purpose of this communication to report the selection of two cell lines from the human amnion strain. These two sublines can be distinguished on the basis of their morphological characteristics, their capacity to support virus multiplication, and their sensitivity to the HeLa and MCN antisera.

The human amnion strain was obtained through the kindness of Dr. L. Hayflick from the Tissue Culture Laboratory of the University of Texas,