

It is likely therefore that soil can exercise restraint on growing roots, and further work on artificial systems should define the effects more fully.

The Letcombe Laboratory has also turned its sophisticated hardware to the time honoured problem of the uptake of nutrients into roots. One interesting finding has been that the unreactive silica, long thought to enter roots passively, actually seems to enter by an active process similar to ion uptake. An offshoot of this work has been the production of stingless nettles, grown in a medium free of the silica which concentrates in the hairs and hardens them into stinging organs.

The radiobiological expertise at Letcombe is of course extremely useful for tackling problems of root physiology. Autoradiography of sections of root cultured in radioactive media can tell a great deal about the behaviour of various substances after uptake. The old idea that aluminium stops root development by blocking cell division has been investigated using scandium-46 (the most suitable isotope available). Autoradiographs of onion roots have shown that scandium-46 enters the cells of the meristem well in advance of cell division which would certainly be expected if it were going to block division.

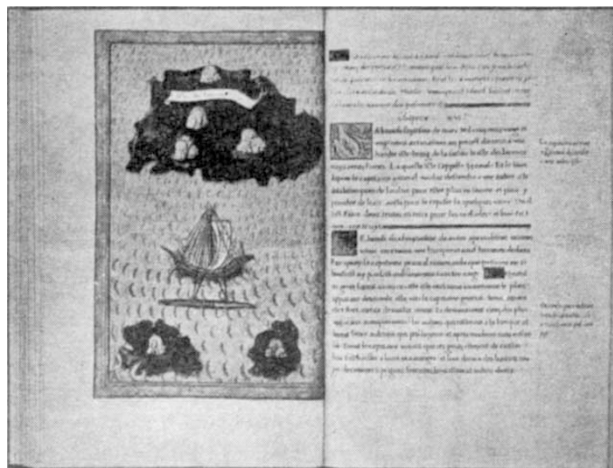
The development of a procedure for identifying soils that are deficient in copper is one of the uses that the laboratory's monitoring equipment has been put to. There are also schemes for measuring the uptake of nutrients in the field, the utilization of nitrogenous fertilizers and the distribution of roots in the soil. At the same time the environmental radioactivity department still keeps a watchful eye on the strontium-90 in milk, which continues to decline.

#### FACSIMILES

### Magellan Translated

MAGELLAN'S first circumnavigation of the Earth has been described by Mr R. V. Skelton, retired superintendent of the Map Room of the British Museum, as "an event which inspired men's imagination as much as the launching of the first satellite did in 1957". Now, 450 years after Magellan's fleet first set sail, Yale University Press, fresh from its dubious triumph with the Vinland map, is publishing a reproduction in facsimile and a translation by Mr Skelton of a French manuscript describing the voyage.

The manuscript, attributed to Antonio Pigafetta, an Italian volunteer crew member of Magellan's fleet, is one of four surviving from the early sixteenth century and the first to have been translated into English. Two of the other manuscripts are in the Bibliothèque Nationale, Paris, and there is an Italian version in the Biblioteca Ambrosiana, Milan. The Yale manuscript has had a chequered existence. Style and quality of craftsmanship suggest that it was probably destined for someone of high social standing, and indeed the first records of its existence are in the Court of the Cardinal of Lorraine. By 1720, it was part of the library of M. Beaupré, a judge of Nancy. Eventually it was bought by a London bookseller, and then by Guglielmo Libri. In 1862, Sir Thomas Phillipps bought the manuscript for his collection in Cheltenham, where it remained until it was purchased by Messrs Robinson Brothers in 1945. In 1964, it was



A facsimile page from Pigafetta's manuscript.

bought by Mr Beinecke and presented to the Beinecke Rare Book and Manuscript Library at Yale.

Pigafetta, the author of the manuscript, came from a wealthy Venetian family, and he was about thirty years old when he set sail with Magellan in 1519. His powers of description and vivid imagination combine to give an impressive account of the three-year voyage which gave Europeans their first introduction to the people and customs of the Pacific, and the account which Pigafetta brought back did much to change man's conception of the world. In the manuscript, Pigafetta describes the mutiny of the sailors and the turning back of one of the fleet, and the hunger, thirst and illness which constantly troubled them, but perhaps the most enlightening parts of the story are those which describe the customs of the Pacific Islanders. In one encounter with these people, Magellan was killed, and in fact, of the 270 people who set sail, only eighteen survived the voyage.

The Yale publication will contain full colour illustrations and twenty-three maps, the only charts derived from originals made during the voyage. Among the illustrations will be one of the three known examples of the terrestrial globe made in 1526, which was depicted in the foreground of "The Ambassadors" by Holbein. By publishing a facsimile and translation of the manuscript, Yale is hoping to bring the manuscript within the reach of both scholars and interested lay people, but the price of £45 for the two volume edition will probably restrict the market largely to libraries.

#### DEMOGRAPHY

### How Many Britons is Best?

THE Institute of Biology has a nose for topicality. Last year, it devoted its annual symposium to biology and ethics; this year it set its speakers to grapple with the theme of "the optimum population for Britain". The issue neatly segregated the social scientists into the hawkish camp, which saw no danger in Britain's present rate of population growth, and the biologists and politicians into the legion of doves, which believes that Britain is already overpopulated.

The symposium, which was held in London on September 25 and 26, produced a resounding democratic victory for the doves. Sir David Renton, MP,