ENGINEERING

Engineers of Britain, Unite

ONE more attempt to unify the engineering profession in Britain was set under way in May this year by the official foundation of the United Kingdom Association of Professional Engineers (UKAPE). Having found its feet and its first fifteen hundred members, UKAPE emerged to face the world on September 24, and is now starting actively to campaign for members among what the vice-president, Mr R. L. Clarke, claimed to be 200,000 potential recruits.

The association owes its existence to the absence of a trade union or similar body covering the interests of professional engineers. The Engineers' Guild, which since 1938 has been trying to overcome the fragmentation of the profession, suffers from its legal status as a company in that it is not entitled to enter into negotiations on such topics as conditions of employment. It was in fact ten leading members of the guild who decided towards the end of 1968 that a new body was needed which could act to promote the interests of members, and the result of further discussions was the establishment of UKAPE.

Although UKAPE has no official connexion with the Council of Engineering Institutions (CEI), it does in practice use membership of one of the fourteen institutions affiliated to the CEI as a criterion for eligibility. The term "professional engineer" is thus effectively given a definition, which covers two groups—corporate members of an institution, who may become full members of UKAPE, and non-corporate (including a fair number of technicians who are on the way up), who are eligible for associate membership. But does this stipulation of what it is to be a professional have the effect of creating a new division among engineers by preventing a whole section of those who are employed in engineering from joining UKAPE? Apparently this demarcation is quite intentional, so it may be that the price for bringing together the professional engineers will turn out to be their further separation within the engineering industry as a whole from those who are not "professional".

UKAPE is endowed with the legal powers of a trade union, but expects to be very sparing in its use of them. It will not, for instance, seek affiliation to the TUC, and seems to be totally horrified at the thought of strikes. What it does intend to do is not really clear at all—Mr Clarke said, for example, that within the engineering profession UKAPE was concerned with "those areas where the chartered engineer is unprotected or his interests inadequately promoted", and to qualify this, added only that "time will show where these areas are". Its basis for action will be what was referred to as "the ethics of the engineering profession", defined on request by the president, Mr G. B. M. Oliver, as "something that every engineer knows in his heart".

The future of UKAPE may in the end depend on two factors—how successful it is in winning new members, particularly in fields where other unions are relatively strong, and how far it is able to steer a middle course between militancy and merely giving advice without giving the appearance of ineffective compromise. Perhaps a common reaction will be that of Mr W. Howie, MP for Luton, and himself a chartered engineer, who remarked that he was pleased to be asked to join but that "I've just looked at the fee—and I'm wondering".

WOMEN ENGINEERS

Recruiting More Girls

As part of the campaign to attract girls into engineering, the Central Office of Information has produced an 18 minute film: "The Engineer is a Woman". The picture shows Sally Craven, one of the four engineers featured at work. Her job as a maintenance engineer

provided plenty of opportunity for wide vistas of factory floors. Girls should be impressed by their chances of breaking into a man's world, although the drawing office may appeal to some more than the dry dock.

PLANT PHYSIOLOGY

How Roots Work

from our Botany Correspondent

ALL manner of complex plant physiology was on show when the Letcombe Laboratory of the Agricultural Research Council opened its doors to visitors last week for the first time since its name was changed from the Radiological Laboratory earlier this year. Most of the work in progress is concerned with plant roots and soil, which have taken up more and more of the laboratory's resources since the need to monitor environmental radioactivity began to decline after 1962.

One of the many unsolved problems facing agricultural botanists is the extent to which different soils restrict the growth of roots. The approach to this problem at Letcombe is to grow cereals in beakers containing small glass beads through which an aerated culture solution is passed. When the beads measure 3 mm across they restrict growth very little, but when they are only 1 mm across growth is quite distorted at the apex, and lateral roots proliferate, making the whole root system look stunted.

But of course this does not mean that small soil particles necessarily restrict growth in the field, where there is no constraint on the soil equivalent to the sides of the beaker. And so the glass beads were put between flexible plastic, and preliminary results indicate that although there is less restriction, the 1 mm beads still affect the morphology of growing roots.

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.

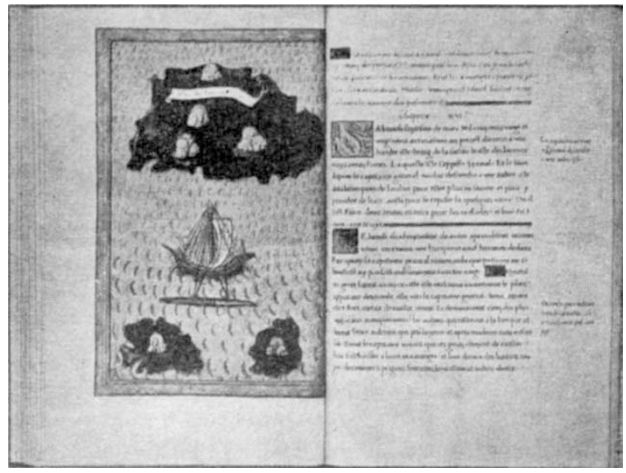
The development of a procedure for identifying soils that are deficient in copper is one of the uses that the laboratory's monitoring equipment has been put to. There are also schemes for measuring the uptake of nutrients in the field, the utilization of nitrogenous fertilizers and the distribution of 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 fascimile 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 Ambrosina, 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 Gugliemo 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 bought by Mr Beinecke and presented to the Beinecke Rare Book and Manuscript Library at Yale.



A facsimile page from Pigafetta's manuscript.

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,