

oranges, greens, purples and yellows. There were more continental exhibitors than previously and most of the West European countries were represented, as well as East Germany. The overall impression given by the display, however, was of general development rather than revolutionary innovations.

Manufacturers are constantly seeking new pigments soluble in volatile solvents for fast drying inks, and some of these were shown. There has also been a general improvement in the stability and colour retention of resins, solventless corrosion resistant coatings for marine applications and low odour compounds for interior decorating. The relatively new "chloride" process for the manufacture of titanium dioxide—the whitest white pigment—gives a purer, whiter product than the old "sulphate" process and the applications now range from paints, plastics and printing inks to leather, cosmetics and artists' colours.

One interesting device on show was a combination of spectrophotometer, data-transfer system and computer which measures the reflectance of a dyestuff on a substrate at sixteen spectral points and stores this information. This enables colour matching and prediction of dye recipes to be accomplished very easily. Other exhibits included a particle size disk centrifuge and the usual selection of viscometers, tackometers, mixers, mills and grinders. Also on show is the cabinet developed by the Paint Research Station for testing the fungicidal activity of paint films. This cabinet can be adapted to simulate fungal attack in the tropics or inside breweries, for example, and should be useful in the study of the disfigurement of painted surfaces by biological attack.

The brightest stands were, of course, those exhibiting daylight fluorescent pigments. Fluorescent colours are about four times as easy to see as the nearest and brightest non-fluorescent colour and are available in a range of hues with such picturesque names as "saturn yellow", "sunset orange" and "rocket red". The chief uses for these brilliant colours are in paints, PVC and paper and textile printing. Several interesting new colour stylings for cars were also to be seen; a range of gold shades produced by mixing a new pigment called "Gold Powder Lake" with aluminium powder was particularly pleasing.

#### PROFESSIONS

### Women in Chemical Engineering

ON March 24, the third week of Women in Engineering Year was marked by a conference held by the Institution of Chemical Engineers at University College, London. Professor J. F. Richardson, chairman of the institution's careers committee, provided the theme for the conference by saying that the task of attracting more women to chemical engineering needs to be tackled in the schools. The conference seemed to agree that opportunities for study and employment are apparently available in plenty if only girls would take advantage of them.

Dr J. W. Mullin pointed out the value of flexibility in chemical engineering courses. At University College, London, where Dr Mullin teaches, there is, as well as the three year course in chemical engineering, a one year diploma course for graduates in chemistry or other engineering subjects. Girls in particular seem

often to be encouraged to study chemistry rather than chemical engineering, so that conversion courses can help to save them for chemical engineering.

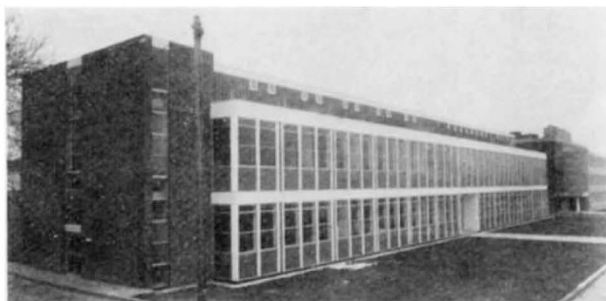
The MSc and diploma courses in biochemical engineering—covering topics such as enzyme kinetics, metabolic regulation and immunochemistry—and the joint honours course in chemical engineering and microbiology beginning at Swansea next September, should help to attract girls. When twenty-eight sixth form girls attended a week's course last summer at Swansea, the response was apparently most encouraging, and some university departments do seem to be prepared to follow flexible policies on admissions.

Dr M. Guter, managing director of CJB (Projects) Ltd, saw no barriers to the employment of women as chemical engineers, except perhaps in the commissioning and operating of plant abroad—sites such as those in Algeria on which his company is now working, for example. The general opinion of industrialists present was that there would be no prejudice against women in chemical engineering if only they were available to be considered for jobs. Raising families was not seen as a great problem for, as Mr C. S. Windebank, past president of the institution, said, the turnover of female staff to be expected as a result of marriage is equalled by the turnover of men, which merely reflects the modern attitude to employment. Dr P. Eisenklam of Imperial College, London, made the telling point that employers expect a positive creative contribution from chemical engineers early in their career, so that the loss of married women should be insignificant.

#### ARCHITECTURE

### Laboratory at Porton Down

A NEW laboratory costing £207,000 was opened at the Chemical Defence Establishment at Porton Down on March 21, by Mr J. Morris of the Ministry of Defence. The building has been specially designed for work on



aerosols and air cleaning techniques, and will house the physicists at the establishment. Critics of research on chemical warfare will no doubt rejoice at the lack of architectural distinction.

#### FOUNDATIONS

### A Cosy World

IN spite of being closed to visitors for two months for building work, the Ciba Foundation managed its usual range of business in 1968. According to its



annual report, it held five of the private international symposia which the rest of the scientific community will eventually be able to appreciate when the symposium volumes are published. It also held its two main annual lectures, various discussion meetings and conferences and put up 1,101 guests from 49 countries. But it has lost a permanent lodger. The National Kidney Research Fund had by September collected its first £100,000 allowing it, as Dr Wolstenholme says, to have "its own modest office elsewhere".

The report also records annoyance with Dr Margaret Mead, who has apparently published an article on "the small conference" which not only fails explicitly to mention the work of the Ciba Foundation over the past twenty years but has added insult to injury in a footnote which Dr Wolstenholme believes refers to a Ciba symposium held in 1965 at which, Dr Mead says, "almost every rule of how to run a conference was violated". Although she seems to have added that, despite everything, "it was a good conference and a good publication", the sting remains.

The foundation's world remains, however, unruffled. It is good to know, for example, that, towards the end of the year the daughter of an ambassador to London, "has given pleasure to guests and staff alike by coming to work as a receptionist to all our guests and visitors. She is a person who can and does very willingly help them with any personal problems—from the least awkward route to Hammersmith to the purchase of a vintage Rolls-Royce".

#### PERIODICALS

### Journal Redesigned

THE *Journal of Experimental Botany* is to have its face lifted in 1970. The format and appearance of the journal, now in its nineteenth year of publication, have not changed in any essential detail since the first issue. Members of the Botany Section of the Society for Experimental Biology, of which the journal is an official publication, feel that its present image is old-fashioned and staid in comparison with some of its competitors. Details of the new format have not yet been decided, but the aim will be to present an attractive modern periodical.

It is almost certain that the page size will be increased to 176 mm × 250 mm (B5), now popular on the Continent and among paper manufacturers but rarely used in Britain and the United States. It was proposed at a Royal Society conference of editors in 1966 that B5 should be recommended as an International Standard Size for journals, but there was no general agreement to this proposal. The council of the Royal Society has decided, however, that the Proceedings of the Royal Society will be published in this size. An immediate advantage of the larger page is the improved quality and clarity with which half-tone plates can be reproduced.

Professor L. J. Audus (Bedford College, London), editor of the *Journal of Experimental Botany*, hopes that the new format will appeal to contributors and subscribers alike. Professor Audus is particularly anxious to restore the balance of subject matter in the journal. His policy has always been to publish worthy papers from every field of botanical research. Recent issues have been lacking in reports of a bio-

chemical nature. Professor Audus hopes that plant biochemists will feel encouraged to publish their work more readily in the new-style journal, the first issue of which will appear in February 1970. Time taken for the publication of a paper in the journal has now been cut to an absolute minimum of seven months. Authors who would like to see their cherished manuscripts published in the first issue will have to hurry.

#### SHIPBUILDING

### Wooden Ships at Greenwich

THE first of what is promised as a series of select international seminars has just been held at the National Maritime Museum, Greenwich, on the theme of wooden shipbuilding. The series is a manifestation of the new image of the museum being promoted by Mr Basil Greenhill, who took over as director last year. The premises are having a face-lift—workmen on ladders are cleaning, refurbishing and reconstructing the display halls and are at present a hazard for visitors.

Mr O. Crumlin-Pedersen, the Danish naval architect turned archaeologist, correctly recognized the significance of the five Viking ships recovered in 1962 from Roskilde fjord. He is now director-designate of the Roskilde Viking Ship Museum, where the ships will go on display after preservation and reconstruction are complete, probably in May when one of the largest of the five ships should finally be ready. There has been a year's delay because, when reassembly began, it was found that the keel had taken up the shape of its ten century old resting place on the fjord bottom and none of the timbers would fit until the original shape had been restored. Repeated attempts—using something like a steam-box—were needed before this was achieved. It is now hoped that two months will be enough to fit to it the timbers and planking. Though Viking ships were nailed from earliest times, no nails were used on the keel, presumably to avoid weakening the key structural member. All the ship's lines were gathered up in prow and stem-post to which the clinkers were keyed. Experience with the first ship to be reassembled indicates that stem and stern were even blunter than had been supposed. Ships of this type made the first long Viking voyages. They were known as "askes" because the top three strakes were made of ash.

The other four Roskilde ships are different, though the circumstances of their sinking make them of common date—the first half of the eleventh century. There is a large, heavily oared, speedy warship of the type probably used to raid England about AD 1000 by Svend Forkbeard; a large, pine-built ocean-going cargo ship of distinctively stout build of the type in which the first Europeans sailed to the Western hemisphere; a smaller half-decked Baltic coastal trader; and a small ferry or fishing boat for which there are no parallels or previous evidence. The continuing work on these ships will be on view to the public at the Roskilde Museum once the first ship goes on display.

Viking shipbuilding tradition had a measurable influence on the craft in England for several centuries up to the fourteenth century, when the square-tailed "cog" steered by rudder became the chief vessel type of northern Europe. Large numbers of old