training mean that the minimum length of training for engineering will be no longer than for hairdressing, which many girls are prepared to enter as apprentices. This should remove at least one of the barriers.

In Gloucestershire, Hertfordshire and the London Borough of Hounslow, employers who have difficulty in filling their craft and technician apprenticeships with boys are being encouraged by the Central Youth Employment Executive to give girls equal consideration. At the same time, youth employment officers have been urged to encourage suitably qualified girls to consider sandwich courses and apprenticeships. Initial reactions show that there is a great deal of work to be done. Prejudice against girl apprentices is strong in traditional manufacturing industries such as mechanical engineering, and employers are usually interested in giving jobs to girls only if insufficient boys are available. Another problem, which places responsibility on the schools, is that not enough girls obtain qualifications in science and mathematics to provide a good supply of recruits to firms prepared to take them.

EDUCATION

Professors for Everyman

LAST week Britain's university of the air, the so-called Open University, announced the appointment of its first five professors and two directors of studies. The three scientists among them are Mr J. M. Pentz, at present a senior physicist at CERN, who is to be director of science studies, Professor G. S. Holister, an engineer who will be coming home from Pennsylvania State University, and Dr Maxim Bruckheimer, currently senior lecturer in mathematics at the City University. In this first batch of appointments the Open University seems to have done its bit to reverse the brain drain, for apart from Professors Pentz and Holister another of the appointees, the classicist Professor J. Ferguson, has been recruited from the United States.

Despite the crisis in educational spending the Open University, as Miss Jenny Lee's personal sacred cow, seems to have survived unscathed. As well as announcing these appointments, the university is currently advertising for more staff, from assistant lecturers to professors, and for a librarian. According to the advertisement in *Nature*, "members of staff will be expected to devote a proportion of their time to private study and research", but it is not clear yet where this will be done. Mr D. Stafford, the secretary of the university, said this week that the university was looking for permanent premises somewhere in the home counties within commuting distance—fifty or sixty miles—of London. The plan is to site the Open University close to a conventional university so that its staff can use the latter's library and perhaps apparatus. But that may be straining the bonds of friendship too far, and Mr Stafford agrees that there could well be difficulties in catering for the needs of scientific research unless, of course, the Open University spends some of its money equipping its scientists. On the face of things, all this suggests that the Open University will be no place for scientists with anything but the most modest research ambitions.

If the staff of the university is to rely on conventional universities for its research facilities, how will the students fare ? The degrees which the Open University will offer will apparently be quite different from anything offered by the traditional universities. That may explain the eloquent silence of the Committee of Vice-Chancellors and Principals, which so far has made no official comment, not even a polite word of encouragement, about the project. The Vice-Chancellors' Committee has, however, recently accepted in principle the invitation to send three members to the council of the Open University. No matter how general the degrees are to be, however, there will have to be some laboratory work and the university intends to persuade all the existing adult and higher education agencies to provide the facilities. The same applies to libraries; local public libraries will apparently be expected to cope with the demand for multiple copies of textbooks. But where is the money to come from ? According to the Libraries Association, admittedly a vested interest, no one has any idea at the moment who will be paying for these special libraries, or, for that matter, what will be the most economic way of meeting the demand. The association makes no secret of its criticism that not enough attention has been given to libraries by the university's Planning Committee. The usual pattern in new universities is to appoint the librarian as soon as possible, but the Open University belatedly decided last week to employ a librarian and is now advertising the job. That in itself is something of a triumph for the Libraries Association, which has been pressing for the appointment ever since the planning of the university began, but the question of funds has still to be solved. The public libraries are overstretched already and there is no obvious reason why the university, with a budget for 1969–70 of £1·5–2 million, should not, like every other university, provide its students with the library they need. The report on the plans of the university, which is due to be published in January, three months before the university receives its Royal Charter, may contain some definite proposals.

GASTROENTEROLOGY

Easing the Pain

THE traditional special diet of milk, puréed vegetables, white meat and fish does not seem to be as valuable in the treatment of peptic ulcers as faith in the time honoured method has suggested. Twelve years ago patients eating a normal diet (with the exception of fried food) or the traditional special diet were shown to be no different with respect to the pain they felt or the extent to which their ulcers healed. More recently, at the MRC Gastroenterology Research Unit at the Central Middlesex Hospital, the effects of normal and special diets on the acidity of the gastric contents have been examined. Although food in general buffers and dilutes gastric acid so that acidity decreases, the special diet has not been found to be any more effective in this respect than a normal diet.

Patients with duodenal ulcer often complain of pain in the early morning and before meals—times when acidity is greatest. The peak acidities before meals have been found to be less when a day's diet is given at two hourly intervals than when the same quantity and content of food is given in larger portions at four hourly intervals. More frequent feeding might therefore be expected to reduce pain during the day, although

there have not yet been any controlled therapeutic observations of the use of such a diet.

The period of low acidity after food tends to last longer after meals containing a high concentration of protein than after meals with little protein but much carbohydrate. A controlled therapeutic trial at the unit, however, has not confirmed the suggestion that a high protein, low carbohydrate diet might be useful in the treatment of ulcers. These studies, as well as making treatment less irksome for patients, are relevant to investigations of dietary factors which may be responsible for the varying incidence of peptic ulcer in different parts of the world.

Other work of the unit aimed at making the life of patients and doctors easier is the development of quicker ways of making a diagnosis. Using available information about the mechanism of production of symptoms it has been possible to build up an algorithmic (flow chart) system of analysis of the causes of difficulty with swallowing. The patient answers "yes" or "no" to various questions and a diagnosis can be made without the use of X-ray or any other form of examination. The algorithm is in two forms; one for the doctor who questions the patient and one for the patient who answers questions from a book or on a film strip in a modified teaching machine. This version with the machine forms the basis for a system of automated patient interrogation which is being developed by the unit in collaboration with the University of Essex.

COUNTRYSIDE

Unspoilt Coastline

ALTHOUGH too much of the coastline of England and Wales has been spoilt by bad siting of caravans, bungalows, industry and defence structures, there remains about three-quarters of the coast that is still completely free from development of any kind. This surprising fact is contained in a recently published compendium of statistics compiled by the Countryside Commission from data supplied from local planning authorities (*The Coasts of England and Wales: Measurements of Use, Protection and Development*; HMSO, 5*s* 6*d*). The coastline is shown to total 2,742 miles, of which a little over a quarter lies in Wales. Out of this mileage, camping and caravan sites exist or are planned for just under 105 miles of coast, industrial and commercial users occupy 157·1 miles, and some 134 miles are occupied by defence and other government land. On the other hand, there are 414 miles of coast that is in protective ownership of some kind—National Trust, Forestry Commission, National Nature Reserves, and the like.

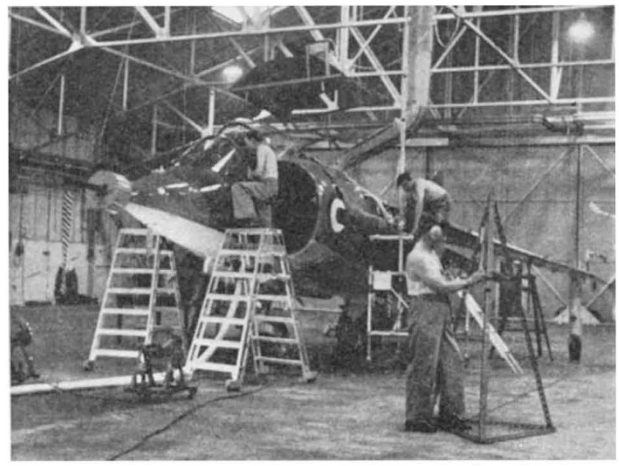
There are wide local variations in the extent of coastal development. The coasts of several counties are hardly developed at all—there are no buildings along any part of the Holland region of Lincolnshire, and only 6·3 per cent and 13·2 per cent of the coasts of Monmouthshire and Gloucestershire are built up. Conversely, the most developed county coastlines in England are those of West Sussex (68 per cent), Durham (53·6 per cent) and East Sussex (50·3 per cent). In Wales, however, the coast of Denbighshire (72·3 per cent) is more substantially developed than that of any English county.

There are wide variations, too, in the extent to which the coasts of county boroughs are developed or are committed for development. The most heavily developed coasts of county boroughs are those of Bootle, Grimsby, Tynemouth, Liverpool, and Great Yarmouth, all of which are completely built up. In contrast, the coasts of the county boroughs of Southport (15·4 per cent), South Shields (18·9 per cent) and Portsmouth (22·9 per cent) have far fewer buildings.

AVIATION

Aircraft on Trial

DESPITE the rapid advance in instrumentation in aviation, some comparatively old techniques survive. At the Ministry of Technology's Aeroplane and Armament Experimental Establishment at Boscombe Down, good use is still made of a large blower, first used in testing flame damping exhaust systems on the British night bomber force of 1942. Four large fans, each ten feet in diameter and with ten blades, are driven by Merlin aero engines to produce airstreams with velocities of up to 400 mph. Whatever is being tested remains outside in the open, so that the blower itself cannot be damaged by breakage or jettisoning of equipment. Last week a quiet murmur of engineering French was to be heard around the blower as tests on the jettisoning of the canopy of the Anglo-French Jaguar went on. Right on cue the canopy flew off to be held by a cat's-cradle of wires and ropes, while a camera in the background recorded what went on. Because the canopy is undamaged and can be used again, costs are greatly reduced and the whole procedure, according to the staff at Boscombe, is fifteen times cheaper than testing in flight.



One of the newer facilities at Boscombe is a hangar which has a good claim to be the biggest Turkish bath in the world. Entire aircraft can be exposed to high temperatures and humidities to test the performance of their systems under extreme tropical conditions. Last week the RAF's latest aircraft, the Harrier, was undergoing a test. Temperatures of up to 75° C can be reached, and maintained to within ±2° C, and humidity can also be closely controlled. Cloud formation can be maintained up to temperatures of 34° C, and the effects of solar radiation can also be simulated. In theory the hangar is at the disposal of industrial