

four residues are protected against acetylation by the presence of AMP. In the last stage, acetylation of the remaining accessible tyrosyl residues leads to complete loss of enzymatic activity. This last group of tyrosines is protected from attack by the reagent if the substrate, fructose 1,6-diphosphate, is present. It is satisfactory that these effects of acetylation can be reversed by removal of the acetyl group, which the same workers earlier found could be achieved by treatment with hydroxylamine. This study offers an interesting example of the uncoupling of an enzyme control mechanism and the catalytic function.

### Machine Tool Contract

THE Ministry of Technology has placed its first contract for the purchase of machine tools as part of a scheme for encouraging technical development by placing pre-production orders. The first machine tool chosen is a three-dimensional inspection machine developed by Ferranti Ltd., and capable of providing a digital record of the dimensions of objects. Existing machines manufactured by the company are already widely in use, but the Ministry of Technology has asked for greater accuracy. The six pre-production machines to be delivered will be accurate to one ten-thousandth of an inch. The contract is worth £45,000.

### Antarctic Revisited

THE largest vessel ever used by the British Antarctic Survey sailed from Southampton this week. She is *Perla Dan*, bound for Halley Bay in Antarctica, where Britain's most remote base is to be rebuilt. The base, built up over the years, is on several different levels joined by tunnels and ladders, and the original huts are now covered by 50 ft. of snow which threatens to crush them. The shelf ice on which the base is built is gradually sliding towards the sea, and the new site three miles inland from the present one will return the base to the point from which it began its slide ten years ago. The new base will consist of seven buildings linked by a covered way; within a year it will be completely covered by snow, and access to the surface will be through tunnels. Men in Antarctica often complain of insomnia, perhaps because the covering of snow makes it impossible to distinguish between night and day, and so the base has been designed to minimize disturbance by siting the generators and laboratories as far as possible from the dormitories.

The Survey carries out a large programme of research at Halley Bay. It is a permanent geophysical station, measuring the magnetic field of the Earth, the depth and density of the ionosphere and the concentration of ozone in the atmosphere. It seems perverse to go so far to make routine observations, but Antarctica does have some advantages to offset its inhospitable climate, and the Survey points out that in the context of world-wide geophysical research, Antarctica represents no less than one-sixth of the total world surface. Some of the work could hardly be done anywhere else — study of the aurora, for instance, and the glaciological and geological work.

### Glasshouse Research

THE Agricultural Research Council makes a practice of examining the research programmes of its establishments in Britain by appointing independent panels of

experts. This year it has been the turn of the Glasshouse Crops Research Institute, which has had to draw up proposals for its research programme for the next six years—a salutary experience, according to the director of the institute, Mr. F. W. Toovey, in his annual report (obtainable from the librarian of the institute, 12s. 6d.).

Long-term planning has not, however, interrupted the work of the institute. The development of a new species of tomato to replace the delightfully named "Moneymaker" has continued; the need to avoid the ripening disease "greenback" is particularly important. The work on tomato mosaic virus has been concluded with the departure of Dr. L. Broadbent as professor of biology at Bristol College of Science and Technology. It seems likely that the disease will be controlled by growing resistant varieties, but conditions of minimum exposure to the virus will have to be maintained so as to avoid the risk that resistant strains of the virus may develop. Mushrooms have been successfully grown in the laboratory on an entirely synthetic medium, which has confirmed earlier findings that they grow only when bacteria are present. The growing of mushrooms remains a somewhat mysterious business. The institute has confirmed that it is possible to control white fly and other pests on cucumber by introducing the parasitic wasp *Encarsia formosa*, and has investigated the density of parasites necessary for effective control.

### Tropical Weather

UNDERSTANDING of the behaviour of weather patterns in the tropics has lagged behind that of meteorological processes at high latitudes. Outside the tropics, numerical models of the atmosphere based on classical concepts of fluid dynamics have done much to analyse and predict the fluctuations of the motion of the atmosphere. In the tropics, on the other hand, the relative sizes of the several terms in the hydrodynamical equations of motion are such that it is not possible to assume geostrophically balanced flow. Models must therefore be formulated differently. Satellite photographs suggest that the growth and disappearance of tropical cloud systems are pulse-like in character and these systems seldom move across the weather map in the way associated with disturbance at middle latitudes. Instead, they possess diffuse and ill-defined boundaries in marked contrast with the clear-cut lines of frontal cloud systems.

A computer study carried out at the University of Hawaii by A. H. Gordon and R. C. Taylor has gone some way to lay the foundations for models of the atmosphere applicable in the tropics. The differential equations of horizontal motion have been integrated numerically. Trajectories for the motion of parcels of air in the layer bounded by the surface of the Earth have been computed. The authors claim that there is good agreement with cloud and precipitation patterns obtained from satellite photographs and by radar echo sounding. They suggest that there are advantages in their use of the Lagrangian method with initial values compared with the more conventional Eulerian boundary problem using finite differences and a grid of points specified in advance. The scale of the phenomena accessible to the Lagrangian method is not limited by the scale of the grid at points so that small scale phenomena can be more adequately described.