



The continuous ironmaking plant being built by BISRA.

determine this, it was decided that a prototype plant was essential, and one is being built at the Tees-side laboratories of BISRA.

Another investigation equally wide in its scope is being carried out at the Swansea laboratory and is aimed at the direct production of thin steel strip from powder. The cost of producing thin strip is very high, and the opportunities for reducing costs of conventional processes are not good. The thinner the strip, the more it costs to produce, which means that there are substantial opportunities for new processes. The one BISRA is investigating uses a mixture of iron powder and binder, which is coated on to a temporary substrate before passing through rolls to form a compact. The binder is removed by a flash heat treatment, which also partly sinters the strip. A second pass through rolls and another heat treatment follow, and the finishing touches may be applied either by planishing or temper rolling. So far, the experimental plant has produced strip which compares closely with conventional strip in properties, though to be economical the process needs to be operated at high speeds. If this can be done, the powder strip might be able to compete with conventional strip in the production of tinsplate. A more immediate prospect seems likely to be the production of stainless steel strip, and the pilot production line is now producing rolls for evaluation by customers.

Since nationalization of the steel industry, BISRA has also been known as the Inter-Group Laboratories of the British Steel Corporation, which should ensure that it continues to have an important part to play in the future. The new director, Dr R. S. Barnes, previously head of the Metallurgy Department at AERE, Harwell, takes over today (March 1).

#### SCOTTISH ASTRONOMY

### Astronomer Royal Reports

from our Astronomy Correspondent

THE predicament which prompts British observational astronomers to seek sites overseas is neatly summed up by the Astronomer Royal for Scotland, Professor H. A. Brück, in his report for the year ending March 31, 1968. "With 77 nights suitable for photometric work, observing conditions on Blackford Hill have been above average during the past year." Blackford Hill, on the outskirts of Edinburgh, has been the site of the Royal Observatory of Scotland since 1895, when the

Victorian astronomers of Edinburgh moved their observatory from its original site nearer the centre of the city. But suburbia has once again caught up and the Royal Observatory has now taken a bigger step to Monte Porzio, near Rome, where a Schmidt telescope has been installed at Rome Observatory.

The need to make all their observations count may be one explanation of the emphasis on instrumentation at Edinburgh, which has recently seen the introduction of a computer at Blackford Hill and the development of an automatic measuring machine called Galaxy which will speed the analysis of plates exposed in the observatory's Schmidt telescopes. The Astronomer Royal for Scotland also reports work on the electronics of the twin 16 inch telescope at Edinburgh to prepare it for full on-line control, together with completion of the control system and of a three channel photometer with a computer output. Much of the research effort has been devoted to a study of the part played by dust in the galaxy, including observations of stars embedded in circumstellar clouds of dust and work on the grains of the interstellar medium. The report also records the completion of a new extension at Blackford Hill containing laboratories, workshops, offices and a new 20 inch telescope. But in view of the observatory's location in the poor climate of Britain and only a few miles from the centre of a major city, it is worth asking whether more of the facilities at Edinburgh ought not to be moved to Italy.

#### PLANNING

### Campus in Bloomsbury

from our Planning Correspondent

A LAST-MINUTE attempt to frustrate London University's plan to demolish the Georgian houses in Woburn Square in Bloomsbury came to nothing last week when, at an extraordinary meeting of Convocation, a motion calling on the university to "halt the imminent demolition" of the square, and to "prepare new plans that will preserve at least the facades and the gardens", was defeated by 301 votes to 281. The university's plan is to replace the square with a new building designed by Denys Lasdun, part of the comprehensive outline scheme prepared in 1959 by Sir Leslie Martin for the development of the university precinct—a 35 acre site between the British Museum and Euston Road. The new building involves the complete rebuilding of the eastern side of Woburn Square to rehouse the Institute of Education, which has long since outgrown its accommodation in Senate House. There will also be an extension to the School of Oriental and African Studies.

The decision of Convocation, the university's graduate body, now means that the University Court can go ahead with the rebuilding. Money is available for the start of the development—some £3.5 million over the next two financial years. Final planning permission was obtained from the Greater London Council last year. There is only one snag, about which the university is not unduly worried—permission for the closure of Woburn Square to traffic has still to come from the Ministry of Transport. If the objectors have their way, there could be a public inquiry which could delay the start of the rebuilding, although probably not the demolition.



Woburn Square, London. A photograph taken in August 1968.

At the time of the release of the Martin plan in 1959, there was no formal protest either from the amenity bodies or from Convocation. The Lasdun plans themselves have been detailed since 1960. Late in the day, a group of university teachers backed by more than 1,000 students was organized to collect the signatures of fifty graduates needed for an extraordinary meeting of Convocation. They were supported by Sir John Summerson, the expert on Georgian architecture, and the joint committee of the Society for the Protection of Ancient Buildings, the Georgian Group and the Victorian Society. The arguments at the meeting last week were based on the architectural merit of the square. Although nobody criticized the intrinsic merit of the Lasdun design, it was argued that the square is one of the few remaining Georgian squares in Bloomsbury, and that it should be saved by rebuilding behind the present facades. It was argued that the preservation of architecturally significant areas has become easier in the ten years since the Martin plan was published, chiefly because of the Civic Amenities Act and the latest Town and Country Planning Act.

It is questionable whether the university would really have had to alter its plans if Convocation had voted the other way. The protest in any case came too late, but it did at least succeed in bringing several hundred members of Convocation together for a discussion of a subject that is becoming increasingly more important. Certainly the university will have to think more carefully about its future plans for expansion in Bloomsbury. It may even be persuaded that there is a case for moving the administration out of central London. Like many local authorities, it will certainly have to look very carefully at the re-usability of old buildings—a subject about which there is still much to learn. While the university pleaded last week that the refurbishing of the existing houses in Woburn Square would only have provided about a third of the room of the Lasdun buildings, there seems to be no clear reason why the houses should not have been adapted for some of the accommodation so desperately needed by the two institutes.

## Parliament in Britain

by our Parliamentary Correspondent

### Chemical and Biological Warfare

THE Federal German Government supports research into protective measures against biological and chemical warfare. Mr Michael Stewart, Secretary of State for Foreign Affairs, confirming this, said he had no reason to believe that any manufacture of weapons was involved so that there was no breach of the 1954 Brussels Treaty. Mr Stewart rejected a suggestion that the British Government should unilaterally adopt the proposals on chemical and biological disarmament put forward at the Geneva conference last year—his aim was for multilateral action by international agreement, he said. (Written answer, February 17.)

### Civil Service

MRS JUDITH HART, the Paymaster General, produced a list of figures giving the number of qualified scientists and engineers employed in government research laboratories at the beginning of 1969. There are 182 in the Road Research Laboratory, 488 in the Ministry of Agriculture, Fisheries and Food, 1,425 in the Ministry of Defence and 1,900 in the Ministry of Technology laboratories. (Written answer, February 17.)

### Gas Centrifuge

THE Prime Minister declared himself unworried that the collaboration between the British, German and Dutch Governments on the use of the gas centrifuge process for uranium enrichment could lead to the proliferation of nuclear weapons. He added that the Ministers of Technology and Foreign Affairs have been working closely together on this development and that he himself had been very much concerned with it since he had learned "two years ago" of the British breakthrough in making the process cheaper. (Oral answer, February 18.)

### Space Activities

SCIENTIFIC research in space is the responsibility of the Department of Education and Science and, despite the existence of a new space division set up by the Ministry of Technology, the Prime Minister sees no reason to transfer the responsibility. He thought it right that "celestial activities are related to terrestrial responsibilities of Ministers" and that pure research in space should be controlled by the minister responsible for research councils. (Oral answer, February 20.)

### Concorde

REPLYING to questions about the technical reasons for the delay in the Concorde project, the Minister of Technology, Mr A. Wedgwood Benn, said that the areas in which difficulties occurred included the air conditioning system, the droop-nose mechanism, the electrical generating system, the gas turbine starter, the inertial navigation system, the landing gear and braking system and the powered flying control system. The setback to the target date for airline service, which is now 1973, was caused partly by delays to the prototypes and partly by a reassessment of the time-scale allowing for the introduction of design changes. (Written answer, February 20.)