

130 people are employed on the project, half of them under Euratom contract, and half of them by the UKAEA which runs Culham.

According to Dr Hans-Otto Wüster, Director of the JET Joint Undertaking and Dr Paul Rebut, leader of the JET design team, there are some worries that JET will not attract enough high calibre fusion physicists to make up the rest of the team. One problem is that during the lengthy debate over where to site the project, almost half the design team returned to their home laboratories. Although many of these have now returned to JET, it is feared that the salaries being offered by Euratom are insufficient to entice French and German scientists to the Oxfordshire countryside.

Initially, experiments on JET will be with a D-D plasma. If these are successful, then the project will move into the "radioactive stage" by 1983-84. This will involve beam-plasma D-T operation resulting in neutron production which will activate the walls of the vessel containing the plasma. Dr Wüster said that this stage of the experimental programme would not commence without further agreement. He also assured that the radioactivity produced would be between ten and a hundred times less than that produced by nuclear fission. As the amount of radioactive material created would be very small, he thought that energy produced from fusion could prove "environmentally advantageous".

The decision over whether or not to enter the 'radioactive stage' is bound to be difficult, according to Dr R. J. Bickerton. There is already one school of thought which would like to proceed to reactor conditions as quickly as possible and another that would rather understand the plasma physics thoroughly first. This difference in opinion is to some extent reflected in the discussions which have already started on the machine to follow JET. Dr Bas Pease, Director of Culham Laboratory, thinks that the next machine should aim at demonstrating a net production of electricity. "I favour the view that we should attempt this after JET, but I can't yet say that I have persuaded a majority of colleagues of that view", he said.

The Euratom countries have already set up a Next European Torus Study Group to discuss the next machine. According to Dr Brunner, however, Europe may not be able to afford to build JET's successor alone. It is therefore cooperating in the INTOR Study Group, under the auspices of the International Atomic Energy Agency, which is looking at the possibility of the USSR, Western Europe, the US and Japan building a worldwide machine.

Judy Redfearn

US foreign research rises to \$1.5 billion

THE vast majority of research carried out by US private corporations in foreign countries is concerned with developing products for local market conditions, rather than with longer term basic or applied research goals, according to a survey conducted by the National Science Foundation.

Research and development carried out abroad by US corporations increased by 41% between 1974 and 1977, to a total of \$1.5 billion, the survey reports. This represents about 7% of the total expenditure on R&D by private companies, which increased by 32% over this period.

The most substantial increase in overseas R&D occurred in the pharmaceutical industry, with many companies conducting trials of new drugs abroad in order to take advantage of more liberal conditions on foreign testing introduced by the Food and Drug Administration in 1975. Thus between 1974 and 1977, the amount of R&D conducted by pharmaceutical companies abroad more than doubled, compared to an increase of only 34% in the funds spent at home over this period (although the report adds that foreign and domestic R&D are now increasing at about the same rate).

The NSF survey says that in companies with world-wide research capabilities, the US laboratory usually takes the lead in overall technological development, with the foreign labora-

tories providing specialised development for particular market conditions. The foreign R&D facilities of these companies therefore conducted primarily development projects, even though basic and applied research accounts for almost one quarter of total domestic R&D spending by US companies.

Interviews carried out with the managers of 18 large private corporations revealed only one case in which a company reported any expenditure on basic research conducted outside the US. Two other companies reported that their foreign research facilities carried out some applied research work.

Looking to the future, the NSF study says that an expected increase in overseas sales by US corporations is likely to cause such companies to open new foreign R&D facilities or to expand existing operations, with increased sales, rather than other factors such as lower research and development costs, providing the main motivation for such developments.

The report also notes that several R&D directors outside the pharmaceutical industry said that increasing regulation by bodies such as the Occupational Safety and Health Administration and the Environmental Protection Agency in the US would tend to cause companies to move R&D resources to other countries where operations would not be affected as much. □

University of Houston expels professor

THE University of Houston in Texas is refusing to renew the contract of Professor Archer J. P. Martin, joint winner of the Nobel prize for chemistry in 1952 with R. L. M. Synge for his work on chromatography, on the grounds of "inadequate productivity".

Professor Martin, who is 69, was appointed to the Welch chair of chemistry in 1974, and until last year held a joint appointment at the University of Sussex, where he was carrying out research on protein separation sponsored by the Medical Research Council.

The University of Houston requires that after a faculty member reaches the age of 64, his or her tenure must be renewed annually. Last year the university told Dr Martin that the Department of Chemistry did not consider he had published enough scientific papers, and that his appointment would not be renewed.

Professor Martin told *Nature* last week that when he took the post, he had not been aware that there would be little money for research assistants or experimental facilities and consequently that he spent most of his time in Houston planning experiments to be carried out in Sussex. □

He accepts that he has published very few scientific papers over the past five years from his work at Houston, but claims that he has no desire to rush into print unnecessarily (his total scientific output is about 70 scientific papers). According to Professor Martin, the university did not take into account papers produced from the work at Sussex in considering whether his contract should be renewed.

A faculty committee, to which Professor Martin protested at his dismissal, came to the conclusion that the terms of his appointment had not been initially made adequately clear, and recommended that he be kept on the staff. However, two weeks ago Professor Robert H. Walker, Dean of the College of Natural Sciences and Mathematics, informed Professor Martin that the university had no power to keep him on unless the Department of Chemistry changed its mind. According to Dr. Walker, the university does not set any specific target on the number of papers which a research worker is expected to produce each year but, he says that there is nevertheless "a certain expectation of productivity". □