

CLUB OF ROME

Onwards Undaunted

from *La Recherche*

IN spite of severe criticisms since publications of *The Limits to Growth* last year, the Club of Rome, which commissioned the report from Professors Jay Forrester and Dennis Meadows at MIT, is undaunted and embarking on several more projects designed to study other related problems, particularly those of population, natural resources, and economic growth.

At a meeting held near Paris recently, the Club unfolded its seven point current research plan. The club, true to form, is, with the support of the Volkswagen Foundation, studying the effects of doubling the world population. A second group of projects surveys the reallocation of the world's resources (with emphasis on energy, food and raw materials), and also looks at the position of Japan in world affairs. A third measures the limits to German growth, the nature of change in technical innovation and the patterns of economic development in West Africa, India and the Republic of Korea.

The rest of the study areas concern national population strategies, aspects of worldwide technological forecasting and the goals and constraints which could affect future science and technology.

A group of researchers headed by Mihajlo Mesarovic (Case Western Reserve University) and Eduard Pestel (Technische Universität, Hanover), is elaborating a computer-aided "strategy for survival", a long term multi-level world model project. The group has recently published *An Interactive Decision Stratum for the Multilevel World Model*, which is largely an econometric exercise in forecasting allowable levels of consuming raw materials and other resources. To answer criticisms made of such forecasts—that variables, representing political, social or psychological decisions and events are missing—Pestel and his team will next attempt to quantify such factors for application to future models. This summer they hope to provide an analysis of future options in using the world's energy resources, and in a year's time they hope to have a model able to absorb the parameters of monetary erosion as it affects capital investment in the energy field. Pestel claims that this will lead to "new sets of decisions possible in the attenuation of the energy crisis and the polluting character of some present energy sources, as well as economic measures to be implemented":

Peccei, faithfully defending the club's philosophy of forecasting based on

computer models, said at the meeting that "Our efforts are still too modest at the Club of Rome. The first research project we did cost exactly what all the world's military forces were spending at that time in the incredibly short span of 30 seconds!"

ATOMIC ENERGY

Krypton Needs Limiting

from a Correspondent

MEANS will have to be found to control the discharge of gaseous krypton-85 from nuclear power stations before the end of the century. Tritium release will also have to be controlled, particularly where local conditions are adverse, but otherwise the problem of an increase in background radiation from the use of nuclear power seems to be well under control. This was one of the chief conclusions of a conference on nuclear energy and the environment held in Liège recently under the auspices of the Association des Ingenieurs Electriciens. The meeting agreed with other conferences' findings that by the year 2000 the addition to the background radiation will be less than one per cent of present levels given the current projections of the increase in nuclear power plant.

The conference also discussed the problems of heat dispersal from power stations and came to the conclusion that by the end of the century Europe's rivers and lakes may not be able to absorb all the waste heat generated. The problem, it was felt, is acute, and must be tackled not only by the designers of power stations, but also by the politicians who plan energy programmes.

The International Commission on Radiological Protection (ICRP) was praised for its work in setting permitted levels of radiation early in the development of nuclear power.

Professor Z. M. Bacq, a biologist from the University of Liège, discussed the evidence that certain cells appear to have repair mechanisms that are effective in the face of low doses of radiation. This implies that there may be a threshold value below which radiation causes no cell damage. Dr F. D. Sowby, scientific secretary of ICRP, said that he was aware of this evidence that decreased doses of radiation do not produce a linear decrease in radiation damage, but he emphasized that until it is more clearly shown that the non-linear effect applies to man (to date it can only be uncertainly demonstrated in mice), the commission will continue to base its permitted exposure levels on the more pessimistic assumption that cell damage does decrease linearly with decreased radiation.

COMPUTERS

Eyes East

IN spite of government enthusiasm for a European computer company, ICL appears to have its sights set on a Japanese rather than a European link.

International Computers Ltd, Britain's largest manufacturer, told the Select Committee on Science and Technology last week that the "ever growing strength" of the Japanese industry worried it. Cooperation with Japan might be possible, however, through Japan-ICL, a subsidiary of the British company, which at present sells non-computer equipment such as punch card sorters and output punchers in Japan.

On cooperation in Europe, the company said that "in view of ICL's evident technical strength and market share relative to the other European computer firms, any unification of the industry could most effectively be centred around ICL".

The company emphasized that any benefits that are derived from harmonization of the European computer industry must be commercial in nature, and not political. But the company was not enthusiastic about the possibilities of successful links being formed. It went on to say that "it is very doubtful in ICL's view if the benefits (resulting from recent agreements on cooperation between Siemens, CII and Philips) will be sufficiently timely or substantial to have any major impact on the relative position of the European computer industry *vis-à-vis* United States manufacturers".

Talks between ICL and Nixdorf in West Germany and CII in France have failed to produce agreements on joint development work because of "various technical and commercial problems". Exploratory talks with United States manufacturers had seemed, ICL said, to have offered "at this point of time no worthwhile commercial advantage".

ICL reaffirmed its belief that by 1976-77 it should "have reached a level of size and profitability adequate to make further research and development support unnecessary". (The government made ICL a £14 million loan last August to help develop the company's new product line.) But the company emphasized that when this support ends the government should continue to provide development contracts for specific projects as well as orders for ICL equipment.

The company's situation has not been helped by a sharp cut in computer orders from the government. In 1971 the government announced that it expected to place orders worth £20 million with ICL that year, but up to September 1972 the company had only received orders worth £18.5 million.