distribution of the particles from 30 eV to 10 keV. This unit consists of eight individual spectrometers, each consisting of an electrostatic analyser, a high-gain electron channel multiplier (the first to be produced in the Soviet Union), sampling schemes and a signal recording device.

The first results from the solar wind experiment are now being analysed, and are providing good evidence of the satisfactory design of the unit. Some typical data so far obtained, for the first 10 days of the flight of Mars-3, are that velocity of the solar wind fluctuated between 300 and 600 km s⁻¹, relative content of alpha-particles varied from 5 to 10 per cent. The temperature of the solar wind particles and the considerable velocity gradients recorded are the subject of further and more detailed study.

The time-gap between the launching of the two probes and the availability of readings from other Soviet projects makes it possible to estimate which fluctuations are due to variation along the trajectory and which are due to variation in time. The solar wind data obtained from Lunokhod-1 and from the Earth-orbiting Kosmos satellites are providing reference data against which the Mars-2 and 3 data may be more clearly evaluated.

ENVIRONMENT

A-level Development

THE third attempt in recent years to develop an A-level syllabus in environmental studies was launched last week by a party of school teachers from Hertfordshire (*Environmental Studies—The Construction of an A-Level Syllabus*; National Foundation for Educational Research in England and Wales). The other two attempts, in 1968–69 and 1970, were unsuccessful but the present proposal has been constructed in greater depth. The Hertfordshire County Adviser for Environmental Studies, Mr S. McB. Carson, said this week that he was optimistic that the present submission would be accepted by the examination boards and the Schools Council.

There are twenty-two schools and two colleges in Hertfordshire that are planning to start teaching the new syllabus in September 1972 if approval is granted by then, and there are four examination boards that have already been approached with a view to instituting the syllabus. These are the University Entrance and Schools Examination Council of London University, the Associated Examining Board, the Cambridge University Local Examination Syndicate and the Oxford Delegacy of Local Examinations. With the exception of the Associated Board which is

not sympathetic to the new syllabus, the other boards are considering the proposal. Before the syllabus can be instituted, however, the boards must submit it to the Schools Council for approval. If approval is granted it is unlikely that more than one examination board will eventually offer the examination and arrangements will probably be made, as is currently done in other subjects for that one board to offer the examination to the schools attached to the seven other boards.

The development of an A-level course in environmental studies is a natural consequence of the O-level and CSE examinations in similar subjects that are already recognized by several examination boards. A problem in instituting the syllabus at A-level will be to find qualified teachers. Mr Carson said this week that the plan in Hertfordshire is to have the teaching done by biologists and geographers, or by specialist environment teachers—either those who are now involved in teaching the O-level subjects or by graduates of one of the several universities that now offer courses in environmental studies. The overlap of the new syllabus with other topics already being taught in schools is not a problem, according to Mr Carson, and of the fifteen university faculties that have in principle approved of the subject as an entry requirement, only one expressed reservations about a candidate offering both environmental studies and biology.

One of the arguments in favour of the new syllabus, says Mr Carson, is the increasing awareness of today's sixth-formers about ecological problems. Unlike most A-level syllabuses, A-level environmental studies will be as relevant as anybody could wish. Another potential advantage of the syllabus is that it offers career opportunities at non-degree level in teacher training and in Town and Country Planning.

BIOMEDICAL RESEARCH

Science Looks Forward ?

by our Special Correspondent

"Too plainly we are—in common with the whole of humanity—confronted with the question of where (the development of biology and medicine) leads." This was the reasoning which led Hoffman-La-Roche to celebrate their 75th anniversary by holding a symposium, "The Challenge of Life", in Basle last week. The aim of the symposium was outlined by Dr Alfred Pletscher (Hoffman-La-Roche) as "to define more clearly the problems created by biomedical progress and to find, if possible, essential facts or clues for their solution". Although the illustrious assembly of speakers, which included not only biologists but also sociologists,

philosophers and even theologians, was, of course, unable to provide definitive answers to this ambitious question, this proved to be one of the very few conferences where a consensus of opinion emerged to pinpoint with some clarity the essential problems which need to be resolved.

Some fascinating clashes of temperament dominated the symposium, in particular the conflict between the idealism of Dr Philip Handler (President, US National Academy of Sciences) and the pragmatism of Solly Lord Zuckerman (former Chief Scientific Advisor to the British Government). Whilst Professor Joshua Lederberg (Stanford University) and Professor Arnold Burgeon (Director, National Institute for Medical Research, Mill Hill) strongly urged that it is essential for scientists to communicate with the public and to reverse the alienation which many laymen now feel from science, Professor Niels Jerne (Director, Basle Institute for Immunology) maintained that it is impossible and, indeed, perhaps undesirable, for scientists to popularize their work.

Any curtailment of basic research would be tantamount to the book burning of the Nazis, said Dr Handler and Professor René König (University of Cologne), whilst others, in particular Professor Bernard Barber (Columbia University), were adamant that, to some extent at least, the sociologist, as a representative of public opinion, should be allowed to sit in judgment on the scientist. And Professor Margaret Mead (American Museum of Natural History) wished that the scientist would listen to the warnings that the social sciences can provide of reactions such as the backlash to science.

The consensus of opinion was with Professor Salvador Luria (Massachusetts Institute of Technology) that the critical point for control is not the direction of basic research but its technological development. And as Lord Todd (University of Cambridge) said, the problem of overpopulation loomed large over the entire proceedings. The right of the individual to expect medical science to maintain him in good health was defended by doctors, including Professor Burgeon and Max Lord Rosenheim (President, Royal College of Physicians of London), but the meaning of this was challenged by Professor Jeanne Hersch (University of Geneva). One of the main talking points was Lord Zuckerman's insistence that governments simply lack the resources to keep up with the demands for expensive treatments, and that medical science is aggravating this problem by devising more of these treatments.

A more detailed account of these discussions will appear in *Nature* next week.