

ONE HUNDRED AND EIGHTY-FOURTH SCIENTIFIC MEETING
SIR JOHN ATKINS LABORATORIES, QUEEN ELIZABETH COLLEGE,
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**THE PART THE INTERNATIONAL BIOLOGICAL
PROGRAMME WILL PLAY IN INCREASING
WORLD FOOD SUPPLIES**

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**Introduction: the purpose and function of the
International Biological Programme**

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The success of the International Geophysical Year (IGY) led many scientists to suggest that something similar should be done in biology. After much discussion and letter writing it was agreed that a year would be too short a period, and, in September 1961, the International Council of Scientific Unions (ICSU) authorized the International Union of Biological Sciences to explore the possibilities of having an International Biological Programme (IBP). A meeting to plan this was held in May 1962 and agreed that the purpose of the IBP should be defined more explicitly by adding to its title the words 'The Biological Basis of Productivity and Human Welfare'. For brevity, the short title is often used; it is important to remember the full one which shows that this is not a purely academic exercise.

The first meeting of representatives of the six sections or subsections between which the work of the IBP was divided was held in November 1962. This was a depressing meeting. Few attended it and many of them wanted to discuss unrealistic projects costing many millions of pounds. The more innocent biologists had clearly been misled by the vast sums spent by the International Geophysical Year and did not realize that that had gathered momentum slowly, that biologists are always expected to be modest in their demands, and that the IBP, unlike the IGY, could not expect military support. Furthermore, the IBP seemed to be preoccupied with academic research, ecology, and rather old-fashioned conservation. The IBP has now fully recovered from this rather inauspicious beginning. Its beginnings are, however, worth mentioning because they explain why the initial association of some countries and organizations with our work was slow and reluctant.

Provisional national committees were established in Britain and several other countries. These uncovered strong differences of opinion on the weight to be given to the second half of our title. The differences were resolved at a meeting in November 1963 which urged the Tenth General Assembly of ICSU to establish the IBP and to include in it a section with the responsibility of seeing that full use was made of existing knowledge and of the results achieved by the other sections.

ICSU agreed, national committees lost their provisional status, and the first General Assembly of the IBP was held in July 1964.

The IBP now consists of seven groups or sections concerned with: Productivity of Terrestrial Communities (PT), Production Processes (PP), Conservation of Terrestrial Communities (CT), Productivity of Freshwater Communities (PF), Productivity of Marine Communities (PM), Human Adaptability (HA), and Use and Management of Biological Resources (UM). There are also committees dealing with Public Relations and Training, and with Organization and Finance. There is an international committee for each section, and most countries, besides having a national committee for the IBP as a whole, also have one for each section.

Finance is controlled by the Special Committee (SCIBP) and is derived from grants and loans from ICSU and UNESCO, a special contribution from USA, and the national dues that member countries (thirty-eight in November 1966) are supposed to pay though not all do so. Britain not only pays its dues but makes a special contribution in the form of the rent on the international central office (7 Marylebone Road, London, NW 1). The Czechoslovak Academy provides the secretariat for section PP. The estimated income of SCIBP is about £60 000 in 1966 and it is hoped that it will be twice that in 1967 and 1968. This money is insufficient to cover the costs of head office staff, publications, secretarial assistance to sectional convenors, organizing international meetings of various types, and the international travel of those concerned in these meetings. Some costs of travel are therefore met by national committees. From the beginning, before SCIBP was established, the Royal Society assumed responsibility for the cost of British participation in meetings held in Britain. Organization was therefore able to proceed very much faster and further in this country than elsewhere, and gave us an undesirable dominance. This has been remedied and only two of the seven sectional convenors are now British.

It is clear that early visions of vast international funds are not materializing—nor are they likely to. According to the rules of ICSU, research projects and expeditions have to be financed by grants from national sources, foundations or, in principle, the international agencies such as the Food and Agriculture Organization and the World Health Organization. The agencies, because of their long-term advance budgeting, cannot do much but, within the limits imposed on them, have been very helpful. UNESCO, as I have said, contributes directly to IBP funds; it may also contribute both advice and money through such groups as its Microbiology Panel.

Before we had managed to get general agreement to the setting up of section UM, I was national convenor for the section that has now become PP. In that capacity I wrote many letters asking for advice and co-operation. Critics of the IBP were evenly divided into those who said its plans were so vague and nebulous that nothing of value could come of them, and those who said it was a sinister conspiracy out to dictate the world's research policy. The former group was a little nearer the mark than the latter. Each section has, at various meetings during the past 3 years, defined a programme made up of themes that have an international application and that

need, or would benefit from, international co-operation. These programmes are approved by the General Assembly and published in *IBP News*, seven issues of which have now appeared. After this the initiative rests with individuals, institutes, and national committees. Those who find existing projects inadequate should propose others.

Phase 1, concerned with planning, will end in June 1967 when the definitive Phase 2 will start; it is expected to last 5 years. Clearly therefore it is too late to make any major changes in the sectional programmes. The programmes are, however, framed in broad terms and sound research projects submitted either centrally or to a national committee will be considered and, if they come within the programme and do not seriously overlap some existing project, will get IBP approval. The intention is that this approval will help the applicant to get support for the project from a grant-giving body such as a research foundation, ministry, the Agricultural Research Council, the Medical Research Council, or the Science Research Council; experience shows that this intention is being fulfilled. The provisional estimates for projects financed from British sources in 1965-6 is nearly £100 000.

In principle, projects should also be considered by the international Sectional Committees. At the Second General Assembly (April 1966) it was agreed that these committees should have no veto but should rate items in national programmes in four categories:

- (1) noted and considered to be of high priority;
- (2) noted with suggestions for collaboration with other national programmes;
- (3) noted with suggestions for improvement (if requested);
- (4) noted.

It is by no means clear what effect this international rating will have on a project that has already been approved and financed nationally. Central initiative is therefore limited to the formulation of the broad programme and to the selection of members of the Sectional Committees. It is obvious that institutes where committee members work, and people acquainted with committee members, put up most of the projects. This is probably because they are more aware than others of the possibilities. Such loose organization may not seem very efficient, but it works and is a far cry from dictatorship. Although there is little central dictatorship, central influence is exerted through the organization of Technical Meetings on specific subjects, the production of handbooks on methodology, and stimulation of the setting up of national committees.

All the sections of the IBP are to some extent concerned with food production. Work directly connected with nutrition appears in the programmes of sections PT, HA and UM; those aspects of it that deal with surveys and feeding experiments will be described by the other speakers at this meeting. The UM programme also includes work designed to make simple and 'traditional' methods of food preservation more trustworthy, effective and generally applicable, and on methods for increasing the quantity or quality of foodstuffs, especially those that could be produced in the wet tropics. No definite project on food preservation has so far been submitted but the topic is included in the programmes of the Philippine, South African, UK and

USA national committees. Research on the production of microbial food is included in the Czechoslovak, Philippine, Swedish, UK and USA programmes. South Korea proposes work on the nutritive value of seaweed. A similar series of projects on the separation or fermentative upgrading of protein from oilseeds, leaves, and other unused or underused materials appears in the Swedish, UK and USA programmes. Some of these projects were discussed in August 1966 at a Working Group meeting of the IBP on 'Novel Protein Sources', held in Warsaw in conjunction with the Second International Congress of Food Technology. There is an account of the meeting in *IBP News* no. 7. Work on the improvement of conventional protein sources or on the extraction of protein from novel sources, done under the aegis of the IBP is now well advanced in Czechoslovakia, Sweden and UK; I have no information about the progress that has been made in the other countries.

The function of the IBP is to be useful. Its successes, whether they take the form of the introduction of new or improved crops or animals into a country, or of the preparation of novel forms of food, will be measured by the change that is made in the quality and character of the food people eat. A study of the resistance to change, and of the techniques for weakening it, will be an important future project for section HA. Similarly, section UM should consider, in concrete terms, what could be achieved in certain typical regions that are at present inadequately fed, if existing knowledge, and the knowledge that we hope will be gained during the course of the Programme, is fully applied. One of the great advantages of having an international programme is that there may be complementation between the different aspects of national character. It seems that we in Britain are peculiarly prompt at getting an organization going and research started; it is to be hoped that some other country will be more effective than we tend to be at getting the results applied.

The Human Adaptability Programme

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The Human Adaptability (HA) Programme is, broadly speaking, concerned with the ecology of man. In spite of many physiological, genetic and anthropological studies we are still profoundly ignorant of the way in which individuals and groups of mankind, with diverse cultures, adapt to their environment.

Since we are witnessing a rapid change in the pattern of life amongst a large proportion of the human population, there is a special urgency to study those peoples who still have a simple and traditional culture. There are few left today, and in a short time there may well be none. In Africa, south of the equator, the Bushmen of the Kalahari are probably the last surviving hunter-gatherer peoples, and their numbers as hunter-gatherers are rapidly declining (Tobias, 1966). In the Arctic there are few Eskimo who have not substantially changed their habits as a result of contact with western civilization. In Australia the Aborigines are being rapidly absorbed, not only