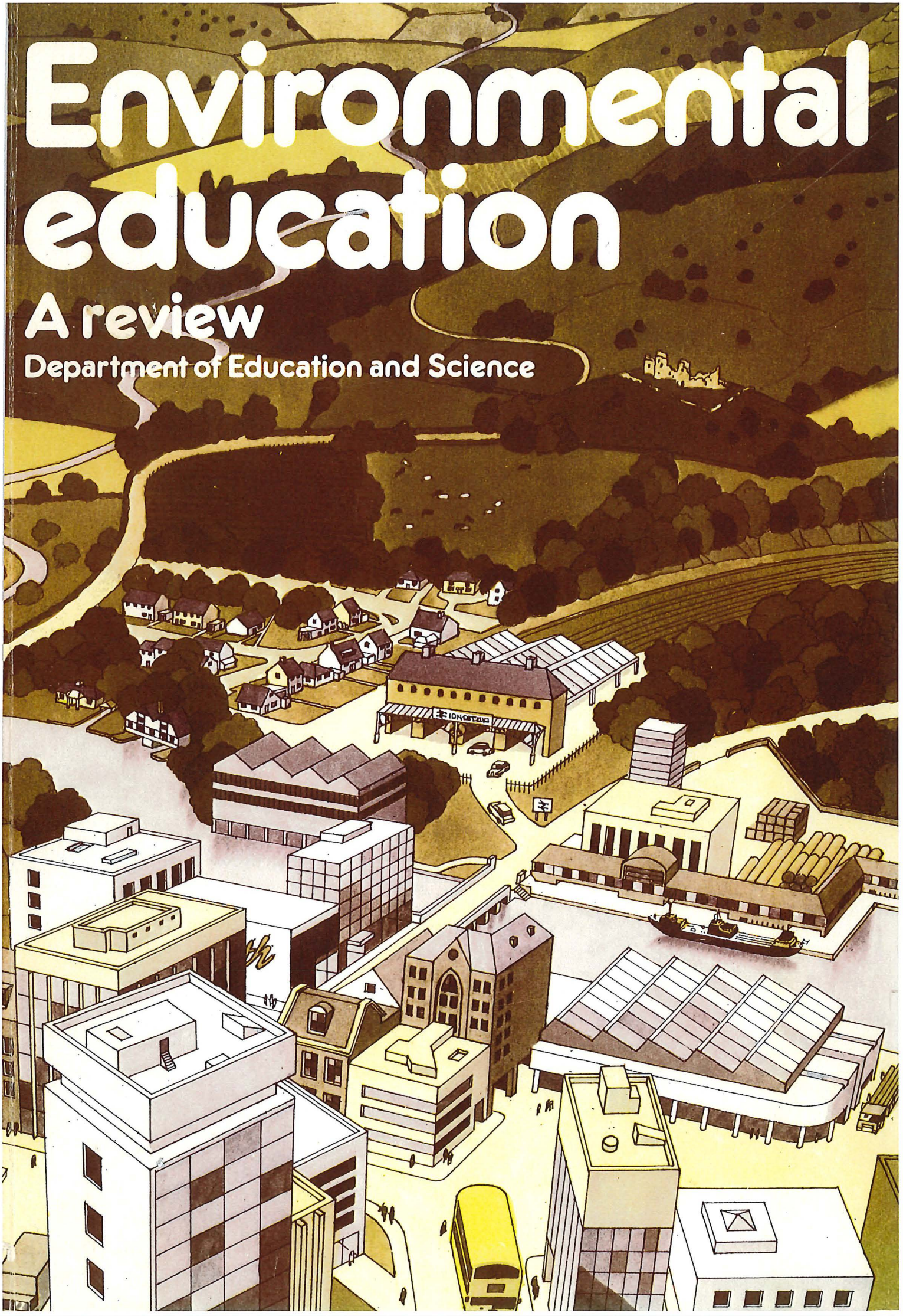
Environmental education

A review

Department of Education and Science



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Contents

Contents

Introduction 3

One: The concept of environmental education

Shades of meaning 5
Definitions and a framework 6
Awareness 7
Understanding 7
Skills 7
Values and attitudes 7
Summary 7

Two: Current practice

The national picture 9
Primary education 9
Secondary schools 10
Field studies 10
Urban studies 11
Non-advanced further education 11
Higher education 12
Teacher training 12
Youth activities 12
Informal environmental education 12
Voluntary organisations 13
Government departments and statutory agencies 14
Conclusion 15

Three: The international context

The international dimension 16
The Tbilisi conference 16
The UK contribution 16
The Tbilisi declaration and recommendations 16
Role, objectives and guiding principles 16
National strategies 17
International and regional cooperation 17
On from Tbilisi 17
International Union for the Conservation of Nature and Natural Resources (IUCN) 17
European programmes 17

Four: Future development in the UK

The significance of Tbilisi 19
Aims and methods 19
The formal education sector 19
Non-formal environmental education 20
Summing up 20

Appendices

1 A brief history of environmental education in the UK 22
2 Conclusions and recommendations of 'The Countryside in 1970' (Conference at Keele, 1965) 24
3 IUCN World Conservation Strategy: Executive Summary 25
4 Curriculum 11-16: Environmental education. HM Inspectorate discussion paper 27
5 Extracts from public examination syllabuses 30
6 Examples of projects qualifying for the Prince of Wales Award 31
7 Environmental education in urban areas (Report by a working party of the Environmental Board, DOE): Conclusions and recommendations 32
8 Historical note on the Nature Conservancy Council 33
9 Declaration of the Tbilisi Intergovernmental Conference on Environmental Education, 1977 34
10 Recommendations 1 and 2 of the Tbilisi Conference 35

Reading list 37

Some abbreviations used in this booklet

BEC	Business Education Council
BEE	*Bulletin of Environment Education*
BTCV	British Trust for Conservation Volunteers
CSE	Certificate of Secondary Education
CGLI	City and Guilds of London Institute
CoEnCo	Council for Environmental Conservation
CEE	Council for Environmental Education
DES	Department of Education and Science
DOE	Department of the Environment
DELTA	Directory of Environmental Literature and Teaching Aids
GCE	General Certificate of Education
HMI	Her Majesty's Inspectors of Schools
IES	Institution of Environmental Sciences
IUCN	International Union for the Conservation of Nature and Natural Resources
LEA	Local Education Authority
NAEE	National Association for Environmental Education
NCC	Nature Conservancy Council
NNR	National Nature Reserve
ODA	Overseas Development Administration
PICC	Professional Institutions Council for Conservation
REED	*Review of Environmental Education Developments*
SEEC	Scottish Environmental Education Committee
SPNC	Society for the Promotion of Nature Conservation
TEC	Technician Education Council
TCPA	Town and Country Planning Association
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNEP	United Nations Environment Programme

Introduction

Awareness of the importance of the environment has grown substantially over the last three decades, along with a greater attention to environmental problems. Fears about man's impact on the natural environment, threats to the existence of many species, the influence of the built environment on the quality of life, the role of modern technology in both causing and tackling pollution, growing concern about energy needs and resources—all these are now common topics of press and public debate.

The corresponding growth in public interest in environmental education can be gauged in part from the number of organisations in the United Kingdom, voluntary and statutory, which are concerned with it to a greater or lesser extent. International recognition of its importance has been demonstrated at a number of conferences over the last 20 years. That held at Tbilisi, USSR, in October 1977, was at intergovernmental level and raised issues for the consideration of all participating countries.

The education service has long accommodated many of the components of environmental understanding within traditional curricular subjects, but the emergence of an identifiable category of environmental education has been comparatively recent. This booklet, prepared by the Department of Education and Science (DES), in close cooperation with members of HM Inspectorate and in consultation with other government departments and interested bodies, is an attempt to indicate some of the thinking and developments that have taken place. It is a companion to *Environmental education: sources of information 1981* (HMSO, £2.95).

The present booklet includes a consideration of the philosophy of environmental education, an outline of what is already going on (in and outside the education system), an international perspective derived largely from the Tbilisi conference, and some appraisal of current United Kingdom activity in the light of the conference recommendations, together with an indication of possible further developments. It is hoped that it will both inform and be a contribution to further discussion.

One
The Concept of Environmental Education

'The term "environmental education" is being used increasingly in Britain, but it is clear that different people mean different things by it and that some who use it are not fully certain what they mean.

Some of the confusion arises from the tendency for adherents of various disciplines to appropriate the word "environmental" to their own subject whether this be ecology, geography, history, archaeology, architecture, planning, sociology or rural studies. In particular, some think almost exclusively in terms of the so-called "natural" environment, others of urban or at any rate "man-made" environments. Again, some stress the educational value of using man's biological and physical environment as a basis for studies at first hand, viewing this environment as a *medium for education*; while others are more concerned with the need to promote a sense of personal responsibility for the state of the environment, which is thus seen as a *goal of education*, since man's health and happiness—and ultimately even his survival—depend on the way he manages it.'

Council for Environmental Education(CEE) report to the third conference on 'The Countryside in 1970'.

Shades of meaning

'Environmental education' is a relatively new term. It is not a new process and aspects of its history and development are given in Appendix 1. But as the passage quoted above makes clear there are conflicting ideas about what it means and implies. Those who use it may speak from different assumptions, so that according to context the word 'environment' may mean anything from the house or street in which one lives to 'Spaceship Earth' itself, and the possible educational connotations are equally broad. Much of the ground was explored at the Conference on Education held at the University of Keele in 1965. This was the second of a series convened at the suggestion of HRH The Duke of Edinburgh under the general title 'The Countryside in 1970'. Widespread interest and support were attracted and the Keele conference proved to be effectively the beginning of a formalised environmental education movement in this country. Its published conclusions and recommendations are given in Appendix 2. Since 1965 there has, of course, been a remarkable expansion of concern to embrace not only urban environments at home, but the whole environment of man. But Keele was a significant starting point.

A helpful analysis of approaches to environmental education, first formulated by the Schools Council's Project Environment in 1974, is expressed in a current Schools Council leaflet as follows:

'It is useful to recognise at least three categories of interpretation of environmental education:

'the environment as a medium for education—the use of real life situations as the basis for inquiry learning, particularly with younger children;

'the environment as a subject for investigation;

'education for conserving or improving the environment—the study of topical problems such as conservation, pollution, population—and the attempt to promote a sense of personal responsibility.'

The first two of these categories—education 'through' the environment and education 'about' the environment—provide the main starting points for formal educational activities. Thus, especially with younger pupils, environmental education amounts to using the environment as a means of offering direct and immediate experience from which particular skills and other attributes may be acquired. There is a distinct emphasis on child development through a method of teaching and learning. In the case of older pupils and students, the emphasis is more likely to be on the study of physical, biological and cultural aspects of the environment as a means to the development of knowledge and understanding.

From the 'environmentalist' point of view, environmental education is seen as placing the accent on ecological processes and the conservation of the natural world. This is education for conservation in the sense proposed by Max Nicholson: 'Conservation means all that man thinks and does to soften his impact upon his natural environment and to satisfy all his own true needs while enabling that environment to continue in healthy working order' (*The Environmental Revolution*, 1970). Nicholson's book is among many which have examined and publicised conservation issues in the last two decades. One of the earliest was Rachel Carson's *Silent Spring* (1962), which warned of the dangers of pesticides. The ecological dangers and the risks of resource-depletion are the main imperatives recognised by the authors of *The Limits to Growth*, prepared for an international group called the Club of Rome (formed in 1968), and *A Blueprint for Survival*, first published as a special issue of *The Ecologist* magazine in 1972.

The United Nations Conference on the Human Environment held in Stockholm in 1972 made a major recommendation (No 96) about the need for environmental education. *Only One Earth*, prepared for that conference by Barbara Ward and René Dubois, was followed up by Barbara Ward in 1979 with *Progress for a Small Planet*. In 1980 there was the launch by the International Union for Conservation of Nature and Natural Resources (IUCN) of the World Conservation Strategy for the conservation of living resources (the executive summary is reproduced in Appendix 3) and the Report of the Independent Commission on International Development Issues chaired by Will Brandt under the title *North—South: A programme for survival.*

To an increasing extent, measures for conservation and the processes of economic development are being seen in organic relationship. While there are some who still maintain that the prospects of a global environmental crisis have been overestimated and overstated—pinning their faith on what new discoveries and new technology may achieve—it is an inescapable fact that there are parts of the world (some might say parts of Britain) in which environmental crises of different kinds and different degree have not only arrived but are endemic. There is now impressive evidence for the thesis that while differences of opinion about problems and solutions are permissible, complacency is folly. There is no respectable reason to deny that education must be explicitly concerned with ways and means of keeping the life-support systems of the earth in 'healthy working order'.

In the sense in which it is used above, conservation is about natural systems and natural resources and how they and the human community interact. It is concerned with the survival of mankind on acceptable terms, hand in hand with the survival and evolutionary development of the living world as a whole. But conservation may also be seen as referring to man's surroundings in the

life-enhancing sense, as well as to natural systems in the life-supporting sense. Although the two concepts manifestly inter-relate, the clear distinction between them needs to be understood when environmental education is discussed. Hence, conservation of landscape beauty and of the historic heritage in town and country, and care for the condition of the built environment, form a separate but equally important strand. Understandably in such a highly populated, industrialised and urbanised country as the UK, this aspect of conservation has received a good deal of attention. Its central concern is with environmental quality—in the functional as well as in the aesthetic sense—as it affects the welfare, happiness and efficiency of individuals and communities. A strong urban environmental education movement has developed, stressing visual awareness, participation and planning. Its adherents, like those whose interests lie primarily in the countryside, have readily acknowledged the interdependence of town and country.

Environmental education in these several senses is relevant to everyone and it has been fostered through a number of agencies, both formal and informal.

It is clear that environmental education operates at two levels of application: there is a fundamental concern for the long-term well-being of mankind and a related belief in helping the individual to understand and come to terms with a complex world for his own more immediate benefit.

In schools the term 'environmental education' is used less often than 'environmental studies', which refers either to a particular method or to specially devised and designated courses. The two terms are not interchangeable. Courses in environmental studies cannot claim to cover everything. Their purpose is rather to show the way and to make an essential contribution to a wider process in which all teachers, subjects and activities should play a part, and for which the whole curriculum should acknowledge responsibility.

Despite the differing priorities of various people involved in environmental education, it is clear that no single aim can satisfactorily be served in isolation from others. Learning for, through and about the environment is inevitably an integral process. For example, if young children study the houses in a street, the immediate purpose is probably to sharpen their powers of observation and foster the skills of recording and creative expression. But the perceptive teacher will always be looking ahead to the development of an interest in buildings as such and a consequent concern for (among other things) the conservation of the architectural heritage. When secondary-level pupils study plant and animal communities as part of their science education, not only may their cognitive learning be reinforced by first-hand observation, but starting points may be offered for the consideration of nature conservation. Sound learning about the environment has to be rooted in direct experience: and the clarification of values and the development of responsible attitudes go hand in hand with the growth of objective understanding.

Definitions and a framework

Because environmental education is capable of different emphases, approaches and interpretations, it is important to establish a consensus about its overall scope and meaning.

Perhaps the earliest and certainly the most often quoted attempt at a working definition was made in 1970 by a conference of the International Union for the Conservation of Nature and Natural Resources (IUCN):

> 'Environmental education is the process of recognising values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision making and self-formulation of a code of behaviour about issues concerning environmental quality.'

Five years later the United Nations Educational, Scientific and Cultural Organisation (UNESCO) produced its Belgrade Charter and restated its goals in 1977 in the following terms:

> 'To foster clear awareness of and concern about economic, social, political and ecological interdependence in urban and rural areas; to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment; to create new patterns of behaviour of individuals, groups and society as a whole towards the environment.'

Also in 1977 the Scottish Environmental Education Committee (SEEC) suggested:

> 'The aim of environmental education is to enable people to recognise the factors which determine the nature and quality of the human environment so that all may respect and appreciate it to the full and participate constructively, as individuals and as citizens, in its management and development.'

These and other attempts to capture the essence of environmental education clearly have much in common, but almost always in terms of broad generalisations. To a large extent this is inevitable because of the sheer complexity (and often the controversial nature) of many of the specific issues involved. The most fundamental of these is probably the potential conflict between conservation and development, which can be easily seen, for example, in the encroachment of town on country, industry on farmland and farmland on wilderness. It is difficult (and perhaps even tactless) to try to epitomise this opposition in a world of unequally distributed resources and development, but at heart it is an argument as between the standard of living and the quality of life. This is not the only dilemma, since the very continuance of life itself also demands a place on the agenda. There is also the problem of balancing risk against benefit, for instance, in the generation of power, in the creation of pollution and in the depletion of resources. In turn there arises the question of the 'limits to growth', with the implication that some societies will have to reduce their wastefulness (and increase their frugality) in order to reduce the poverty of others. Even if detailed agreement was achieved about matters like these, there would remain the very considerable challenge of setting realistic priorities for action. This, of course, is what 'North—South', referred to above, is essentially about: its final chapter is entitled 'A programme of priorities'.

Decisions are ultimately a political responsibility. But the likelihood of the best choices being made is greatly enhanced when there is widespread knowledge and understanding of all the implications. So education, both formal and informal, has an indispensable contribution to make. Some educationists are undoubtedly sceptical, partly as a reaction against what are seen as the alarmist claims of a 'doomwatch' lobby. The risk here is that deeply important issues may be neglected, or even dismissed, for shallow reasons. This is a field in which pressure groups play a necessary part in the process of public education and it does appear, in fact, that their arguments command increasing respect, consideration and acceptance in essentials. The task of education is to develop a rational basis for the study of the environment—natural, built and cultural—and so equip people

to make up their own minds in an informed way. Some of the essential elements of that process are briefly discussed here.

Awareness

We spend much of our waking lives 'reading' our environment. Much of this is done relatively imperfectly, since most people are concerned primarily with immediate, short-term, practical needs. Although in the licensed freedom of holidays, some develop a feeling for scenic beauty, back in their home surroundings such perceptions fade. It takes only a short time in the company of an expert in, say, houses or hedgerows or birdsong to awaken people to sights or sounds they would normally have missed. The inculcation of such powers of observation and discrimination is among the chief concerns of the educationist.

Teachers of young children know that sensory awareness provides a necessary foundation for first-hand learning of all kinds. Proper aesthetic development can proceed only from a training in observing and listening, in responding to experience with all the senses and in appreciating form, texture, colour, detail, pattern and association in all things. The same training offers an essential grounding for scientific study and investigation. This awareness is not solely an academic or scholastic concern: it contributes significantly to the individual's enjoyment of life. It is also a prerequisite for the development of an environmentally responsive and responsible society; and it cannot be dissociated from understanding.

Understanding

It is evident that many traditional academic disciplines are concerned with the study of the physical world and with man's place and behaviour within it. To that extent there is little that is novel about much of the factual content of environmental education. A specimen list of topics from different backgrounds about which the informed citizen would need a degree of knowledge and understanding might include the following: ecological relationships and balance; energy sources and energy flow; population growth and control; water; the preservation of finite resources and the husbanding of renewable resources, including food; the care of wildlife and the countryside; the causes, process and dangers of pollution; the implications of technological advance, economic activity and growth, and differentials in human consumption patterns; conservation of the cultural heritage; the planning and control of land use; the distribution, form and function of human settlements; urban growth and decay; the political structures within which environmental decisions are taken.

A list like this could quite easily be lengthened and still be incomplete: the implications for teaching and learning are therefore formidable. There is good reason to try to provide as wide a range of insights as possible, although this will present fundamental questions of selection and of depth of treatment. Whatever subject matter is chosen, it is most important to convey the realisation that environmental systems are complex and their problems are not susceptible to easy answers. The crucial element is an understanding of the nature and significance of inter-relationships—both within and between systems. This cannot be achieved solely through the medium of separate curricular subjects, nor can it be built up without taking a synoptic approach from time to time. The proper study of environmental issues automatically entails cross-disciplinary reference and requires cooperative teaching strategies.

Skills

Since meaningful environmental education can hardly be confined to textbooks and discussion, it is important to identify a range of relevant skills, from the simple to the complex, which—reinforced by awareness and understanding—can contribute towards an overall environmental competence.

The main stimulus for the acquisition of physical skills is probably the individual's wish to explore the environment in different ways for different purposes. Outdoor pursuits and the wider process of outdoor education (living, moving and learning in the outdoors) are closely related to environmental education and have helped in its growth. There is little need to stress the recreational benefits of the ability to interpret nature and the urban and rural scene. Equally, it is useful (and gratifying) to be able to read a map, visualise other places, anticipate the weather and appreciate the environmental factors that affect choices at home and at work.

But the most important skills in this context are the sophisticated ones demanded by science, technology and politics. Science and technology offer the power to modify environments for better or worse, and politics is partly about the application of this power in the light of whatever social, economic and ethical priorities prevail. So it is questions of values and attitudes, as they affect decision-making, that lie at the heart of environmental education.

Values and attitudes

Environmental education is more than the sum of its learning components because its ultimate aims are overtly affective and are directed towards influencing behaviour. It seeks to cultivate such qualities as curiosity, aesthetic sensibility, respect for living things, sympathy with others and the wish to act constructively. The real question is how best to stimulate and sustain such attitudes. In practice, there is great reliance on the effectiveness of first-hand experience, learning by doing, cooperative approaches and involvement in debate and action related to live issues. Above all, the clarification of values must be linked to the encouragement of respect for evidence, objectivity and tolerance in resolving the kinds of dilemma which have already been mentioned but bear re-statement: how to reconcile conservation and development in, for instance, the encroachment of town on country, industry on farmland, farmland on wilderness, the clearance of forests and the drainage of wetlands; how to balance benefit against risk in, for instance, the generation of power, the depletion of resources, the pollution of air and water; how to increase the frugality of some societies in order to reduce the poverty of others; perhaps above all how to see quality of life in truer perspective with standards of living. Issues like these bring environmental education firmly into the realm of ethics.

Ethical codes developed precisely to regulate conduct between individuals and between communities to their mutual benefit. So long as the Earth offered apparently endless space and limitless resources, there seemed to be no need for any comparable code to regulate man's conduct towards his physical and biological environment. That position no longer exists—nor does the happy innocence that exploited it. Now, as many resources are nearing exhaustion and the world population continues to grow, the adoption of an environmental ethic based on ecological realities is becoming an urgent necessity. It is a question not of altruism but of survival.

Summary

The discussion of principles in this chapter has stressed both the complexity of the subject matter of environmental education and the need to get to grips with it. The following list of some of its main purposes is paraphrased from a discussion document by HM Inspectors of Schools about environmental education in the secondary school curriculum (see Appendix 4). But its relevance to

life-long education should be clear. It is offered both as a summary of the foregoing and as a basis for practical planning in any educational context.

Environmental education should include helping people to:

- view their surroundings with an appreciative but critical eye
- acquire a range of relevant skills
- understand something of the processes of the physical world, and gain a basic knowledge of ecological principles and relationships
- understand something of the economic, technological, planning and political processes which affect man's use of his environment
- develop some insight into other people's environments, life-styles and problems
- understand something of the interdependence of peoples and the nature of the resource base on which mankind relies
- develop a concern both for their own environments and for the environments of others
- acquire a basis on which to make informed decisions about environmental issues that affect them and society—and the interest and will to do so.

Environmental education is ultimately about helping people to choose wisely and act considerately, whether as individuals, citizens or members of the world community—that 'global village' in which we are all part of one another. It is a life-long and many-sided process in which every educationist has a proper role to play.

Two Current Practice

The national picture

The environmental education movement is, above all, a grass-roots affair and this—together with the high degree of devolution of educational responsibility in the UK—makes it difficult to give an accurate overall picture of what is happening. Perhaps the best approach is to summarise the range of local and regional initiatives, involving mainly children and young people of school age, from a series of recent articles in the *Review of Environmental Education Developments* (REED), a journal published three times a year by the Council for Environmental Education (CEE). The main activities reported include:

Active cooperation, both informal and on an organised basis, between:

teachers, lecturers, advisers, centre wardens, architects, farmers, civic departments (e.g. education, environment, museums, libraries, archives, parks and gardens, planning, environmental health), voluntary organisations (e.g. Civic Trusts, Naturalists Trusts, Royal Society for the Protection of Birds, British Trust for Conservation Volunteers) and statutory bodies (e.g. Countryside Commission, National Park Authorities, Manpower Services Commission, Central Electricity Generating Board).

The planned use of a great range of study areas:

school grounds, streets and buildings, parks, farms, quarries, nature reserves in rural and urban areas and reserves around power stations, areas of coast and countryside served by field study centres.

The use of day and residential centres in town and country:

several dozen local authority centres, near and far, in wide and rural landscapes; several dozen teachers' centres and curriculum development centres; youth hostels and centres of the Field Studies Council; a study room in a park and an urban study centre in a church.

The production and use of many resources:

booklets, handbooks and trail guides, books and documents from libraries and record offices, objects from museums, slides and tapes, teachers' packs and pupils' worksheets.

Active conservation and reclamation work:

tree planting, stream clearance, improvement of waste ground, town gardens, creation of nature reserves on school sites.

Coordinated ventures of several kinds:

exhibitions, continuing curriculum development (e.g. the production of guide lines, schemes of work, examination syllabuses) and special projects. One authority ran an environmental project for schools in collaboration with members of its planning department. Within the general theme of conservation and planning for the future, groups of pupils in different schools applied themselves to such problems as the use of undeveloped land, the provision of amenities, alternative uses of a rubbish tip and a derelict railway, redevelopment of a town centre, life in high-rise flats, the reclamation of slag heaps and the creation of a linear park. Representatives of seven authorities in one region formed a Young People and the Environment Group. Their first publication, *Education for Environmental Responsibility*, has been followed by *Environmental Education Across the Curriculum.* Its contents include a discussion of aims and objectives, case studies from a dozen different schools and a resource guide. One of the authorities concerned is running a major project in secondary schools called 'Teaching for a world of limited natural resources'.

The many and varied activities listed above reflect, among other things, the conviction of those concerned about the merits of environmental study as an approach to learning and of environmental experience as a means to personal and social development; also a parallel conviction that the encouragement of responsible attitudes towards conservation and the improvement of environmental quality must be a prime function of education. But although this impressive catalogue can only be a sample—albeit a fair and representative one—of a continuing flow of initiatives, it should not be taken to imply that enthusiasm and support are evenly or universally spread. It is a guide to what is being done by some and could arguably be done by more, given the means and the motivation.

Primary education

The infant school (five to seven years) continues and intensifies the process that begins in the family setting, in which children are generally encouraged to explore their surroundings, to come to grips (metaphorically and literally) with the objects they encounter and to develop their perceptions of all they can see, touch, smell, hear or taste. As well as signalling the start of the whole learning process, this can plainly be seen as the first steps in environmental education. Much of what happens in the infant schools underlines this fact, since it is important for teachers of young children to offer them richness and variety of experience, whether in the classroom, in the school grounds, or further afield in town and country. The key activities are exploration and observation, contact with living things and the development of different kinds of self-expression. The outcome of effectively guided experience of this sort is the growth of awareness, skills, understanding and concern, so clearly it is an advantage for teachers to have explicit ideas about the ways in which environmental competence, among other attainments, needs to be fostered. Essentially, though, it is a matter of good pedagogy.

So it is also in the junior school (seven to eleven years), where environmental study is normally viewed less as a subject than as an approach to learning. Hence its objectives are defined more in terms of skills, ideas and attitudes to be developed than of information to be acquired. There is a principal emphasis on skills, such as those of communication (language, mathematics, art and crafts), individual study (the use of reference materials), scientific method (observing, measuring, reporting, collecting, classifying, experimenting), geography (the use and interpretation of maps), history (the recognition and use of many kinds of evidence of the past) and social development (cooperation with peers and encounters with adults). First-hand experience is essential. As well as studying their own localities and places further afield through school journeys, many schools attach great importance to growing plants, caring for animals, recording the weather, visiting parks, farms, nature reserves, historic houses, archaeological sites and museums, and meeting people who live and work in the community.

Developments in environmental work reflect the freedom and flexibility of approach which have characterised the efforts of many infant, junior and middle schools in recent years. Classroom doors and windows have been opened and many children have experienced sights and sounds that earlier

may have been denied them. But two related points must be made here: first, not all schools have so far managed to make the best use of their local environments for learning purposes; and, second, good environmental work cannot be done without skilled organisation. The HM Inspectorate survey published in 1978, *Primary Education in England* (HMSO), found that although concern for the natural environment and for living creatures was widely fostered and basic skills received adequate attention, there was some neglect of aspects of learning specific to science, history and geography. It is undoubtedly difficult to imbue environmental work with a sense of progression and the beginnings of formal structure but helpful guide lines are being developed by more than a few local education authorities.

Secondary schools (11-18 years)

Many younger pupils, especially in comprehensive schools (and pupils of similar age in middle schools), follow combined courses under assorted titles which have significant elements of locally based environmental study. Work in language and mathematics may be integral to such courses and so may aspects of science, religious education and art—the pattern is a very varied one—but history and geography are almost invariably the main contributors. Among the academic aims are the development of skills, the learning of techniques and the establishment of conceptual frameworks which may or may not be subject-specific. Within a wide range of traditional subjects, as well as through newly devised courses, there is increasing recognition that as pupils become more experienced and mature their interests and their investigations should be directed towards social and environmental issues. It is interesting to note some of the changes that are taking place, partly through the influence of curriculum development projects.

The two main (and relevant) strands of modern geography teaching are closely relevant to the theme of this review. They are the study of spatial organisation and of man-environment relationships. Geographers are greatly concerned with perceptions and assessments of environmental quality, hazards and opportunities, and how they influence decision-making.

Urban conditions receive much attention, and countries and regions for study at large scale are invariably chosen so that contrasts in development may be illustrated. Historians are concerned to use the evidence of town and country at large, as well as particular sites, to foster the awareness of continuity and change, and of cause and effect, which is an element of environmental competence. Although the teaching of art remains largely studio-orientated, there is a move to introduce a greater element of direct observation and analytical recording, especially in the appraisal of buildings and townscapes.

In many ways science—the study of matter, energy and life—is fundamental to environmental education. Here there is a greater readiness to employ industrial and other non-traditional starting points for the refinement of scientific skills and to encourage a greater understanding of the environmental, technological and social relevance of science. But it is regrettable that not all pupils receive the level of ecological insight which is indispensable to satisfactory environmental education. For a number of reasons, including financial ones, rural science is not taught as much as it was and there are fewer teachers who are expert in plant and animal husbandry. On the positive side, there are more courses involving industrial and technological links and more in environmental science itself.

The last few years have seen the wide-scale appearance of inter-disciplinary courses in environmental studies, for a number of reasons. For instance, there was the desire of teachers to broaden the base of rural studies, to focus attention on the urban environment and to offer less academic pupils more attractive courses. But perhaps the most significant factor was the intention spelled out in the preambles to many new examination syllabuses for the Certificate of Secondary Education (CSE) and the General Certificate of Education (GCE) at ordinary and advanced levels, in various modes, to identify and advance the aims of environmental education coherently, starting from first principles. The design and implementation of new syllabuses have been slow processes especially for GCE, and it is still difficult to evaluate them. Advanced-level courses have been introduced only after trial periods and much discussion between representatives of schools, universities and examination boards. The main issues have included the need for a unifying theme; breadth versus depth; relations with traditional school subjects; required degrees of prior knowledge; the range of resources needed (books not least); the balance of content from the sciences and the humanities; the competing claims for attention of town and country; specific academic requirements (for entry to higher education) as against the general educational needs of sixth-formers; and the problem of teaching a newly defined field of study.

The challenge to the teacher is how to cope with breadth of content in such a way that environmental insights are always soundly based. One approach is to offer individual pupils the chance to study particular problems in depth. But despite the complexity of some of the practical demands, it is an undoubted achievement to have identified a new curriculum area, to have generated discussion and to have stimullated the consideration of environmental factors in other educational contexts. Some extracts from examination syllabuses are given in Appendix 5.

The cause of environmental education has been greatly assisted in the last decade by curriculum development, much of it undertaken by local groups of enthusiastic primary and secondary school teachers, with the support and encouragement of local authority advisers, wardens of teachers' centres, the staffs of colleges of education and others. Nationally, the Schools Council has sponsored many influential projects, such as Environmental Studies 5-13, Science 5-13, Geography for the Young School Leaver, and Art and the Built Environment. Geography 16-19, still at the development stage, takes a man-environment approach, while the scope of another example, Project Environment, can be seen from the titles of its four main publications: *Education for the environment*; *Ethics and environment*; *The school outdoor resources area*; and *Learning from trails*. There are nearly 30 projects with some relevance to environmental education listed in a current Schools Council leaflet. But although this work has involved substantial school-based development programmes and research findings have been reported by several independent projects, there is still an urgent need for more research into environmental education, particularly its methodology and effectiveness.

Field studies

Field studies have become an established part of educational practice at all levels over the past 30 years or more, and environmental education clearly owes a lot to this tradition. A special part in its progress has been played by the Field Studies Council, a voluntary organisation founded in 1943 as the Council for the Promotion of Field Studies. Members of the Council's professional staff are based at well equipped centres in England and Wales.

Their invaluable achievement is to have developed field-work methods, established recognised standards and undertaken research. Similar work is carried out north of the border by the Scottish Field Studies Association.

Virtually every school now provides opportunities for outdoor study. Some public examinations have compulsory fieldwork elements. A number of schools operate extensive and carefully planned programmes which give pupils a series of progressive field-study experiences, including visits of up to a week to residential centres.

In 1979 there were more than 360 residential centres in England and Wales operated by local education authorities wholly or partially for field studies (outdoor pursuits is the other important and related use), and nearly 300 independently run, including youth hostels with special facilities. At LEA centres especially there are rarely enough places to meet demand. Use has to be carefully rationed, which is partly why many schools have acquired their own bases, often in remote country. Great enthusiasm and voluntary effort support such undertakings. In addition, many field-study parties stay at hotels and guest houses which adapt to their needs and make low charges out of season. Day centres, mainly operated by LEAs, are numerous and these also tend to be heavily over-subscribed. The whole network of centres represents a substantial investment in environmental education in its widest sense. Development has now reached a plateau for several reasons, including financial constraint (some have been closed), pressure on the countryside (some areas are severely over-used) and the need to pause for evaluation. In particular, it needs to be asked whether 'distant' fieldwork might (in general) be better done and better justified if it were built more firmly on experience gained and techniques learned in the home area.

Realisation of the need for competent and efficient leadership of educational parties in the field, with safety and conservation as prime considerations, has led to the production of many national and local publications, including codes of conduct, and to the establishment of in-service courses for leaders. But there remains considerable scope for more and better training.

Urban studies

There has been a considerable increase in urban studies over the last decade. Although most of this work is done from school bases and much from local teachers' centres, many field centres now include urban work in their programmes and there are also about 20 special urban studies centres. Most of them are used only in the daytime, but one or two have some residential accommodation. Typically, they enjoy the cooperation of local planning departments and of professional and community interests.

The main object of the Council for Urban Studies Centres, founded in 1973, is '. . . to promote and advance the study and understanding (by school-age and older students and by the public at large) of the social, physical and natural characteristics of the urban environment and their inter-relationship . . .'. The centres perform a number of functions, including acting as learning bases for both local students and visitors; as centres through which information (particularly planning information) can flow; and as venues for involving the public in consultation about environmental planning.

Substantial encouragement for the centres has been given by the Education Unit of the Town and Country Planning Association (TCPA), whose *Bulletin of Environmental Education* (BEE) has helped to spread ideas and information at home and abroad. As a result, the phrase 'street work' is now part of the language and hundreds of town trails have been developed. There is a solid base of experience to build upon.

Hand in hand with the prime aim of fostering concern about the built environment, there is a drive to improve understanding of the conservation of nature in urban areas, to explore the resources of wasteland and to give city children some experience of living things. Some local authorities make notable contributions to this effort, through a variety of special resources, and a number of city farms and an 'ecological park' in London have been set up by voluntary groups.

A fairly recent arrival on the scene is now known as 'heritage education' and heritage centres have been opened by various agencies. Following European Architectural Heritage Year in 1975, the Department of the Environment set up a Heritage Education Group to stimulate study of the urban environment and of the historic heritage. It does this by bringing together educationists, architects, planners and other local government professionals, as well as representatives of bodies with a shared concern. The Group has also sponsored special ventures which have resulted in such publications as *Education and Heritage, The Young Environmentalists* and *Environment and Community*. Its periodical, *Heritage Education News*, is widely distributed. Plans are now being made to form a Heritage Education Trust centred on a college of education, with support from the Historic Houses Association, among other interests, and under the auspices of the Council for Environment Education (see page 13).

Non-advanced further education

Environmental education has not achieved the kind of influence in non-advanced further education that has been experienced in the school and in some parts of higher education over the past 10 years. However, growth in the general studies aspects of technical and craft courses, and the problem of motivating students in such non-tested areas, has led many teachers to introduce industry related general education, to give students a chance to tackle topical environmental issues. This has been particularly effective for those who benefited from their school experience of environmental education and are aware of media coverage of environmental questions.

But it is in the area of the main curriculum that most signs of serious consideration can be seen and a growing body of opinion maintains that this is the proper place for dealing with contemporary environmental problems, however valuable general studies treatment might be. There appears to be wider appreciation now of arguments about the wastefulness of industrial processes based on cheap and plentiful raw materials and power supplies. Useful foundations for a wide range of courses are offered.

There is a considerable challenge here to national validating bodies, including the Technician Education Council (TEC) and the Business Education Council (BEC) to stimulate further curriculum consideration based on a much more realistic appraisal of Britain's industrial future. It is a challenge which must be met. A promising sign that it is recognised is the recommendation of a TEC working party that environmental education should form part of the general education of all technicians. The City and Guilds of London Institute (CGLI) foundation courses already have a compulsory environmental education component.

Another welcome straw in the wind has been the recent launching of a few technical courses committed to the development of environmentally orientated technicians in such fields as

countryside conservation and the monitoring of industrial processes. This kind of work should have an increasing impact on the traditional areas of study out of which it has grown.

Higher education

In recent years there has been a substantial development of environmentally orientated courses in universities, polytechnics and other institutions of higher education. That the process is not at an end is shown by the establishment, in 1980, of a Centre for Environmental Interpretation at a polytechnic. A large part of the new growth is represented by courses that are not directly vocational and now number more than 60. Modules and options drawn from the sciences and from the humanities are often incorporated. 'Environmental science' is a common title; the many others include, for example, human ecology, landscape studies and resource management. There are professional courses of a broadly environmental nature for more than 250 degrees and diplomas. They include, most obviously, those with direct application to the use, modification and monitoring of the built and natural environments, such as agriculture, architecture, landscape architecture, town and country planning, and engineering and environmental health. In all such courses there is a general challenge to make the breadth of reference and to give the kinds of insight that will be needed if professional practice is to be adequately informed and responsible. In this connection post-graduate and mid-career courses for professionals have potentially much to offer. Some of those that exist are related to changes in legislation and some lead to extra qualifications, for instance, in pollution control and recreational land management.

Teacher training

Parallel with the development of environmental studies as a teaching approach in primary and middle schools there was a great expansion of related main-subject courses in colleges of education. The subsequent contraction in demand for teachers has severely reduced the number of such courses; rural studies has suffered most from this and few effective centres survive. The position has been complicated by the need to offer more widely based courses (often modular) for students who want to keep their career options open. Course designers face difficult questions, such as those connected with the coherence and integrity of courses and their capacity to deal with underlying theory and philosophy; the balance between subject teaching and practical teacher training; and preparation for varied teaching roles. These considerations are important both in initial and in post-graduate teacher education and in-service training has an important supplementary part to play. There has, in fact, been an increase in the number of environment-orientated courses for serving teachers who want to refine their competence and enhance their qualifications. Herein lies a particularly significant role for college staffs, who have played a notable part in the development of the theory and practice of environmental education, through their initial training courses, curriculum development projects, publications and, not least, the establishment of the Society for Environmental Education, which has now merged with the National Association for Environmental Education (NAEE—see Appendix 1).

Youth activities

This is a field in which education and environmental action are inseparably linked. Young people can get real enjoyment and satisfaction from out-of-school environmental activities, especially when they are given some freedom to organise their own programme, and this experience of improving and protecting their surroundings can make lasting impressions. Voluntary community action like this, together with its effects on those who undertake it, forms a highly desirable outcome of environmental education. A survey made in 1976, sponsored by the Council for Environmental Conservation (CoEnCo), covered the efforts of thirty-three organisations involved in action campaigns, workcamps, community service, special projects and surveys, studies of birds, animals, plants and ecology, and fund-raising. CoEnCo has since set up a Youth Unit which is developing ways to encourage this kind of initiative and to implement training schemes for youth leaders. A sub-committee is also carrying on the work of the Youth Committee of the former Council for Nature

Informal environmental education

An interest in nature as a subject for study and a matter of delight, and a concern for the condition of our towns and cities, are both themes with histories that go back many years and to well before the Industrial Revolution. For long such matters moved only a minority —naturalists, writers, painters and poets, reformers and the like—but now there is a much wider awareness of man's place in and impact upon the natural world, of the influence of the rural and urban environment on the quality of life and of the dangers of indifference and neglect.

A number of factors are at work to bring this about. They include the realisation that modern technology poses powerful new threats to the environment, while at the same time offering the means for effective conservation and improvement. One of the most significant causes of the increased interest in environmental matters has been the role of the media. Educational television and radio make notable contributions and both the BBC and the independent television companies issue consolidated lists of relevant programmes.

The total output is substantial. But much is also achieved through news and current affairs programmes and above all, perhaps, by documentary series such as 'Life on Earth' and 'Botanic Man' which have effectively brought issues relating to evolution, ecological diversity and balance, and the conservation of nature, to audiences of millions. Other series have been variously concerned with the quality of the landscape and of the built environment.

As to the press, special mention should be made of competitions and projects for school children and students which involve environmental monitoring, appraisal and improvement. Examples are provided by Watch (the Watch Trust for Environmental Education) sponsored by *The Sunday Times* and the Society for the Promotion of Nature Conservation (SPNC); the Wide Awake Trail Award Scheme run by *The Daily Mirror* and the Heritage Education Group; the Kenneth Allsop Memorial Essay Competition run by *The Sunday Times*; the essay competition run by *The Observer* and the Institution of Environmental Sciences (IES) in aid of World Environment Day; and the new essay competition organised by the Professional Institutions Council for Conservation (PICC) in conjunction with *The Times Educational Supplement* to promote urban renaissance as part of the current European campaign.

Alongside all this media activity have been the campaigning and educational work of a great number of voluntary organisations (see next section).

The appetite for enlightenment is also catered for by the widespread provision, through many agencies, of evening classes and short residential courses on environmental themes of many kinds, including wildlife, landscape, local history and archaeology. Much of this informal provision, like

material in the mass media, is highly educational within essentially social and recreational contexts. Underlining and reinforcing it has been the steady increase in the provision of interpretative facilities in both town and country, such as information centres, 'heritage' centres, leaflets, maps, pictorial displays, exhibitions, trails, guided walks and farm open days.

Voluntary organisations

The companion to this booklet, *Environmental Education: Sources of Information 1981* (HMSO), now in a second and revised edition, lists, in addition to other organisations, about 150 voluntary bodies, both national and regional, and representing a variety of interests, which contribute to environmental education in the widest sense. Their aims, activities and services are described in that booklet, which should be consulted by those wanting detailed information. There is space to mention only a few of them here. Four main groups can be identified: bodies that exist to promote the study and better understanding of particular matters; those that emphasise specific aspects of environmental protection and conservation; professional associations and coordinating organisations. But these are not exclusive categories.

The first group includes organisations ranging alphabetically from Agricultural Colleges and the Arboricultural Association to the Zoological Society of London. The second group takes in, on the one hand, organisations with a prior concern for amenity, such as the National Trust and the Council for the Protection of Rural England and, on the other hand, conservationist pressure groups like the Friends of the Earth (part of a worldwide federation) and the Conservation Society (whose offshoot, the Conservation Trust, does valuable work in the preparation and provision of resources for schools).

Among professional bodies, the Royal Institute of British Architects and the Royal Town Planning Institute have both set up working groups on environmental education. The former has established an architectural workshop for schools in a northern city, while the latter has published a leaflet on 'The Role of the Planner in Environmental Education'. The Geographical Association has a standing committee for environmental education and has recently published a new statement about the contribution the subject can make. The Scottish Association of Geography Teachers and the Association for Science Education have issued similar statements.

In recent years several professional bodies have come into being to promote across-the-board aspects of environmental education at different levels. For example, the National Association for Environmental Education brings together primary and secondary school teachers, local authority advisers and others for regular one-day conferences and an annual residential conference, all of which are devoted to particular themes. The Association disseminates its thinking in a range of publications, including the pioneering *Statement of Aims* for environmental education, which analyses content and suggests practical objectives for successive educational phases. There is also a newsletter, and it issues the magazine *Environmental Education* three times a year. Other print includes surveys of school examination syllabuses and of environment related higher education courses.

The Institution of Environmental Sciences acts on behalf of those in further and higher education, publishing a comprehensive news-sheet and promoting regular conferences. Its first European conference was held in London in 1978 and the second in Berne in 1980. The IES has organised two seminars in the UK in response to the UNESCO conference on environmental education in Tbilisi. The Professional Institutions Council for Conservation encourages the consideration of conservation issues in the environmentally concerned professions. Other groups exist to foster the environmental interests of teacher training staff, members of education advisory services and those involved in running field-study centres.

Organisations that exist wholly or partly to coordinate different interests and activities are exemplified by the Civic Trust, representing local amenity societies, the Society for the Promotion of Nature Conservation representing the county-based nature conservation trusts, and the British Trust for Conservation Volunteers supporting and coordinating voluntary conservation work. The Council (formerly Committee) for Environmental Conservation (CoEnCO), established in 1969, has a wider brief and brings together a range of organisations '. . . in order to develop a common approach to issues of national importance.'

The single most important coordinating body is the Council for Environmental Education, established in 1968 as a direct result of the second 'Countryside in 1970' conference. It has effectively been a model of its kind and it goes a long way towards meeting the recommendation (No 27) of the Tbilisi conference for the establishment of national information centres. It comprises a permanent staff and representatives from over 50 national bodies concerned with the environment and environmental quality and with educational provision and practice, including government departments and agencies. This broad structure enables it to act as a forum for discussion, an initial point of reference and a disseminator of information for the whole environmental education movement in England and Wales. International contacts are growing and many overseas visitors are received. The CEE is financed mainly by the Department of the Environment, local authorities and the sale of its publications, and although funding still presents problems, recent increases in the government grant have permitted a strengthening of the headquarters staff. The benefits are already being felt and the Council seems poised to increase its effectiveness. Nevertheless, much depends on the generosity of those who serve in an honorary capacity.

The Council's main publication, *REED*, has been mentioned and there is also a monthly news-sheet. A recent issue about environmental education in the curriculum was distributed to every secondary school in England and Wales, with the aid of a Schools Council grant, and a series of regional seminars on the same subject has been organised.

Another important CEE publication is the *Directory of Environmental Literature and Teaching Aids* (DELTA). It will shortly be superseded by a series of classified lists and annotated bibliographies prepared by a newly established information service, which is the first of its kind. Special initiatives taken with the help of the CEE include the Town Teacher movement, in the field of urban environmental education, and the Sandford Awards for educational work at historic houses and other establishments, in the field of heritage education.

The Scottish Environmental Education Committee, founded in 1977, has a mainly academic membership; its purpose is to promote inquiry and development in Scotland and it organises an annual standing conference. The Prince of Wales Committee provides a forum for amenity groups in the Principality: it encourages environmental projects by young people through an award scheme and has held a major conference to consider the environmental education issues that affect Wales. For examples of projects qualifying for the Prince of Wales Award, see Appendix 6.

Government departments and statutory agencies

In the UK it is primarily teachers, institutions and local authorities that decide what is to be taught in schools: the Government exercises little direct control. In England and Wales the Department of Education and Science influences the curriculum mainly through the guidance and information it provides and through discussion stimulated by HM Inspectors of Schools. Similar situations exist in Scotland and Northern Ireland under the aegis of their respective education departments.

It is a responsibility of the DES, mainly through the Inspectorate, to monitor the education system and assess needs and trends. Advice is available to those in the field through courses and publications, and through contact with individual members of HM Inspectorate. There is an environmental education committee of inspectors with an appropriate range of phase and subject interests and the duty of keeping in touch with developments. The committee organises annual short courses for teachers and prepares publications. A view of environmental education (see Appendix 4) was compiled for the HMI series of discussion papers on the theme 'Curriculum 11-16' and the present volume is another product of the committee's work.

The Department of the Environment (DOE) also has a considerable interest in the nature, content and effectiveness of environmental education which, in consultation with DES, it seeks to encourage wherever possible. In December 1979 the Department's former Environmental Board published a report on Environmental Education in Urban Areas, whose conclusions and recommendations (given in Appendix 7) relate to the school curriculum, urban study centres, the role of professional bodies, research, and the concerns of government departments. This is a valuable report which draws attention to a number of important current issues, and its proposals need careful consideration in the wider educational context and with due regard to financial implications.

Because of its responsibility for a wide range of functions that affect the physical environment, DOE makes a good deal of information available, both to the general public and to the education service, by the production of books, leaflets, wall-charts, films and slides on such topics as architecture, planning, noise, pollution, urban conservation and waste disposal. DOE also gives essential financial support to the Council for Environmental Education and other bodies, including, for instance, the CoEnCo Youth Unit, the Keep Britain Tidy Group (which has a substantial programme of educational research involving many schools) and the Heritage Education Group.

Within the Department, a number of directorates have interests in environmental education, for example, the Directorate of Ancient Monuments and Historic Buildings (concerned with urban conservation as well as with ancient monuments and historic buildings), the Central Directorate on Environmental Pollution, and the Central Unit for the Built Environment, which has a general remit to stimulate and increase concern for all aspects of the built environment in the Department's work. The Directorate of Rural Affairs, which is responsible for policy on nature conservation, acts as the focal point within the Department for liaison with outside bodies on environmental education matters.

DOE also exercises oversight of the statutory requirement for public participation in relation to the structure and local plans which guide development at county and local levels; associated study documents, consultations, public inquiries and consequent publicity have all played a part in the spread of understanding of environmental issues.

The Ministry of Agriculture, Fisheries and Food is primarily responsible for the health of the agricultural and fishing industries and for ensuring satisfactory food supplies, so that its services and publications are generally of a technical character. But wider questions inevitably arise and an officially commissioned report, *Agriculture and the Countryside* (1978), had implications both for the education of farmers about conservation and of the general public about agriculture.

The Department of Energy is also mainly concerned with technical matters, but it is clear that the public must recognise the problems and be able to assess the arguments if the right energy policies are to be evolved and carried out. The Department accordingly issues numerous publications, many of them suitable as source materials for schools: booklets, leaflets and fact sheets on such topics as fuel efficiency, different energy sources, and energy saving; and a new series of teaching packs.

The Department of Transport produces some information with a bearing on environmental education, especially about road safety and road planning.

The Overseas Development Administration of the Foreign and Commonwealth Office administers the Government's programme of financial and technical assistance to over 120 developing countries. Within the UK it tries to promote a better understanding of the needs of the third world and of the nature of development processes and, incidentially, how the latter relate to environmental considerations. Published materials include a wall chart for schools, a wallet on natural resources, and other illustrative material.

The Nature Conservancy Council (NCC) is the government agency 'for the purposes of nature conservation and fostering the understanding thereof.' (A brief historical note is given in Appendix 8.) Developing responsible attitudes towards the environment is fundamental to the work of the NCC and its educational activities fall into four broad categories:

- Sites. Several of its National Nature Reserves (NNRs) are used by schools, colleges and universities for educational visits and field studies. On some of them there are nature trails and small centres with informative displays and staff in attendance so that the general visitor can gain greater understanding and enjoyment from his visit and minimise his impact on sensitive habitats.
- Materials. Descriptive leaflets and nature trail texts are produced from some NNRs and for a few there are also teachers' guides or educational handbooks. Leaflets, posters and wall-charts on various nature conservation topics are available as well as educational project material. Information circulars on geological and physiographic conservations are issued periodically to more than 11,000 recipients. Nearly 6,000 of these go to schools.
- Advice and support. The NCC advises local education authorities and others on the need for and the suitability of areas for educational use and on their management. Grants are made to help educational and interpretative projects related to nature conservation and the NCC is co-sponsor of an annual conference for those involved in providing or running field-study courses.
- Shell Better Britain Competition. The NCC is a joint sponsor of this competition which encourages young people, in and out of schools,

to undertake practical projects to improve their local environment, whether largely natural or man-made.

The Countryside Commission has the duty of keeping under review matters relating to the conservation and enhancement of landscape beauty in England and Wales, and to the provision and improvement of facilities for enjoyment of the countryside, including the need to secure access for open-air recreation. It is primarily an advisory body which seeks to inform and to change attitudes, and to that extent its function is educational. It addresses itself to national and local government, to voluntary organisations and to individuals. A major part of the Commission's work concerns the 10 National Parks of England and Wales which run their own information and/or educational services. The Commission designates areas of outstanding natural beauty, heritage, coasts and long-distance walking routes. It has been active in promoting or providing interpretative facilities, including visitor centres, trails, guided walks and farm open days. Much of the grant aid given by the Commission each year to both the public and private sectors is specifically for the provision of information and visitor services such as these. The work is always directed to the dual aim of enhancing the pleasure of visitors through increased awareness and understanding and of protecting the places visited.

The Commission publishes the Country Code as well as a variety of informative leaflets and booklets. A conservation education officer has recently been appointed and further initiatives in the area of education for leisure and the development of responsible attitudes towards conservation and the use of the environment are being considered.

The Countryside Commission for Scotland has powers 'to engage in any activity which they may consider appropriate for the purpose of educating and informing persons in the proper use of, and behaviour in, the countryside'. Its Conservation Education Branch, set up in 1968, has done pioneering work in the fields of environmental education and interpretative planning. In 1970 the Commission played a leading role in the organisation of European Conservation Year in Scotland, which took as its theme 'Information and Interpretation'.

Many contributions have been made to courses and conferences at home and overseas, including annual Council of Europe workshops. Regular courses are provided at the Commission's own training centre and joint courses include those held with the Scottish Field Studies Association on fieldwork methods and with the British Trust for Conservation Volunteers (a cycle of 12 weekend courses). The staff are continually concerned with the provision, maintenance and improvement of interpretative facilities at sites to which the public has access throughout Scotland.

The Forestry Commission has done much in recent years to encourage wide use of its forests for educational purposes. It makes many publications available, including about a dozen packs of teaching materials relating to particular forest areas. These have been prepared through active collaboration with teachers and others in the education service.

Conclusion

So brief a survey of so broad a field inevitably suffers from shortcomings of both content and balance. There is also a real danger that a concise account with minimal comment may convey too rosy a picture. Despite the amount of activity described here, there is certainly no cause for complacency. Indeed, what amounts to a great richness of example remains to be much more widely emulated.

Three
The International Context

The international dimension

The growth of international trade and travel and changes in economic and industrial patterns have environmental consequences that call for cooperative responses and coordinated policies. For example, demand for raw materials that causes the depletion of finite resources such as fossil fuels carries with it grave implications for the future of the world, no matter where the depletion is actually taking place. Similarly, polluted air and water have no regard for international frontiers. Inevitably, as problems of protecting the environment cross national boundaries, so must environmental education enlarge its horizons and involve the whole community of nations.

A sense of urgency now spurs mankind's search for harmony with his environment and there is widespread agreement that education has a vital part to play. Only the incorporation of environmental elements into educational programmes offers the hope of real progress towards ensuring that the citizens of tomorrow, including scientists, technologists and decision-makers, are more successful than past generations have been in reconciling the demands of conservation and development. Good intentions are easier to express than to realise; but there has been general agreement that they should at least be formulated and people from different political and economic systems have sat down together in order to work out their common priorities. This shared concern has expressed itself in a number of conferences and seminars over the last decade. For example, in 1970 IUCN convened an International Working Meeting on Environmental Education in the School Curriculum, in Carson City, Nevada, USA; then, in 1972, Stockholm was the scene of the celebrated United Nations Conference on the Human Environment, which recommended the Secretary-General, together with UN and other international agencies, to try to establish an international programme of environmental education. And in 1975, arising out of the Stockholm conference, there was a 10-day International Environmental Education Workshop in Belgrade. This one was organised jointly by UNESCO and the United Nations Environment Programme (UNEP), and it gave birth to '... a global framework for environmental education', or the Belgrade Charter. Regional meetings that followed led up to the 1977 conference at Tbilisi.

The Tbilisi conference

The first intergovernmental conference at ministerial level on environmental education took place in October 1977 in Tbilisi, capital of the Soviet Republic of Georgia. It was organised by UNESCO with the cooperation of UNEP and was attended by official government delegations from 66 member states of UNESCO and by representatives from 20 international non-government organisations. The agenda included the following main items:

- Major environmental problems in contemporary society;
- The role of education in facing the challenges of environmental problems;
- Current efforts at national and international level for the development of environmental education;
- Strategies for the development of environmental education at national level;
- Regional and international cooperation for the development of environmental education.

The UK contribution

For the United Kingdom, the Department of Education and Science produced a national report in the form of a set of documents outlining the current profile of environmental education in the country. The 20 papers covered historical growth, current treatment in schools and in further, higher and non-formal education; such themes as urban environmental education, nature conservation, and the role of the media; and the UK contribution to worldwide environmental education. Contributors included members of environmental bodies with a keen interest in education and representatives of the education service and HM Inspectorate of Schools The papers were presented in a pack, *'Environmental Education in the UK 77,'* which also contained a sample of publications from relevant voluntary and statutory organisations.

The Tbilisi declaration and recommendations

The overall purpose of the Tbilisi conference was to devise a plan of action which could be adopted by all the countries involved and through which environmental education could be promoted and developed at both regional and national levels. This aim was realised by the approval of a declaration and a set of 41 recommendations.

The Tbilisi declaration (reproduced in Appendix 9) reiterated the worldwide need for environmental education as a 'comprehensive lifelong education' which would provide every individual with the skills and attributes necessary to improve the quality of life. To meet this need, the conference appealed to member states to introduce an environmental content into their educational provision; invited education authorities to promote environmental education research and innovation; urged member states to collaborate in the exchange of research findings, materials and teaching facilities; and appealed to the international community to give generous help to the furtherance of this cooperation.

The Tbilisi recommendations, briefly summarised here, can be divided into three main parts. The first group (Nos 1-5) shows how environmental education relates to education as a whole in terms of role, objectives and guiding principles and outlines its importance to various sections of the community. The second group (Nos 6-21) is concerned with national strategies, suggesting ways in which each country can make its own contribution and offering specific guide lines. The third group (Nos 22-41) deals with international regional cooperation, with the emphasis on environmental education programmes for the third world and on overseas aid; in the UK, these recommendations are particularly relevant to the work of the Overseas Development Administration.

Role, objectives and guiding principles

Recommendations 1 and 2 are given in Appendix 10. The conference urged that environmental education should bring about a closer link between educational processes and daily life and take into account the complex ethical, social, cultural and economic dimensions of the human habitat, the interaction of natural and built environments, and the needs and perceptions of different countries. National decisions and actions were seen as having international repercussions. Environmental education had to keep sight of the relationship between improvement of the environment and the degree and nature of social and economic development in different regions.

Environmental education was declared to be a lifelong process affecting all age and socioeconomic groups; to help make it a reality, full advantage

should be taken of the resources offered in both public and private sectors and by the mass media. The approach should be interdisciplinary and holistic, focusing on current and future problems and relating the subject matter to the learner's own experience. It should emphasise the complexity of environmental questions, encourage the faculty of critical thinking and make use of the whole range of educational opportunities and methods. The process should start when the learner is young by encouraging awareness within the family and by involving children even at the pre-primary school stage. UNESCO should provide aid where it is needed.

For the recommendations to make '... an effective contribution towards improving the environment' they should be backed by legislation, controls and government policies. All governments should maintain systematic evaluation of the impact of development on the environment.

National strategies

The conference urged the setting up or strengthening of coordinating bodies for environmental education in each country, involving teachers, representatives of educational and environmental protection authorities and the media. These bodies should have many functions, including the encouragement of collaboration, the dissemination of information, the drawing up of guidelines and the consideration of research needs.

More and better books and teaching aids were needed and more leaders in environmental fields should be trained. Audio-visual materials should be developed to popularise environmental education programmes and an internationally understandable glossary of environmental terms should be produced.

To be effective, environmental education had to be aimed not only at the general public, but also at certain strategic occupational groups (e.g. planners, architects, engineers) and at some smaller groups whose work brought them into significant contact with the environment (e.g. biologists, oceanographers, soil scientists). Initial professional training for such groups should include a common core of interdisciplinary environmental studies. Training for those already qualified could take the form of in-service or postgraduate courses. Both the general public and non-government organisations should have advance warning of, and the chance to participate in, proposals which would directly affect their environment.

Institutions engaged in curriculum development should examine the relative suitability of single-subject, multi-disciplinary and inter-disciplinary teaching approaches; more attention should also be given to the initial and in-service training of teachers. All teachers should be made aware of the importance of an environmental dimension to their work.

Universities could combine resources, and different disciplines (for example, biology, socioeconomic studies, sciences, geography) could contribute to environmental education at this level. Students on technical courses should be informed about the kind of environmental changes their work could lead to. In the non-formal sector more should be done to make the general public aware of the detrimental effects of wasteful use of consumer goods.

The conference also advocated government support for non-formal associations and institutions, including youth organisations, engaged in environmental activities, underlining the vital role played by voluntary effort. Museums and exhibitions should be encouraged and increased. Governments should investigate the best ways of communicating an enhanced appreciation of environmental education to the widest possible audience.

International and regional cooperation

Most of the recommendations in the third group deal with international co-operation in carrying out environmental education programmes; this is described as a network approach. The conference urged UNESCO to extend its activities in the environmental education field and to consider the possibility of offering a prize for outstanding work. UNESCO should also offer technical aid to member states for the establishment of national environmental education structures.

The conference placed great emphasis on the value of exchanges of ideas, information and personnel. There should be more international symposia and seminars and a second Tbilisi-style event should be arranged after a suitable interval. More use should be made of UNESCO's regional officers for the development of environmental education and UNEP should be responsible for co-ordinating the work of UN agencies. UNESCO should regularly compile and issue directories of environmental education organisations and personnel.

Special aid programmes were proposed in order to coordinate efforts in Africa and Asia and in other parts of the world where the establishment of environmental education programmes was hampered by a shortage of financial resources and trained personnel.

On from Tbilisi

Amadou-Mahtar M'Bow, Director General of UNESCO, described the Tbilisi recommendations as 'both a milestone and a starting point'. They provided the basis of an action plan. UNESCO itself would now be moving into a more operational phase, he said, including making aid more readily available to member states who wanted to launch pilot environmental education projects.

The United Kingdom supported the Tbilisi declaration and recommendations, acknowledging the relevance and value of the conference's aims. Many of the recommendations were consonant with what was already being done in the UK, but there was still a pressing need for improved and expanded environmental education. (Possible developments are considered in Chapter Four.)

International Union for the Conservation of Nature and Natural Resources (IUCN)

The work of its Commission on Education has made the IUCN a pioneering force in environmental education since 1949. It has organised a series of world and regional conferences, including the International Working Meeting on Environmental Education in the School Curriculum, mentioned earlier in this chapter, and the first European Working Conference on Environmental Conservation Education in Switzerland, in 1971. Environmental education specialists from the UK serve as members of both the Commission itself and its North-West Europe Committee.

The most important of IUCN's current contributions to environmental education is its World Conservation Strategy, launched in 32 countries (including the UK) in March 1980. The strategy, an official summary of which is reproduced as Appendix 3, urges the case for maintaining essential ecological processes, life-support systems and genetic diversity and puts forward priorities for the sustainable use of natural resources. The biggest challenge to environmental education is seen as remedying the lack of awareness evident among both the public and the professionals, including those involved in agriculture and industry, legislators and decision-makers, of the benefits and necessity of conserving natural resources.

European programmes

There are few environmental problems affecting this country that are not

shared by our neighbours in Europe and so the UK plays a part in environmental education programmes sponsored by both the Council of Europe and the European Communities. This regional cooperation is very much in line with the third group of recommendations adopted by the Tbilisi conference.

The Council of Europe's Committee for the Conservation of Nature and Natural Resources has a committee for environmental education and training which has taken a series of initiatives in recent years, mainly in the form of courses and publications. There have been courses on ecology (held in the Netherlands), education for public participation (also in the Netherlands), regional ethnology (in Denmark), environmental education in an urban setting (in England) and the special problems of environmental education in southern Europe (in Portugal). The magazine *Naturopa*, distributed in this country by the Nature Conservancy Council, contains articles on a wide range of environmental topics. Publications have been issued with such titles as *Environmental Awareness* (by D. Aldridge of the Countryside Commission for Scotland), which offers a statement of principles, followed by a survey of facilities available in member states for environmental education and interpretation; *Regional Ethnology*; and, most recently, *Environmental Education in a Totally Urban Setting* (by G. Carter of the Countryside Education Trust), which provides a clear exposition of principles, methods and facilities, together with a series of case studies illustrating UK practice. The Council has also published *Environmental Education at University Level,* which surveys and analyses the diverse programmes to be found in this field in member states. An exhibition on environmental education, organised jointly with the French Ministry of the Environment, was mounted in Paris in 1979. UK contributions included a presentation by the Research Project of the Keep Britain Tidy Group; a selection of children's work from the county of Avon, illustrating, among other things, cooperation between the education and planning departments; and a presentation about the work of an urban studies centre. A selection from the exhibition is going on tour among member states. In 1980 a colloquy held in Strasbourg included several contributions by speakers from the UK.

Following European Architectural Heritage Year in 1975, the Conference of European Ministers Responsible for Regional Planning proposed the holding of a European Urban Renaissance Year. The Council of Europe's governing body (the Committee of Ministers) sponsored a campaign launched at the fifth session of the Conference of Regional Planning Ministers, held in London in October 1980. An international conference to close the Heritage Year will probably be held in the early autumn of 1981 in Strasbourg. The main elements of the UK contribution are sponsored by the Department of the Environment, with the participation of a wide range of statutory and voluntary organisations.

An environmental education programme has also been established by the Commission of European Communities. In 1977 it set up a Network Project linking primary schools in member states, with the aim of sharing experience of teaching methods in environmental studies. Members of the Curriculum Development Unit of the University of Dublin School of Education provide guidance and coordination and progress is monitored by a panel of experts. The schools receive financial help for such things as the purchase of equipment, pupil and teacher travel (various exchanges have been made) and the production of teaching materials. Contact is maintained by a newsletter and by annual seminars for the teachers (held so far in Dublin, Hertfordshire and Italy). Some of the first year's project work was featured in a publication, *Environment and Life.* Currently, 20 schools are taking part, and they are organised into three groups, each of which has representatives from five countries and is working on one of the themes: energy, recreation and leisure, and the cultural heritage. One positive outcome of the project is expected to be the production of teaching materials suitable for use by others.

In 1980 the Commission also launched an extensive inquiry, conducted by interview and questionnaire, into the philosophy and practice of environmental education in member states.

A European Conference on Environmental Education in Berne in the Spring of 1980 was the second of a series. The conference, with the theme Environmental Education and its Applications, was organised by the Institution of Environmental Sciences (UK) and the World Environment and Resources Council. The conference's aim was to discuss the recommendations of the 1977 Tbilisi conference in terms of the future needs of society, and its principal resolutions reflected, among other things, the importance of close cooperation between non-governmental organisations and the UNESCO/UNEP international environmental education programme and the promotion and development of environmental education on a worldwide basis.

Four
Future Development in the UK

The significance of Tbilisi

The UNESCO/UNEP Environmental Programme began in 1974. In effect, it prepared the ground for the intergovernmental conference in Tbilisi and it is now much involved in the efforts to implement the Tbilisi recommendations through the agency of a small Environmental Education Unit based at UNESCO headquarters in Paris, through a continuing programme of regional meetings and through the provision of funds to support selected projects. The progress of this work is regularly reported in the newsletter *Connect*.

The moves that led up to the conference brought together practising environmental educators as consultants at a series of regional workshops (of which that for Europe was held in Helsinki in December 1976). The resulting declaration and recommendations thus represent a synthesis of the best ideas and information from over 100 countries which attach considerable importance to environmental matters and which have committed themselves to a serious effort to attain the conference's objectives. Detailed consideration of various aspects of environmental education can be found in *Trends in Environmental Education*, published by UNESCO in 1977. The main message to come out of the Tbilisi discussions is that environmental education is a practical means of equipping individuals to understand and cope with problems and processes that affect their daily lives. It should therefore not be viewed as an optional extra, but as an essential and integral part of the education of everyone.

Aims and methods

In the words of one of the first Tbilisi recommendations, 'environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities.' The implication of this for those who guide and direct environmental education is clear: care is needed to ensure that programmes and activities are problem-orientated. This is underlined by another of the early recommendations, which maintains that 'environmental education should help learners discover the symptoms and real causes of environmental problems'. Further, programmes should focus on root causes and 'show the economic, political and ecological interdependence of the modern world'. Teachers and course planners can raise the quality of environmental education by eliminating content that is superficial or too narrowly conceived and by testing their programmes against the objectives set out in the first chapter of the present review, and implicit in the Tbilisi Conference recommendations (see Appendix 6).

It must, nonetheless, never be forgotten that a prime purpose of environmental education is to foster positive appreciation and enjoyment of the environment at the personal level and for individual benefit. This must always be a principal means by which to create a public that actively seeks to protect and improve what it values.

If environmental education is to make a quantitative advance as well as a qualitative one 'full advantage must be taken of all public and private facilities available to society for the education of the population: the formal education system, different forms of non-formal education, and the mass media.' For this to become a reality, commitment to environmental education needs to be maintained and strengthened. Without such commitment there is little prospect of real progress.

The formal education sector

Although there is no question of the education service enjoying an exclusive and prescriptive right to dispense environmental, or any other, education, the fact remains that at present there are no fewer than 11 million young people—one-fifth of the UK population—involved with the service in one way or another. Inevitably this places a large measure of responsibility on the providers of formal education. The aims and objectives of environmental education, therefore, demand due consideration when policies for the curriculum as a whole are being developed. Some local education authorities have already made valuable contributions to the overall development of environmental education The most important strategy has been the establishment of a responsible adviser who, with the aid of a supporting team, has been able to supervise and allocate resources, provide in-service training, involve teachers in curriculum development and secure the cooperation both of local communities (including their elected and professional representatives) and voluntary organisations. The example of such authorities deserves to be widely studied and the merits of what they do deserve to be considered in the light of available options.

There is no substitute for first-hand experience to bring environmental education to life, and teachers need to be able to see the learning potential of all available resources. Both town and country can offer a wealth of opportunity for practical work in different specialisms and there are many possibilities to involve outside organisations and professionals, including conservation groups and planning teams.

The education service has a duty to do all it can to make students aware of the environmental (and other) realities of the world they live in and to try to equip them to assess the implications of alternative policies for the future—their personal futures, the future of their own communities and indeed the future of the world itself. Environmental education must therefore be a function of the whole curriculum and its relevance to the lives and interests of all pupils must be made plain.

Clearly this cannot be achieved unless the schools, with due support, are able to take positive action. A practical first step might be the designation of a member of staff to take responsibility for planning, coordination and general oversight of elements of environmental education in the curriculum. It should go without saying that the support of the head and the cooperation of colleagues will be vital to the effectiveness of the nominated teacher's efforts. Realistic objectives should be agreed on and great care needs to be taken to design syllabuses and programmes of study appropriate to them, in terms of content, emphasis and sequence. This may call for adjustment within individual subjects, for instance, by giving more weight to ecology within science, to environmental evidence in history, or to man/environment relationships in geography. Timetables, too, may need modification to make room for some cooperative teaching and to allow for learning activities out of school.

The local neighbourhood is a valuable resource, offering opportunities for pupils to learn about the complexities of immediate environmental issues, to take part in local affairs and to see in microcosm some of the problems that face larger communities, whether regional, national or even global. It is, of course, important for all pupils to be encouraged to discuss and study environmental questions in this wider context, whether or not they are given specifically environmental courses. As in other aspects of education, the aim should always be to

open their minds to the general via a thorough grounding in the particular, and to help them to lift their eyes (sometimes literally) to broader horizons. Any approach to environmental education which lacks such a perspective is unlikely to produce lasting benefits.

The foregoing considerations relate essentially to what might be done at the secondary level (in primary schools matters would be managed differently, and less formally) and it is important for advocates of environmental education to accept that in trying to meet their many curricular responsibilities secondary schools have no easy task. The design of schemes of work and the deployment of teaching strengths has to be done with a whole range of needs in mind. Environmental education must be seen in relation to, for instance, moral, social and political education with which, clearly, there are degrees of overlap. In their thinking and planning both for the curriculum as a whole and for particular subjects and courses, schools may most justly be asked to take account of environmental concerns when they are set in context with others; and arguments for environmental education are bound to be most persuasive when they are seen as part of a broad spectrum of related needs.

Given suitable preparation in school, pupils who enter higher or further education should do so with a degree of environmental competence and understanding that can increase the benefits they derive from their courses. However, as the Tbilisi conference emphasised, the environmental education of the student calls for a much bigger contribution from professional and vocational courses. More cooperation is needed between specialists such as engineers, scientists, architects, administrators, surveyors and planners, to prevent the danger of offering courses that are too narrow or rigid and to enable specialisms to be seen in relation to each other and to communal responsibilities. There could be an important role here for the professional associations: they could, for example, collaborate with their colleagues in the education service in the design of more in-service and refresher courses for professionals. At the very least, they will need to become still more responsive to the problems of the environment.

Mention has already been made of the TEC working party recommendation that environmental education should form part of the general education of all technicians. It must be said that both here and at operative and technologist levels there is considerable room for improvement. The inclusion of environmental elements in liberal or general studies is not an adequate response to the need. The need for attention by colleges and validating bodies to this question rests on the arguments that have already been advanced in the case of the schools.

Britain's environment will continue to suffer if environmental considerations do not play a significant part in industrial decisions and if the environmental implications of industrial ways of working are not appreciated. Britain's students ought to be equipped to make sense of their environment at the occupational as well as the personal level. An informed workforce is important to environmental progress. But it must be added that management also has a crucial part to play.

Non-formal environmental education

The notable efforts of the voluntary and statutory agencies in the field of environmental education were briefly summarised in Chapter 2. Communications with the education world have benefited greatly from their involvement in the production of DES source booklets on environmental education. Numbers of voluntary organisations offer young people and adults valuable practical involvement in environmental work, through camps, courses and projects. These fruitful opportunities should be made more widely known, especially via the education service and the mass media.

There is considerable expertise in the interpretation of town and country in the UK, where the development of both field studies and of urban studies have been pioneered. The importance of interpretative and study centres is likely to grow, not only within formal education, but also in offering educative experience to the more mobile and leisured population of the near future, on visits to country parks, nature reserves, old cities and new towns.

The potential for expanding out of school environmental education activities by young people has been demonstrated. Realising that potential will require more youth-leader training in the environmental field, encouraging appropriate organisations to include more environmental action in their programmes and promoting more environment-related educational provision for young people in inner city areas.

Research has shown that broadcasting, especially television, and the press can have more influence on young people in terms of environmental knowledge and attitudes than what they are taught at school. There is already substantial coverage of environmental matters—whether overtly educational, news-based or entertaining—in much of the mass media, but they clearly have it within their power to make an even bigger contribution to the awareness of the young. If the sense of responsibility of the few could be more widely spread, the media could advance the cause of environmental education—and therefore the prospect of a better world—in ways not open to other agencies.

Recommendation No. 6 of the Tbilisi conference urges each country to strengthen or set up appropriate organisational structures to coordinate environmental education activity. In England the Council for Environmental Education was set up in 1968 for this very purpose and the younger Scottish Environmental Education Committee and the Prince of Wales' Committee may have the potential to fulfil similar roles. The Department of the Environment has taken significant steps to create a means of coordinating relevant work within its own sphere of interest. There is no doubt that effective coordination and consultation can increase the value of the work of the great numbers of organisations involved, by offering them a more rational basis on which to plan their activities and by showing them who their allies are. The possibility could arise of giving the whole movement a united and coherent voice with which to argue its overall case—for example, through the establishment of a national centre for environmental education.

Summing up

These pages offer evidence that the UK has much to be proud of in the field of environmental education, in the formal and non-formal sectors of education, in the programmes of the statutory bodies and in the activities of the many voluntary bodies. But it is equally true that the sheer complexity of the process overawes many people, who have at best only a partial understanding of its nature and scope. As the issues raised here and in other publications suggest, environmental education is not a monopoly of any subject specialism, any single profession, or any particular section of society. It is a significant aspect of the educational process as a whole and we are all in it together. As the first of the Tbilisi recommendations puts it:

> 'A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environment resulting from the interaction of their biological, physical,

social, economic and cultural aspects, and acquire the knowledge, values, attitudes and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and the management of the quality of the environment.'

A more formidable challenge could scarcely be formulated. It is the purpose of this publication to make a contribution to an effort in which many are already joined and to indicate the right direction along a hopeful road.

Appendix 1

A Brief History of Environmental Education in the UK

This account is based, by permission, on a paper prepared for the 1977 Tbilisi conference by K S Wheeler, Chairman of the Executive Committee of the Council for Environmental Education

There are four traditions in the evolution of British environmental education in schools:

1 Environmental studies—the interdisciplinary use of the environment as a stimulus to learning.
2 Conservation—the use of nature study and field study to teach about the countryside.
3 Outdoor recreation—the pursuit of physical recreation in the countryside.
4 Urban studies—the study of the built and social environment of towns and cities.

The starting point in time was undoubtedly the work of Sir Patrick Geddes (1854–1932), biologist, town planner and educationist. Regarded as the father of environmental education, he demonstrated his ideas through civic and regional surveys he conducted from the Outlook Tower, Edinburgh. Later, the Le Play Society was founded by teachers and others inspired by Geddes' example and wishing to put into practice his principles of regional surveying. People in contact with these ideas published two influential books: *An introduction to regional surveying* by C C Fagg and G E Hutchings (1930) which provided the basic methodology for field studies in the countryside; and *Actuality in the school* by G J Cons and C Fletcher (1938) which contributed greatly to persuading primary schools to use the local environment in their teaching.

During the 1930s mounting concern was expressed about the deterioration of the countryside caused by urban sprawl and the decline of farming. The Council for the Preservation of Rural England, formed in 1926 to improve countryside amenity, was the first environmental pressure group to call for 'educational activity on a national scale to protect the countryside'. The need for a more informed concern about the countryside was recognised by the creation in 1943 of the Council for the Promotion of Field Studies (now the Field Studies Council). This independent body aimed to encourage scientific fieldwork by setting up residential centres to accommodate school and college parties. It was a major innovation in the practice of environmental education and it heralded an upsurge of educational activity related to the countryside. This was accompanied by the introduction of more concrete and relevant work in primary and secondary schools throughout the 1950s, and advisory reports such as the *Schools and countryside report* (1958) and the report of *The study group on education and field biology* (1963) also exercised some influence.

The importance of nature conservation first received official recognition when the Government set up the Wild Life Conservation Special Committee which reported in 1947. Two years later the Nature Conservancy was established by Royal Charter and given power by Act of Parliament. It made important contributions to the development of environmental education, especially through the 1960s. In 1973 an Act of Parliament established the Nature Conservancy Council (NCC) as a government body 'for the purpose of nature conservation and fostering the understanding thereof' in Great Britain. In 1966 the Conservation Society had been established to make people aware of the dangers to the natural environment; and it set up the Conservation Trust to be concerned mainly with education.

In May 1963 *The Observer* and the Council for Nature held a wildlife exhibition which had far-reaching repercussions on education. It highlighted the lack of collaboration and leadership among the countryside amenity and conservation organisations, and the Council's patron HRH the Duke of Edinburgh put in train a series of study conferences to explore ways to make improvements. Called 'The Countryside in 1970' conferences, they were held against a background of increasing public anxiety about the environment, and from them it became apparent there was a need for more environmental education if the countryside was to be preserved. So conservationists and educationists met at 'The Countryside in 1970' conference (held at the University of Keele in 1965) to discuss the educational implications. Many valuable recommendations were made (see Appendix 2) leading to the setting up in July 1968 of the Council for Environmental Education (CEE) to provide a focal point for coordinating effort and disseminating advice. The organisational machinery now existed to facilitate the growth of environmental education in England and Wales. On the same day the Scottish Education Department appointed a Committee on Education and the Countryside with similar functions.

In 1967 the Plowden Report *Children and their primary schools* confirmed the value of using the environment, and from 1968 onwards teachers began to introduce new environmental studies courses. In primary schools the use of the environment for teaching became accepted practice, and in secondary schools most of the regional boards of the Certificate of Secondary Education (CSE) began to develop new syllabuses in environmental studies. Some examination boards began to include fieldwork questions in geography and biology syllabuses at GCE O- and A-level. In a move to overcome the reluctance of the examination boards to accept environmental studies at A-level, the Hertfordshire Education Department held the Offley Conference (October 1970) which took a major step towards identifying relevant interdisciplinary concepts but it was not until 1973 that the examination was first set.

In 1968 in Britain, the Society for Environmental Education (SEE) was founded as the first teachers' association to propagate ideas about 'the use of the environment in education and education for the environment'. In 1970 the National Rural Studies Association was renamed the National Association for Environmental Education and has since superseded SEE as the major teachers' organisation. The Schools Council as the main curriculum development body for schools in England and Wales also responded to the need for initiatives in environmental education. Between 1967 and 1971 it started several major projects, such as the Environmental Studies Project, Project Environment, and the Nuffield A-level Biological Sciences Project.

In the 1960s several universities such as East Anglia and Lancaster set up new degree courses in environmental science and other aspects of environmental studies. Similarly, many polytechnics introduced new environmental courses, and teacher training programmes in colleges of education began to offer environmental studies as an element in degree courses.

Perhaps the most rapid developments during this time were the growth of field studies and of outdoor education, particularly through the provision of field study centres, many of them residential, by local education authorities. The use of the countryside for outdoor pursuits increased enormously and in 1970 the National Association for Outdoor Education was founded.

Throughout this period Britain was also grappling with urban environmental problems and in response to the 1969 Skeffington Report *People and planning* the Town and Country Planning Association (TCPA) decided that more should be done to teach young people about the urban environment. Accordingly, the TCPA Education Unit was set up in 1971 to campaign for the introduction of urban studies in schools and colleges, mainly through their monthly *Bulletin of Environmental Education* (BEE). By 1972 the TCPA had begun to consider ways and means of establishing urban studies centres in towns and cities analogous to field studies centres in the countryside, although their inspiration came from the early example of Geddes' Outlook Tower in Edinburgh.

In 1970 the Government set up the Department of the Environment (DOE) to coordinate policy on the environment and in 1972, as part of the United Kingdom's contribution to the United Nations Conference on the Human Environment, DOE prepared two publications seminal to the development of environmental education. These were *50 million volunteers: a report on the role of the voluntary organisations and youth in the environment* and *How do you want to live? A report on the human habitat.* Both consider the British view of the human environment to include not only the biophysical but also the sociocultural environment of man, particularly in urban surroundings. Thus by the early 1970s environmental education was developing rapidly in the United Kingdom in all four areas of environmental studies, conservation, outdoor recreation and urban studies, and firm foundations had been laid for future progress.

Appendix 2

Conclusions and Recommendations of the Conference on Education (The Countryside in 1970, Second Conference) held at the University of Keele, 26-28 March 1965

On the assumption that man's well-being demands a healthy environment, of which the countryside is an essential part, and that the increasing demands of a modern, affluent, mobile society require national, regional and local policies for the countryside, the conference

CONCLUDED THAT

1. Positive educational methods are needed to encourage awareness and appreciation of the natural environment as well as responsibility for its trusteeship by every citizen.
2. The educational system has a decisive contribution to make in creating this awareness and sense of individual responsibility.
3. The countryside is a rich source of inspiration and teaching material which can contribute substantially to education at all levels; field studies provide a valuable means of using and developing this educational resource.
4. Properly integrated into the curriculum, field studies can form a valuable part of the whole school course. They provide an opportunity of relating many subjects more directly to the natural environment and of fostering a deeper understanding of the forces affecting it.

AND RECOMMENDED THAT

1. The educational system should provide a wider understanding of the natural environment as a contribution to the cultural values of a liberal education and as an essential basis for the conservation and enhancement of the countryside.
2. The education of children should be enriched by making full use of the resources of the countryside wherever possible and appropriate.
3. The training of teachers should include experience in using the resources of the countryside and of waste ground (see Recommendation 13) in the education of children.
4. More incentive, publicity and facilities should be provided by institutions of higher education and local education authorities for the training and guidance of teachers in conducting field studies, particular in developing the broad environmental approach which would help to break down out-dated barriers between many school subjects.
5. Fundamental and operational educational research, with participation by teachers, should be intensified to determine more exactly the content of environmental education and methods of teaching best suited to modern needs.
6. Means must be found of assessing field studies and project work in the examination system by collaboration between examination boards and teachers. More encouragement should be given to scientific enquiry into and experiments with alternative ways of examining.
7. Those concerned with examinations and syllabuses should encourage multi-disciplinary field projects and should cooperate with teachers in preparing and assessing them.
8. Residential and day field studies centres, sufficient to meet the national and local demand, should be provided by authorities and organisations concerned with education.
9. Local education authorities should be requested to survey future requirements in their areas and to prepare plans for securing the necessary land before it is too late; wherever possible, sites—including school gardens—should be provided near schools.
10. Local education authorities should be encouraged to seek the help of the County Naturalists' Trusts in England and Wales and the Scottish Wildlife Trust in Scotland on the finding, use and care of sites for field study centres and for educational nature reserves.
11. Special arrangements should be made for advice and guidance on the use of such facilities and for the dissemination of knowledge from specialist bodies. Specialists (for example, staff of government organisations, agriculturalists, foresters, technologists, and members of voluntary bodies) should be encouraged to make advice and facilities available to teachers, and teachers to take advantage of such services.
12. Local authorities should develop civic parks and other open spaces for environmental education and should provide associated interpretative facilities, such as field museums and nature trails.
13. When rehabilitating waste land and preparing schemes for urban renewal, local authorities should take into account the requirements of environmental education.
14. Interpretative and information services should be coordinated and expanded as a matter of urgency on a scale adequate to meet the increasing use of the countryside for leisure.
15. Museums should develop their interpretative role and their contribution to the educational system through School Museum Services.
16. Environmental education should form part of the basic training of agriculturalists and other professions concerned with land and water, particularly planners, architects, landscape architects, foresters and water engineers.
17. A review should be made of the demand for persons with appropriate ecological training who will be required to implement national, regional and local policies for the countryside. The results of this review should be made available to institutions of higher education and professional bodies so that they may make adequate provision to meet the long-term demand.

Appendix 3

IUCN World Conservation Strategy. Executive Summary

The World Conservation Strategy is intended to stimulate a more focussed approach to the management of living resources and to provide policy guidance on how this can be carried out by three main groups:

—government policy makers and their advisers

—conservationists and others directly concerned with living resources

—development practitioners, including development agencies, industry and commerce, and trade unions.

1. *The aim of the World Conservation Strategy is to achieve the three main objectives of living resource conservation:*

a. to maintain essential ecological processes and life-support systems (such as soil regeneration and protection, the recycling of nutrients, and the cleansing of waters), on which human survival and development depend;

b. to preserve genetic diversity (the range of genetic material found in the world's organisms), on which depend the functioning of many of the above processes and life-support systems, the breeding programmes necessary for the protection and improvement of cultivated plants, domesticated animals and micro-organisms, as well as much scientific and medical advance, technical innovation, and the security of the many industries that use living resources;

c. to ensure the sustainable utilization of species and ecosystems (notably fish and other wildlife, forests and grazing lands), which support millions of rural communities as well as major industries.

2. *These objectives must be achieved as a matter of urgency because:*

a. the planet's capacity to support people is being irreversibly reduced in both developing and developed countries:

—thousands of millions of tonnes of soil are lost every year as a result of deforestation and poor land management:

—at least 3,000 km^2 of prime farmland disappear every year under buildings and roads in developed countries alone;

b. hundreds of millions of rural people in developing countries, including 500 million malnourished and 800 million destitute, are compelled to destroy the resources necessary to free them from starvation and poverty:

—in widening swaths around their villages the rural poor strip the land of trees and shrubs for fuel so that now many communities do not have enough wood to cook food or keep warm;

—the rural poor are also obliged to burn every year 400 million tonnes of dung and crop residues badly needed to regenerate soils;

c. the energy, financial and other costs of providing goods and services are growing:

—throughout the world, but especially in developing countries, siltation cuts the lifetimes of reservoirs supplying water and hydroelectricity, often by as much as half;

—floods devastate settlements and crops (in India the annual cost of floods ranges from $140 million to $750 million);

d. the resource base of major industries is shrinking:

—tropical forests are contracting so rapidly that by the end of this century the remaining area of unlogged productive forest will have been halved;

—the coastal support systems of many fisheries are being destroyed or polluted (in the USA the annual cost of the resulting losses is estimated at $86 million).

3. *The main obstacles to achieving conservation are:*

a. the belief that living resource conservation is a limited sector, rather than a process that cuts across and must be considered by all sectors;

b. the consequent failure to integrate conservation with development;

c. a development process that is often inflexible and needlessly destructive, due to inadequacies in environmental planning, a lack of rational use allocation and undue emphasis on narrow short term interests rather than broader longer term ones;

d. the lack of a capacity to conserve, due to inadequate legislation and lack of enforcement; poor organization (notably government agencies with insufficient mandates and a lack of coordination); lack of trained personnel; and a lack of basic information on priorities, on the productive and regenerative capacities of living resources, and on the trade-offs between one management option and another;

e. the lack of support for conservation, due to a lack of awareness (other than at the most superficial level) of the benefits of conservation and of the responsibility to conserve among those who use or have an impact on living resources, including in many cases governments;

f. the failure to deliver conservation-based development where it is most needed, notably the rural areas of developing countries.

4. *The World Conservation Strategy therefore:*

a. defines living resource conservation and explains its objectives, its contribution to human survival and development and the main impediments to its achievement (sections 1–4);

b. determines the priority requirements for achieving each of the objectives (sections 5–7);

c. proposes national and subnational strategies to meet the priority requirements, describing a framework and principles for those strategies (section 8);

d. recommends anticipatory environmental policies, a cross-sectoral conservation policy and a broader system of national accounting in order to integrate conservation with development at the policy making level (section 9);

e. proposes an integrated method of evaluating land and water resources, supplemented by environmental assessments, as a means of improving environmental planning; and outlines a procedure for the rational allocation of land and water uses (section 10);

f. recommends reviews of legislation concerning living resources; suggests general principles for organization within government; and in particular proposes ways of improving the organizational capacities for soil conservation and for the conservation of marine living resources (section 11);

g. suggests ways of increasing the number of trained personnel; and proposes more management-oriented research and research-oriented management, so that the most urgently needed basic information is generated more quickly (section 12);

h. recommends greater public participation in planning and decision making concerning living resource use; and proposes environmental education programmes and campaigns to build support for conservation (section 13);

i. suggests ways of helping rural communities to conserve their living resources, as the essential basis of the development they need (section 14).

5. *In addition, the Strategy recommends international action to promote, support and (where necessary) coordinate national action, emphasizing in particular the need for:*

a. stronger more comprehensive international conservation law, and increased development assistance for living resource conservation (section 15);

b. international programmes to promote the action necessary to conserve tropical forests and drylands (section 16), to protect areas essential for the preservation of genetic resources (section 17), and to conserve the global 'commons'—the open ocean, the atmosphere, and Antarctica (section 18);

c. regional strategies to advance the conservation of shared living resources particularly with respect to international river basins and seas (section 19).

6. The World Conservation Strategy ends by summarizing the main requirements for sustainable development, indicating conservation priorities for the Third Development Decade (section 20).

Appendix 4

Environmental education A working paper by HMI
This paper is from the HMI publication Curriculum 11-16 (DES 1977)

GENERAL INTRODUCTION

Environmental education is to be regarded as a function of the whole curriculum, formal and informal. It is furthered both through established subjects and by courses in environmental science and environmental studies which in varying degree are interdisciplinary. There is a common purpose in these to foster an understanding of the processes and complex relationships which affect environmental patterns, together with sensitivity to environmental quality and a concern for the wise and equitable management of the earth's resources. Contributions come mainly from biological, physical, earth and rural science, and from geography, history and art (including architecture); but this is not an exclusive list. Because the spectrum of concern is so wide and so many variations of content and emphasis are possible, it is desirable to identify a set of overall aims for guidance in syllabus and curriculum construction.

AIMS AND OBJECTIVES

UNESCO has stated the goals of environmental education as follows:

i 'to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas';

ii 'to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment';

iii 'to create new patterns of behaviour of individuals, groups and society as a whole towards the environment'.

How is the school—which, it should be stressed, bears only a part of the total responsibility—to translate such aims into realistic objectives for pupils aged eleven to sixteen? One possible framework is outlined here. Although awareness, competence, understanding and concern are separately identified, their development in practice must rely on close relationships between them: teaching emphases will vary according to circumstance. There is an implicit progression from learning which is mainly directed towards personal development to learning which increasingly takes into account the needs of society:

a. **Awareness** (the term being used here in a direct and simple sense.)

Awareness requires to be cultivated. We spend much of our waking lives 'reading' the environment around us. To be trained to observe, to respond to sensory experience and to appreciate form, texture, colour, detail and pattern in all we see is a prerequisite of aesthetic development and of much of the enjoyment of life. Such awareness provides the necessary basis for first hand learning.

b. **Competence**

There is a need for training in environmentally-related skills, physical and intellectual, scientific and technological. Pupils can be helped to extend their skills of living and moving in town and country. The individual stands to gain in efficiency and personal satisfaction from the ability to read a map, to interpret the urban and rural scene, visualize other places, anticipate the weather and travel wisely. It is helpful to have an educated perception of the environmental factors affecting choice of work and of home. Scientific and technological skills give the power to modify environments for better or for worse, and require judgement in their use. There is irony in the thought that some of the most primitive peoples of the world are perforce, on their own terrain; the most environmentally competent. In sophisticated societies, the development of technology has all too often outrun competence in this sense.

c. **Understanding**

A large proportion of academic disciplines are devoted to the study of the physical world and man's behaviour within it. Some of the topics with implications for environmental education, of which the informed citizen could be said to need a degree of knowledge and understanding, are:

ecological relationships and balance

energy sources and energy flow

population growth and control

the preservation of finite resources and the husbanding of renewable resources

the care of wildlife and the countryside

the processes and dangers of pollution

the implications of technological development

economic activity and growth

differentials in human consumption patterns

the distinction between standard of living and quality of life

conservation of the cultural heritage

the planning and control of land use

the distribution, form and function of settlements

urban growth and decay

the political structures within which environmental decisions are taken.

Much of the content indicated by such a list is dealt with by the separate subjects of the curriculum; it may usefully suggest criteria for the selection of what is to be taught. Clearly, any attempt to teach everybody everything is misplaced, although there is good reason to try to provide as wide a range of insights as possible. What is perhaps most important is to convey the realisation that environmental systems are complex and environmental problems not easily resolved. This cannot readily be done solely through the medium of individual subjects or without taking a synoptic view from time to time. The proper study of environmental issues requires cooperative teaching approaches and automatically entails cross disciplinary reference.

d. **Concern**

Competence and understanding in the individual are of little value to society unless they serve to awaken concern for the quality of the environment and for life within it which in turn leads to commitment and action. Hence it is often said that the ultimate purpose of environmental education is ethical. Schools are, properly, concerned about moral attitudes towards the environment as they are about moral attitudes towards people; but the cultivation and clarification of values is a difficult and delicate business, in which regard must be paid to social factors and to the backgrounds, beliefs, preconceptions and maturity of pupils. There is probably general agreement about the sort of precept which is proper for the encouragement of considerate attitudes and behaviour; and that precepts should be supported by reason, underpinned by the example of teachers and fostered by experience. In the last connection, just as field work and 'street work' are accepted as essential aspects of environmental learning, so experience in the care of animals and plants should not be omitted.

Relatively mature pupils are faced with more difficult questions of commitment and action: overlap with social, moral and political education becomes clear. Pupils of aged fifteen and sixteen deserve an introduction to controversy with safeguards based on respect for evidence, sympathetic identification with others, awareness of prejudice and an understanding that choices are rarely clear-cut. Environmental issues provide good starting points in that they continually come to notice in unforced ways, they are real to pupils, and they may act as effective testing grounds for social, moral and political values. Their consideration may diminish parochialism and help to broaden perspectives, for many issues need to be seen in a wide—often worldwide—context. Many young people show a degree of spontaneous and thoughtful concern which calls for sensitive acknowledgement in teaching programmes and teaching styles. (Perhaps a lack of concern on the part of others, for whatever reasons of background and life-style, makes a similar if much more testing demand?) Furthermore, the response may be provoked: 'Don't tell us about it: let us discuss what we can do about it'. Various kinds of action are possible when pupils perceive a need. Participation in projects affecting the local environment can bring fruitful contact both with the general public and with professional people such as architects and planners.

CONTRIBUTION TO AREAS OF EXPERIENCE

Because learning at first-hand through the environment can be so pervasive a method, because so many aspects of the curriculum contribute to environmental understanding, and because there is an integral concern with values and attitudes, the process of environmental education relates to all the areas of experience identified in *Curriculum 11-16*:

i *Ethical:* environmental education postulates an ethic based on the need to conserve the earth's resources for the benefit of future generations. It is also concerned with canons of considerate behaviour and codes of conduct;

ii *Scientific:* environmental education must be firmly based on a scientific approach. Ecological and technological understanding are cornerstones. Environmental study provides incomparable opportunities for learning such scientific skills as observing, selecting, investigating, classifying, pattern-seeking, making hypotheses, experimenting and theorising;

iii *Linguistic:* the need to communicate information, thoughts and feelings about the world around us is a powerful stimulus to language development and self-expression. The world around us is probably the richest source of imagery by which the quality of linguistic communication is enhanced.

iv *Mathematical:* mathematics is inherent in the patterns and processes of the natural world, the study of which in turn fosters mathematical skills. Algebra and statistics are fundamental to the understanding of, for instance, population growth and resource depletion.

v *Physical:* the need and the wish to explore the environment, for different purposes and in different modes, is a major stimulus to the development of physical skills.

vi *Social/political:* it is a main function of environmental education to create awareness of the interdependence of human communities. Environmental understanding makes an important contribution to political competence. Many of the conflicts which politics exists to resolve are concerned with man-environment relationships. Local political issues with which pupils can identify frequently have an environmental component.

vii *Aesthetic:* the prime basis of environmental education is sensory response, and an integral purpose is to foster perception of the environment in aesthetic terms as a means to the enrichment of experience.

viii *Spiritual:* wonder evoked by the natural world and the perception of forces external to human existence have always had the power to arouse spiritual feelings.

REASONABLE EXPECTATIONS BY AGE 16

It seems important that those who will shortly become autonomous citizens should, to the extent of their capabilities:

a. view their surroundings with an eye both appreciative and critical;

b. be competent in a range of environmentally-related skills;

c. understand something of the processes of the physical world, and especially have a basic knowledge of ecological principles and relationships;

d. understand something of the economic, technological, planning and political processes which affect man's use of his environment;

e. have a degree of insight into other peoples' environments, life-styles and predicaments;

f understand something of the interdependence of peoples and the nature of the resource-base upon which mankind relies;

g. show developing attitudes of concern towards their environment and the environments of others;

h. in so far as environmental issues are concerned, have a basis on which to develop the ability to make informed decisions affecting themselves and society—and the interest to do so.

IMPLICATIONS

There is no automatic need to add anything to the timetable. It is clear, for instance, that the purposes of science and geography are very closely aligned with those identified above. There is a variety of opinion about the merits of 'combined' as opposed to 'separate-subject' approaches to environmental education; but both should be regarded as valid and necessary. It is the proper part of academic disciplines to establish the main conceptual frameworks within which progressive learning and increasingly sophisticated understanding may be developed.

There is also a responsibility to keep teaching priorities under review and to recognize that the needs of the individual and of society require cooperation (however devised) in the study of many significant issues, or something will be lost.

If a school decided to implement a policy for environmental education, some of the practical implications might be:

i The design of syllabuses and overall programmes of study to ensure suitability of content, emphasis and sequence.

ii The provision, at suitable stages, of opportunities for all pupils (a) to study and discuss environmental issues in the round and (b) to become actively involved where appropriate.

iii Adjustment of the timetable to provide opportunities for a measure of cooperative teaching, and to permit a proportion of the pupils' learning experience to be undertaken out of school.

iv The designation of a member of staff to have responsibility for planning, coordination and oversight.

Appendix 5

Extracts from Public Examination Syllabuses

1. London University Examination Board A–Level in Environmental Studies
The aims and objectives of the two year course are that the student should be better able:

a. to identify and appreciate the interrelationships of the physical and biological factors that make up the environment;

b. to analyse and synthesise the ways in which man may control his environmental impact and to recognise the values by which such control may be guided;

c. to evaluate and establish a set of personal values towards the place of man in the environment, and the impact of human society on its biophysical surroundings.

The syllabus has four sections:

I The energy flow through the natural environment and the limits of the resource base.

II The ecosystem ('the student will carry out ecological studies in the field').

III Man as an organism in the environment.

IV Environmental conflicts and planning: a field study.

2. Joint Matriculation Board A–Level in Environmental Science

The sections of the syllabus are:

i Energy, water and other resources.

ii Food supply and food production.

iii Pollution, waste disposal and pesticides.

iv Population.

3. East Anglian CSE Mode 1

The aim is to produce students who are fully appraised of the dynamic nature of the physical and biological environment, and by the understanding so gained are made aware of their responsibilities to society as a whole for the treatment and management of the total world environment. The syllabus recognises that some 80 per cent of Britain's population lives in urban or urbanised situations, and yet places sufficient emphasis on the study of ecosystems to show that living communities of plants and animals are a vital and necessary factor in their lives.

Appendix 6

Examples of projects qualifying for the Prince of Wales Award

1. Reclamation of derelict land for agriculture, forestry, recreation, or for an educational purpose.
2. Landscaping in connection with industrial, commercial, road or other development.
3. Removal or screening of an eyesore.
4. Improvement in the environment of a notable site or building, e.g. by tree planting.
5. Conversion to a community use of a building which has outlived its original purpose.
6. Any imaginative activity leading to conservation or better appreciation of the environment in the widest sense.
7. Rehabilitation or improvement of local surroundings for recreation and education or conservation purposes e.g. street, stretch of water, village green, beach, etc.
8. Use of reservoirs for recreation/education/conservation purposes.
9. Development of a new country park or picnic area, or improvement of an existing one.
10. Establishment of a new nature reserve or trail, or improvement of an existing one.
11. Sign-posting and/or illustration by diagram or model of a feature of historical or archaeological (including industrial) interest.
12. Provision of a hut or observation post for studying natural features, and interrelation of rural activities.
13. Provision of an exhibition or staffed reception centre, with information displays, for visitors.
14. Scheme for conservation for particular flora or fauna, e.g. completed field study/conservation project.
15. Production for schools of a teaching pack on local features or on a particular environmental problem.

Appendix 7

Environmental education in urban areas: conclusions and recommendations*.

(Report by a Working Party of the Environmental Board, Department of the Environment)

Conclusion 1: Urban environmental education should help people perceive, understand, analyse, and finally improve their built environment. It should be centrally concerned with aiding people to participate more effectively in shaping their local environment. It is not a pure subject in its own right, but should draw on environmental aspects of traditional subjects ranging from natural sciences through geography and history of art, architecture and planning. It should include visual and design components, and should involve direct experience as well as academic study. (Paras 109–114).

Conclusion 2: Environmental education in schools should be given a much higher priority than at present. The main effort needs to be in the secondary schools. Here environmental education should be developed not as a separate subject, but through stressing environmental aspects of related subjects. The emphasis should be on local studies, with locally produced materials, and on bringing educational and environmental interests together—perhaps by the appointment of education officers in relevant local authority departments. Any examination element should be based on locally developed syllabuses. The initial emphasis needs to be on inner city partnership areas.

Recommendation: The Department of the Environment and the Department of Education and Science should urgently explore ways of introducing an environmental education element into secondary schools and, especially into those schools situated in inner city partnership areas. (Paras 116–121).

Conclusion 3: Urban Studies Centres and their equivalents, providing a resource for both adults and children, should be a first priority for any additional governmental assistance in the field of environmental education. There should be an emphasis on inner city locations, at least in the first phase. Their work needs a coordinating body. This could be the Council for Urban Studies Centres.

Recommendation: The Department of the Environment should work to support a network of Urban Studies Centres, or equivalents, initially in inner city areas and especially where there is local initiative. A minimum of nine centres in the partnership and programme areas should be supported from an appropriate source of funds for a guaranteed period of at least five years. The work should be co-ordinated by the Council for Urban Studies Centres working to a brief developed by the Department. (Paras 122–127).

Conclusion 4: The role in environmental education of the professions and trades concerned with urban development and redevelopment is deficient and in need of improvement.

Recommendation: The principal professional bodies concerned—the Royal Town Planning Institute, the Royal Institute of British Architects, the Royal Institution of Chartered Surveyors and the Institution of Civil Engineers—should jointly with the Department of the Environment set up a working party to discuss the problem. (Paras 128–130).

Conclusion 5: The Department of the Environment's research funds should be used to support the monitoring and evaluation of experimental projects; a state-of-the-art review on what people expect from their environment; and short research reviews for teachers. They will provide the main support for research in these areas, but not exclusively so.

Recommendation: The Department of the Environment should develop a programme of research in these three main areas. (Paras 131–136).

Conclusion 6: Central government needs a central environmental education unit to disseminate information, develop policy and to act as an international exchange point.

Recommendation: The Department of the Environment should take the lead in setting up an environmental education unit to serve all central government departments. (Paras 137–140).

Conclusion 7: The roles of existing grant-aided bodies such as the Council for Environmental Education, the Council for Urban Studies Centres, the Town and Country Planning Association and the Heritage Education Group should be reviewed and the present level of aid to such organisations should be reconsidered with a view to extending it where appropriate.

Recommendation: The Department of the Environment should make this assessment before deciding on financial support to these organisations in 1979/80. (Paras 141–143).

*The conclusions and recommendations are those of the Working Party, not of the Department of the Environment.

Appendix 8

The Nature Conservancy Council. An historical note.

The Nature Conservancy Council (NCC) was established by Act of Parliament in 1973 to be the government body "for the purposes of nature conservation and fostering the understanding thereof" in Great Britain. These two aspects of the NCC's work are closely related, and the recognition in the Act of the importance of developing responsible attitudes towards the environment is fundamental to the work of the NCC.

Nature conservation had first received official recognition when, in response to considerable pressures from the voluntary organisations that had been pioneers in the cause of nature conservation for many years, the Government set up the Wild Life Conservation Special Committee which reported in 1947. Two years later the Nature Conservancy, the precursor to the NCC, was established by Royal Charter and given powers by Act of Parliament, and this body was to make important contributions to the development of environmental education especially through the decade of the 1960s. In 1963 it collaborated with national and local voluntary bodies in a National Nature Week to interest the general public in natural history and nature conservation; about 50 nature trails, at that time a new concept in Europe, were set up for the event. It convened a study group to consider the state of and requirements for the teaching of biology in the field; its report, *Science out of Doors*, was published in 1963 (Longmans). It also took a leading role in the early work of the Commission on Education's North-West Europe Committee, International Union for Conservation of Nature and Natural Resources, convened a national conference on Education and the Countryside in 1965 (under the aegis of "The Countryside in 1970"), and promoted the establishment of the Council for Environmental Education and the Countryside in 1968.

Appendix 9

Declaration of the Tbilisi Intergovernmental Conference on Environmental Education

The Intergovernmental Conference on Environmental Education, organised by UNESCO in cooperation with UNEP, convened in the City of Tbilisi reflecting the harmony and consensus achieved there, solemnly adopts the following Declaration.

In the last few decades, man has, through his power to transform his environment, wrought accelerated changes in the balance of nature. The result is frequent exposure of living species to dangers which may prove irreversible.

The Declaration of the United Nations Conference on Human Environment organised in Stockholm in 1972 proclaimed: "to defend and improve the environment for present and future generations has become an imperative goal for mankind". This undertaking urgently calls for new strategies, incorporated into development, which particularly in the developing countries is a prerequisite for any such improvement. Solidarity and equity in the relations between nations should constitute the basis of a new international order, and bring together, as soon as possible, all available resources. Education utilising the findings of science and technology should play a leading role in creating an awareness and a better understanding of environmental problems. It must foster positive patterns of conduct towards the environment and the nations' use of their resources. Environmental education should be provided for all ages, at all levels and in both formal and non-formal education. The mass media have a great responsibility to make their immense resources available for this educational mission. Environmental specialists as well as those whose actions and decisions can have a marked effect on the environment, should be provided in the course of their training with the necessary knowledge and skills and be given a full sense of their responsibilities in this respect.

Environmental education, properly understood, should constitute a comprehensive lifelong education, one responsive to changes in a rapidly changing world. It should prepare the individual for life through an understanding of the major problems of the contemporary world, and the provision of skills and attributes needed to play a productive role towards improving life and protecting the environment with due regard given to ethical values. By adopting a holistic approach, rooted in a broad interdisciplinary base, it recreates an overall perspective which acknowledges the fact that natural environment and man-made environment are profoundly interdependent. It helps reveal the enduring continuity which links the acts of today to the consequences for tomorrow. It demonstrates the interdependencies among national communities and the need for solidarity among all mankind.

Environmental education must look outward to the community. It should involve the individual in an active problem-solving process within the context of specific realities, and it should encourage initiative, a sense of responsibility and commitment to build a better tomorrow. By its very nature, environmental education can make a powerful contribution to the renovation of the educational process.

In order to achieve these goals, environmental education requires a number of specific actions to fill the gaps that, despite outstanding endeavours, continue to exist in our present education systems.

Accordingly, the Tbilisi Conference:

Appeals to Member States to include in their educational policies measures designed to introduce environmental concerns, activities, activities and contents into their education systems, on the basis of the above objectives and characteristics;

Invites educational authorities to promote and intensify thinking, research and innovation in regard to environmental education;

Urges Member States to collaborate in this field, in particular by exchanging experiences, research findings, documentation and materials and by making their training facilities widely available to teachers and specialists from other countries; and

Appeals, lastly, to the international community to give generously of its aid in order to strengthen this collaboration in a field which symbolises the need for solidarity of all peoples and may be regarded as particularly conducive to the promotion of international understanding and to the cause of peace.

Appendix 10

Recommendations 1 and 2 of the Tbilisi Intergovernmental Conference on Environmental Education

The role, objectives and guiding principles of environmental education

Recommendation No 1

The Conference,

Considering the challenge that environmental problems present to contemporary society and having regard for the role that education can and must play in solving such problems.

Recommends the adoption of certain criteria which will help to guide efforts to develop environmental education at the national, regional and international levels.

1. Whereas it is a fact that biological and physical features constitute the natural basis of the human environment, its ethical, social, cultural and economic dimensions also play their part in determining the lines of approach and the instruments whereby people may understand and make better use of natural resources in satisfying their needs.
2. Environmental education is the result of the reorientation and dovetailing of different disciplines and educational experiences which facilitate an integrated perception of the problems of the environment, enabling more rational action, capable of meeting social needs, to be taken.
3. A basic aim of environmental education is to succeed in making individuals and communities understand the complex nature of the natural and the built environments resulting from the interaction of their biological, physical, social, economic and cultural aspects, and acquire the knowledge, values, attitudes, and practical skills to participate in a responsible and effective way in anticipating and solving environmental problems, and the management of the quality of the environment.
4. A further basic aim of environmental education is clearly to show the economic, political and ecological interdependence of the modern world, in which decisions and actions by the different countries can have international repercussions. Environment should, in this regard, help to develop a sense of responsibility and solidarity among countries and regions as the foundation for a new international order which will guarantee the conservation and improvement of the environment.
5. Special attention should be paid to understanding the complex relations between socioeconomic development and the improvement of the environment.
6. For this purpose, environmental education should provide the necessary knowledge for interpretation of the complex phenomena that shape the environment, encourage those ethical, economic and aesthetic values which, constituting the basis of self-discipline, will further the development of conduct compatible with the preservation and improvement of the environment; it should also provide a wide range of practical skills required in the devising and application of effective solutions to environmental problems.
7. To carry out these tasks, environmental education should bring about a closer link between educational processes and real life, building its activities around the environmental problems that are faced by particular communities and focusing analysis on these by means of an interdisciplinary, comprehensive approach which will permit a proper understanding of environmental problems.
8. Environmental education should be regarded as a continuing process providing its recipients, through the constant renewal of its approach, content and methods, with knowledge that is always attuned to the changing conditions of the environment.
9. Environmental education should cater to all ages and socioprofessional groups in the population. It should be addressed to (a) the general non-specialist public of young people and adults whose daily conduct has a decisive influence on the preservation and improvements of the environment; (b) to particular social groups whose professional activities affect the quality of the environment; and (c) to scientists and technicians whose specialized research and work will lay the foundations of knowledge on which education, training and efficient management of the environment should be based.
10. To achieve the effective development of environmental education, full advantage must be taken of all public and private facilities available to society for the education of the population; the formal education system, different forms of non-formal education, and the mass media.
11. To make an effective contribution towards improving the environment, educational action must be linked with legislation, policies, measures of control and the decisions that governments may adopt in relation to the human environment.

Recommendation No 2

The Conference,

Considering that it should be a right of every citizen to receive environmental education,

Endorses the following goals, objectives and guiding principles for environmental education:

1. The goals of environmental education are:

(a) to foster clear awareness of, and concern about, economic, social, political and ecological interdependence in urban and rural areas;

(b) to provide every person with opportunities to acquire the knowledge, values, attitudes, commitment and skills needed to protect and improve the environment;

(c) to create new patterns of behaviour of individuals, groups and society as a whole towards the environment;

2. The categories of environmental education objectives:

Awareness: to help social groups and individuals acquire an awareness of and sensitivity to the total environment and its allied problems.

Knowledge: to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its problems.

Attitudes: to help social groups and individuals acquire a set of values and feelings of concern for the environment, and the motivation for actively participating in environmental improvement and protection.

Skills: to help social groups and individuals acquire the skills for identifying and solving environmental problems.

Participation: to provide social groups and individuals with an opportunity to be actively involved at all levels in working towards resolution of environmental problems.

3. Some *guiding principles* for environmental education:

Environmental education should:

—Consider the environment in its totality—natural and built, technological and social (economical, political, technological, cultural-historical, moral, aesthetic);

—be a continuous lifelong process, beginning at the pre-school level and continuing through all formal and non-formal stages;

—be interdisciplinary in its approach, drawing on the specific content of each discipline in making possible a holistic and balanced perspective;

—examine major environmental issues from local, national, regional and international points of view so that students receive insights into environmental conditions in other geographical areas;

—focus on current and potential environmental situations, while taking into account the historical perspective;

—promote the value and necessity of local and international cooperation in the prevention and solution of environmental problems;

—explicitly consider environmental aspects in plans for development and growth;

—enable learners to have a role in planning their learning experiences and provide an opportunity for making decisions and accepting consequences;

—relate environmental sensitivity, knowledge, problem-solving skills and values clarification to every age, but with special emphasis on environmental sensitivity to the learner's own community in early years;

—help learners discover the symptoms and real causes of environmental problems;

—emphasise the complexity of environmental problems and thus the need to develop critical thinking and problem-solving skills;

—utilize diverse learning environments and a broad array of educational approaches to teaching/learning about and from the environment with due stress on practical activities and first hand experience.

Reading List

Names and addresses of over 250 organisations concerned with the environment are listed, together with brief descriptions of those organisations and the resources they offer, in *Environmental Education: Sources of Information 1981* (HMSO £2.50)

Educational

Carson, S.McB (ed). *Environmental Education—Principles and Practice*, 1978. Edward Arnold.

Council for Environmental Conservation (CoEnCo). *Habitat*, monthly newsheet.

Council for Environmental Education (CEE). *Review of Environmental Education Developments* (REED). Quarterly journal; monthly newsheet; *Environmental Education in Theory and Practice: an annotated bibliography*; classified annotated bibliographies.

Council of Europe. *Regional Ethnology; Environmental Awareness* 1976; *Environmental Education in a Strictly Urban Setting* 1979; *Environmental Education at University Level.*

Department of Education and Science. *Environmental education: sources of information 1981* HMSO, 1981; *Curriculum 11-16: a discussion document* DES, 1979; *Environmental education in the UK* (Tbilisi papers) DES, 1977; *Trends in Education* No 4/77, articles on environmental studies in the middle years.

Department of the Environment. *Environmental Education in Urban Areas* 1979 HMSO.

Heritage Education Group. *Education and Heritage*; *The Young Conservatives*; *Environment and Community*; *Heritage Education News* (newsletter).

Martin, G. C. and Wheeler, K (eds). *Insights into Environmental Education* 1975 Oliver and Boyd

National Association for Environmental Education (NAEE). *Environmental Education—a Statement of Aims*, 1976; *Environmental Education*, periodical.

Prince of Wales Committee. *Environmental Education and Training in Wales*, 1980.

Royal Society of Arts. *Report of a Seminar on Environmental Education*, 1978.

Schools Council Environmental Studies Project (5-13) *A Teacher's Handbook*; Project environment, *Education for the Environment*, *Ethics and the Environment*, Longmans; Information sheet, *Learning and Teaching Schemes in Environmental Education*, 1978.

Scottish Education Department. *Environmental Education* 1974. HMSO.

Town and Country Planning Association. *Bulletin of Environmental Education* (BEE), monthly.

UNESCO. *Trends in Environmental Education*, 1977; *Report of Tbilisi Conference*, 1978; *Connect*, newsletter.

Watts, D.G. *Environmental Studies*, 1969, Routledge and Kegan Paul.

Young People and the Environment Group. *Environmental Education across the Curriculum*, 1979.

General background

1962 Carson, R. *Silent Spring*, Hamish Hamilton (Penguin 1965).

1967 Arvill, R. *Man and Environment*, Pelican.

1968 Club of Rome. *The Limits to Growth* (Pan 1974).

1969 Barr. *Derelict Britain*, Pelican (out of print).

1970 Fraser Darling. *Wilderness and Plenty*, British Broadcasting Corporation.

1970 Nicholson, M. *The Environmental Revolution*, Hodder.

1972 Commoner, B. *The Closing Circle: Confronting the Environmental Crisis*, Jonathan Cape.

1972 The Ecologist, Vol. 2 No. 1. *A Blueprint for Survival*, Penguin.

1973 Schumacher, E. F. *Small is Beautiful*, Blond and Briggs (Sphere 1972).

1974 Bennett D. R. and Humphries, D. A. *Introduction to Field Biology*, Edward Arnold (revised edition).

1974 Ward B. and Dubois, R. *Only One Earth*, Penguin.

1978 Bellamy, D. *Botanic Man*, Hamlyn.

1979 Attenborough, D. F. *Life on Earth*, Collins and BBC.

1979 Ward, B. *Progress for a Small Planet*, M. T. Smith (Penguin).

1980 Allen, R. *How to Save the World*, Kogan Page.

1980 Brandt Commission. *North-south: a programme for survival*, Pan Books.

1980 IUCN. *World Conservation Strategy.*

1980 Mabey, R. *The common ground*, Hutchinson (in association with the Nature Conservancy Council).

1980 Owen, D. F. *What is ecology?* Oxford University Press. (revised edition).

Awareness of the importance of the environment has been increasingly reflected in public debate, national and international, over the last three decades. Pollution, endangered species and energy resources are only some of the environment-related topics that have become subjects of public concern.

Education within the United Kingdom has long accommodated many of the components of environmental understanding within traditional curricular subjects but in the last ten to fifteen years environmental education has emerged as an identifiable area of education. A number of organisations, voluntary and statutory, are now concerned with it and international recognition of its importance has been demonstrated at a number of conferences, in particular, one at intergovernmental level held at Tbilisi, USSR, in 1977.

Environmental Education: A Review, prepared by the Department of Education and Science in close co-operation with members of HM Inspectorate and in consultation with other governmental departments and interested bodies, is an attempt to indicate some of the thinking and developments in this field of education. It includes a consideration of the philosophy of environmental education, an outline of what is already going on (in and outside the education system), an international perspective derived largely from the Tbilisi conference, and some appraisal of current United Kingdom activity in the light of the conference recommendations, together with an indication of possible further developments.

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