

siasm, effusing hope for the New World's environmental future if only human population-pressures can be curbed and foreseeable catastrophes avoided.

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EUROPEAN SEMINAR ON NEW MANAGEMENT OF THE ENVIRONMENT IN RURAL AREAS, HELD AT THE COUNCIL OF EUROPE, STRASBOURG, FRANCE, DURING 20–22 OCTOBER 1987

As a contribution to the Campaign for the Countryside, from 20 to 22 October 1987, 80 specialists and representatives from ten European countries took part in a seminar convened jointly by AIDEE (Association Internationale des Entrepreneurs Ecologiques) and the Council of Europe. The theme of the seminar was 'for a New Management of the Environment in Rural Areas'. Statements on the technical, scientific, legislative, economic, financial, social, cultural, administrative, and political, aspects clearly demonstrated the seriousness, the diversity, and the complexity, of the problems to be solved—such as the conflict resulting from the right of farmers to a decent income, and the need to protect natural resources and landscapes.

The evolution of agriculture does indeed come up against two obstacles which do not, at first glance, have any obvious relation to each other: excess production and degradation of the environment. However, control of the former leads to a progressive reduction of cultivated areas, thus leading to abandoned areas—wastelands—which can only be kept in ecological balance by the maintenance of at least a minimum of agricultural activity. Agricultural policies must therefore aim at protection of the environment, even and especially in 'marginal' areas. What is beneficial to farming is, in general, also beneficial to the environment, and *vice versa*.

Any future policy must thus look to both sectors, namely the environmental and the agricultural, so that ecological and socio-economic needs become compatible. It is society as a whole—at local, regional, national, and European, levels—which must make a special effort. This presupposes a spirit of solidarity shared by all, at the levels of planning and execution. Such were the main conclusions of this Seminar, which should be noted also beyond the bounds of the European Continent.

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CONFERENCE ON GAIA: THEORY, PRACTICE, AND IMPLICATIONS, HELD AT WORTHYVALE MANOR, CAMELFORD, CORNWALL, ENGLAND, UK, 21–24 OCTOBER 1987

This meeting was attended by more than fifty scientists or otherwise ecologically-minded people, who found Worthyvale Manor, in Cornwall, a very nice place for such a Conference, which ranged around atmospheric chemist James Lovelock and microbiologist Lynn Margulis, progenitors of the Gaia hypothesis. The full proceedings of the Conference are to be edited by Peter Bunyard & Edward Goldsmith, Editors of *The Ecologist*.

Substantial control of The Biosphere by its living components having long been recognized among biologists\*, it took an atmospheric chemist, James E. Lovelock, to bring it out in the 1970s, as the main basis of what he called 'The Gaia hypothesis'. This was developed essentially together with the Boston microbiologist Lynn Margulis, and papers on it were subsequently published in various scientific journals. Furthermore, Lovelock's conception of the Earth as a living organism was popularized in various books and articles, including his own book entitled *Gaia: A New Look at Life on Earth* (Oxford University Press, 1979; reprinted with a new Preface, 1987, xiii + 157 pp.), while a further book by him, entitled *The Ages of Gaia*, is now in press.

The reception of this Gaia concept was more or less cold in academic circles but was often welcomed among non-biologist holisticians. Lovelock's viewpoint of our global habitation of the Earth's surface as constituting part of a 'continuum of living matter' including the vital atmospheric envelope, is now being integrated by international scientific research programmes such as the International Geosphere-Biosphere Programme (of ICSU) and the Ecologically Sustainable Development of The Biosphere Project (of IASA). Many planetologists are in line with this view of our 'living planet', but global ecologists are less keen and have trouble with Lovelock's great optimism and lack of biological sense\*.

The programme of this Gaia conference indicated the very wide scope of discussions and included the following main papers (in order of presentation): 'A History of the Idea of The Biosphere', by the undersigned; 'The Evolution of Gaia', by James E. Lovelock; 'Daisy World Mechanism: Does the Coupling between Life and the Environment Lead to Self-regulation?', by Andrew Watson; 'Mechanisms or Machination? Is the Ocean Self-regulating?', by Michael Whitfield; 'Biological Modulation of Ocean Salinity', by Gregory Hinkle; 'Life as a Geological Force', by Peter Westbroeck; 'Microbial Mechanisms of Gaian Control', by Lynn Margulis; 'Gaia, Epistemological Implications', by David Abram; 'Gaia, Implications for the Philosophy of Science', by Jerome R. Ravetz; 'Gaia, Implications for Evolutionary Theory', by Mae-Wan Ho; 'Gaia and the Cosmology of Amazonian Indians', by Martin von Hildebrand; 'Gaia, Implications for the Social Sciences', by Matthias Finger; and 'Gaia, Implications for the Ecological Movement', by Peter Bunyard.

The debate was a lively success, in part because many ecologically-minded people disagreed with some apparently too-optimistic ideas supported by James Lovelock, Lynn Margulis, and her son Dorian Sagan (whose father is the astronomer Carl Sagan). Indeed, Dorian Sagan and his mother are very enthusiastic about Man-made or 'space biospheres', while many ecologists are not. In my own contribution, I had emphasized the necessity to question the supposed novelty of the Gaia concept, recalling V.I.

\* See for example, Professor John R. Postgate, FRS, in *New Scientist*, 118 (1607), p. 60, 1988.—Ed.

Vernadsky's work and the biogeochemical studies of the Yale ecologist G.E. Hutchinson, which collectively bridged the gap between Vernadsky's concept of The Biosphere and the modern science of ecology. In short, the Earth as an in-part 'living organism' is a better metaphor than that of a spaceship. We are neither passenger nor pilot of The Biosphere, but only a thinking and a living part of it, with, however, capabilities now to steer it practically where we will.

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VATICAN STUDY WEEK: A MODERN APPROACH TO THE PROTECTION OF THE ENVIRONMENT, HELD IN ROME, ITALY, DURING 2-7 NOVEMBER 1987

From time to time the Pontifical Academy of Sciences organizes a Study Week to investigate particular scientific issues. Within recent years the topics have included climate, particle physics, and expansion of the universe. The latest one, held in early November 1987, was entitled 'A Modern Approach to the Protection of the Environment'.

It is said by Vatican officials and Pontifical scientists that the idea originated with Pope John-Paul II himself. Perhaps because of the appalling pollution in his native Poland, or perhaps because of the close association between environmental decline and pervasive poverty in the Third World, the Pope has issued some stringent remarks on the environment. In Nairobi, for instance, during the course of his 1985 visit, he asserted that

'It is a requisite of our human dignity, and therefore a heavy responsibility, to exercise dominion over the created world such that it may truly be for the enjoyment of the human family. The exploitation of the riches of nature must occur according to criteria that take into consideration not only the present needs of people, but also the needs of future generations... Progress in the field of ecology, the growing awareness of the need to protect and conserve limited natural, non-renewable resources, are in harmony with the demands for healthy governance. God is glorified when the created world serves the needs of global development of the entire human family.'

Whatever the source of the inspiration behind the latest Study Week, it attracted some leading scientists. There were Peter H. Raven and John D. Ives from the United States, Francesco di Castri now from France, John Jeffers from Britain, Carlos Chagas and Valdemar Rodrigues from Brazil, Mohammed A. Ayyad from Egypt, and Stjepan Keckes from UNEP. Nor were the participants all natural scientists. Karl-Göran Maler, of the Stockholm School of Economics, was there too, with his strong interest in environmental affairs—together with a number of Italian luminaries, notably Giovanni Battista Marini-Bettolo.

During the course of the week we discussed a range of issues, including tropical forests, 'acid rain', the 'greenhouse' effect, spread of deserts, ozone-layer depletion, soil erosion, and mass extinction of species. True, many observers believe that certain of these issues are aggravated by rapid growth of human numbers. But during the Study Week, it was considered pointless, if not counter-productive, to raise the population question: both 'sides' would know the other's position, and an exchange of views would surely prove sterile. While making their position on popu-

lation briefly plain, then, the scientists decided to register their dissent, and leave it at that—even though some of them pronounced the population problem to be the *biggest environmental issue of all*.

On the final morning there was a half-hour audience with the Pope. He presented a brief speech, in which he remarked that

'This [environmental protection] topic merits most careful attention and is truly one of tremendous importance at the present moment in the history and development of our modern world. ... Technology, as the transfer of science to practical applications, must seek the good of humanity and never work against it. Therefore, science and technology must be governed by ethical and moral principles. ... Technology has not always respected the environment, [and] has led to situations causing great concern by reason of the irreversible damage done, both locally and world-wide. ... [There are] very serious inroads on forest resources in many countries.

'The adverse effects on the environment can be corrected in the causes that produce them only by teaching people a new and respectful attitude towards the environment—an attitude that ensures the rational use of the natural resources which have to be preserved and passed on for the use of future generations... In developing countries there is an acute problem of the destruction of forests in the wet tropics and of desertification in the dry tropics—problems that threaten the feeding of the population. ... In the industrialized countries there is the worrying problem of waste products in gaseous, liquid, solid, or radioactive form. Imprudent practices have caused very serious damage to nature. Uncontrolled discharges have resulted in acid rain, trace substances in the environment, and the contamination of the seas, as for example the Mediterranean.'

Pontifical Academy leaders suggest that the Pope may eventually issue an Encyclical on environmental concerns. If so, it would surely help the environmental cause. Were the Vatican Curia to mobilize the message through the hierarchy of bishops and the other channels for the Church's communications, it could eventually reach 800 million people around the world, or one in six of the entire human community.

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NINTH INTERNATIONAL SYMPOSIUM ON TROPICAL ECOLOGY, HELD AT BANARAS HINDU UNIVERSITY, VARANASI 221005, INDIA, DURING 11-16 DECEMBER 1987:

Major Conclusions and Future Outlook

The IX International Symposium on Tropical Ecology, including the International Conference on Rehabilitation of Disturbed Ecosystems: A Global Issue, organized by the International Society for Tropical Ecology, was held at Swatantrata Bhawan, Banaras Hindu University, during 11-16 December 1987. The academic meetings were attended by some 450 delegates, including about 100 from abroad, and represented 26 countries in all.

Besides 15 sessions devoted to contributed papers, 5 day-long sessions devoted to poster presentations, and 4 plenary lectures, the Symposium included a number of