



NATURE IN FOCUS

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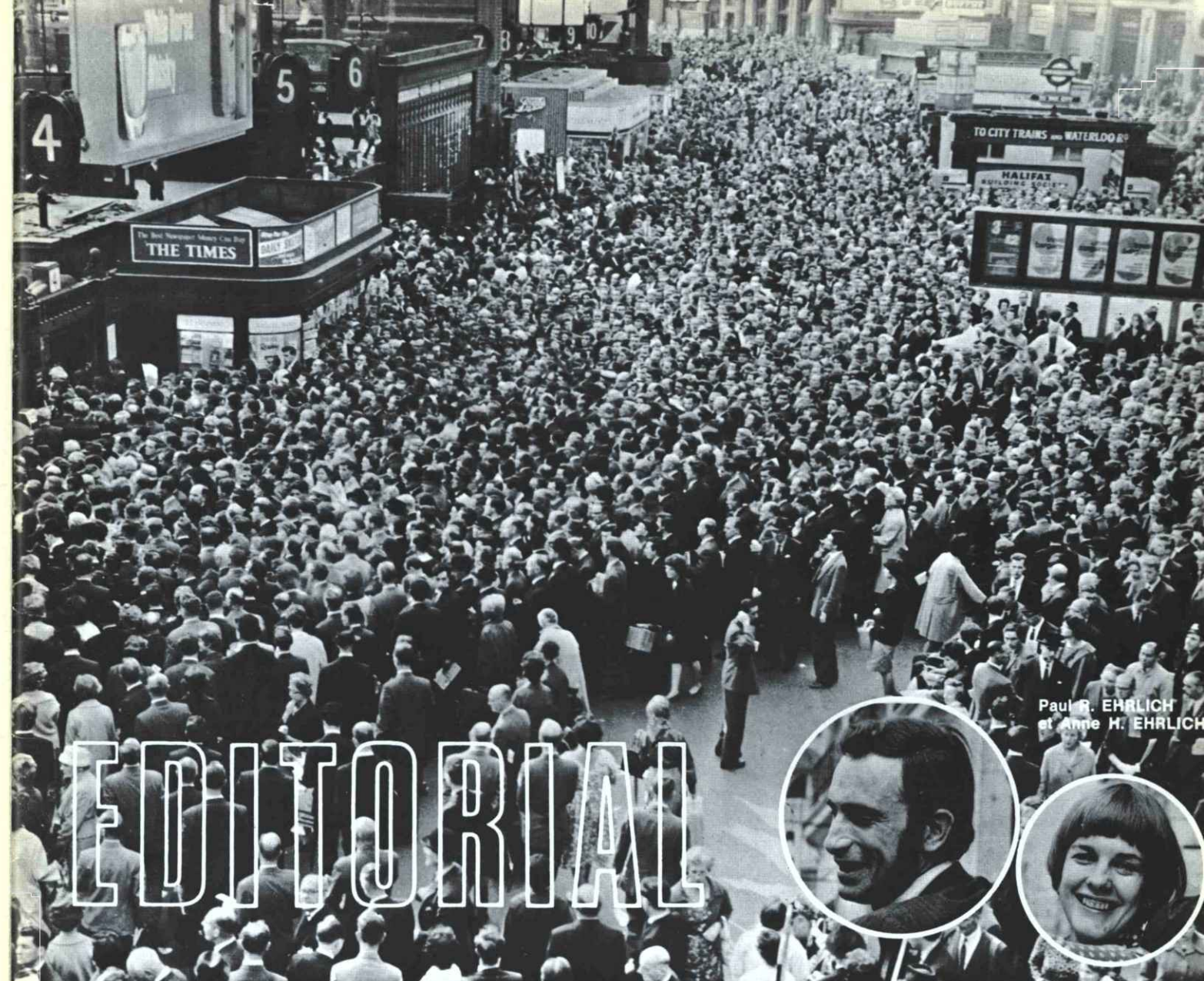
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EDITORIAL

The year 1973 may be a turning point in human history; it may signal the beginning of the end of the population explosion. If so, it will be because nature — the Earth's fragile life-support system — has begun to fight back, not because mankind has mended its ways.

The human population is still growing at an estimated two per cent per year. If that rate continues unchanged, the population will double in size by 2008. The prospect of trying to meet the needs of nearly four billion additional people within so short a time represents an enormous challenge in itself. Compounding the problems created by rapid population growth is the increase of humanity's impact upon the natural environment. This impact, measured by such parameters as increase in energy production, has been

estimated to be growing at about five per cent per year, doubling in only fourteen years. Environmental destruction and resource depletion are, of course, related not only to population size but also to the technological state of the society.

Thus resource-environment problems are most severe in the overdeveloped countries of Europe, North America and Japan, where populations are growing slowly in comparison to the less-developed countries. Growth in these slowly increasing populations poses the greater danger to the Earth's ecological systems and to the resource heritage of future generations, since each additional individual may have an impact 50 or more times greater than that of an individual added to a poor nation.

In the past year, extraordinary chang-

es in weather patterns have had serious effects on food production in widely scattered regions of the world and in both industrialised and non-industrialised nations. Regions where the last harvests were well below expectations included the USSR, Indonesia, parts of China, the Philippines, the Indian subcontinent, and sub-Saharan Africa. Famines are already under way in the last two areas. Disastrous spring weather in the United States can be expected to cause reductions in the fall harvest there this year. If the rains fail again, southern Asia and central Africa will face massive famines. This is why 1973 may be a turning point.

Did human assault on the environment, including the atmosphere, contribute to the disastrous weather that led to the crop failures? No one

Paul R. EHRlich
et Anne H. EHRlich

knows. But the possibility that air pollution from industrial nations, agricultural dust from poor nations, and deforestation may have been significant factors cannot be ignored. Furthermore, recent setbacks in oceanic fisheries yields may be traceable in part to human damage to the ecological systems of the seas. And, even if the weather should turn favourable again, it seems unlikely that catastrophic famines can be avoided for much longer while population size and environmental deterioration continue to increase in tandem.

Whether the famines materialise in this or some later year, how will such a catastrophe be perceived? Will the fundamental role played by overpopulation suddenly become clear to people everywhere? Or will the famines be viewed as just another unpredictable "natural disaster" due to "bad weather"? If all nations recognise the root causes of massive famine — too many people to feed successfully, year in and year out under all weather conditions, and environmental abuses that threaten potential food production — there may be hope for dealing with the causes in the future.

POPULATION PROBLEMS: THE ROLE OF THE COUNCIL OF EUROPE

The 2nd European Population Conference, held under Council of Europe auspices in 1971, brought out the pressing need for governments and the relevant professional circles to keep a close watch on population trends in Europe, especially in relation to social developments.

Attention was also drawn to the fact that public opinion, generally speaking, does not appreciate the practical implications of the changes taking place in European population patterns.

The experts were unanimous in recommending that this situation must be remedied. Hence the decision of the Committee of Ministers of the Coun-

cil of Europe, in response to the recommendations of the 2nd European Population Conference and at the prompting of the Consultative Assembly, to set up for a period of five years a Committee of Demographic Experts, on which all the 17 member States will be represented. This Committee's terms of reference consist primarily of investigating population trends in Europe (problems of ageing, factors affecting migration within Europe, trends in fertility, implications of a stationary population), informing national authorities and the public about the economic, social, ecological and cultural effects of these trends and drawing up reports and

concrete recommendations to governments as appropriate. The Council of Europe possesses intergovernmental machinery and a parliamentary assembly enabling it to play a valuable role in this sphere by promoting co-operation among researchers and policy-makers, so as to ensure that the experts' scientific findings are incorporated in political and administrative practice. The Council of Europe's Committee of Demographic Experts will begin work in September 1973, when its first meeting will be used to draw up a 5-year outline programme for the Council's demographic activities.

It is interesting to speculate on the condition of the Earth in the year 2473. Will there be an impoverished human population of billions eking out a dismal existence on a ravaged

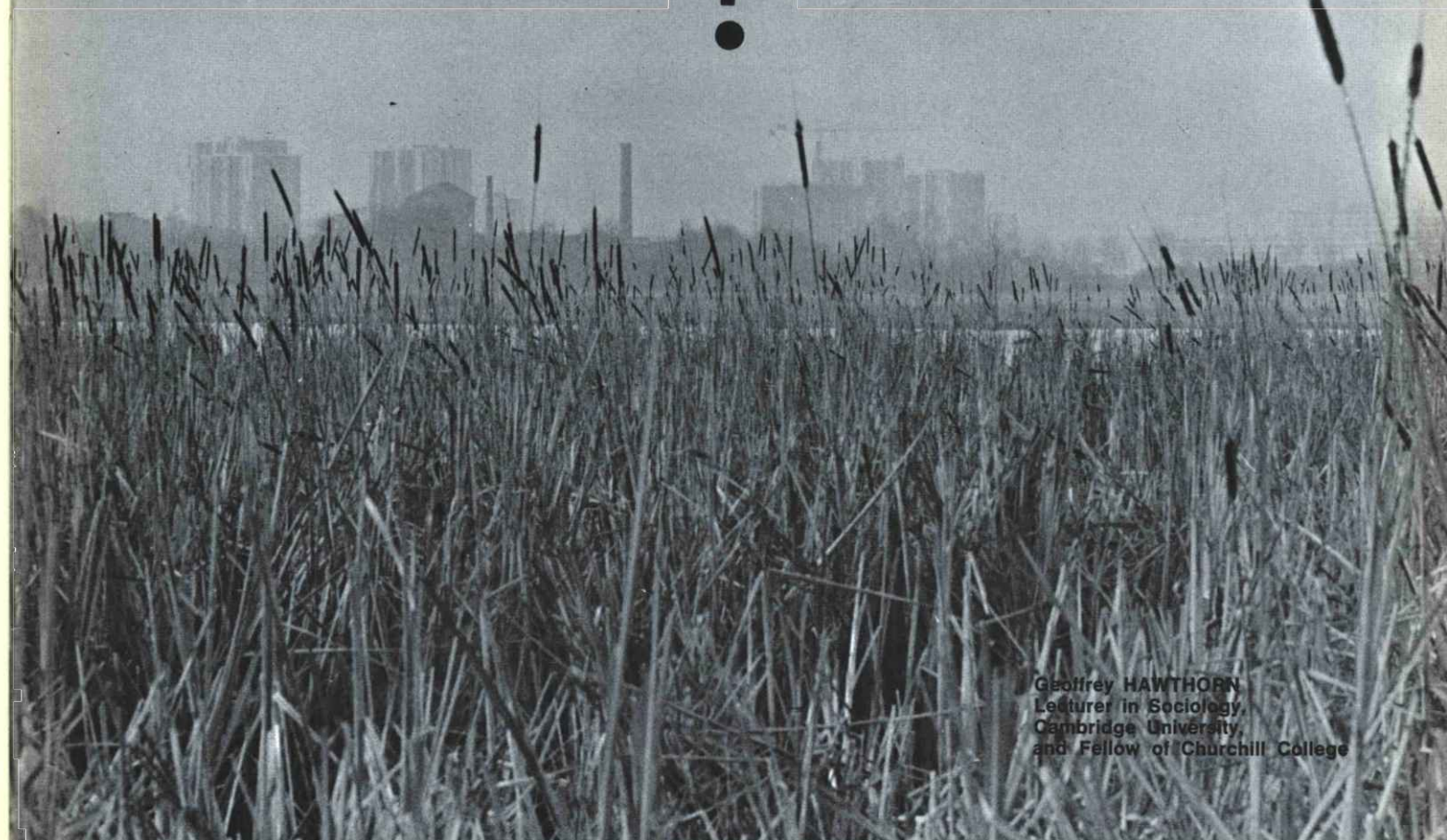
Earth, frequently decimated by large-scale famines and pandemics? Will there be scattered enclaves of "rich" people clinging to remnants of the world's wealth and bitterly defending their spoils? Or will the planet still be beautiful, tended by perhaps a billion people who live in harmony with nature and each other? Suppose that the population has been stabilised at a level that the Earth can support indefinitely at a comfortable level without strain. A complex natural environment provides effortlessly, as it does now, many valuable services for mankind. "Bad weather" inspires no fears, as stocks of stored food are ample to tide all of humanity over a decade or more of climatic change. The basic needs — food, housing, clothing, medical care, education, a healthful environment, and satisfying work — are amply provided for every individual.

Which future would you prefer to bequeath to your descendants?

M. F. Catalano,
Deputy Director
of the Direction of Economic
and Social Affairs

DOES POPULATION GROWTH THREATEN THE NATURAL ENVIRONMENT

?



Geoffrey HAWTHORN
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and Fellow of Churchill College

Between 1950 and 1970, the population of Europe (excluding the USSR) increased by an average of 3.5 millions a year. Over the preceding fifty years, the corresponding figure was 1.9 millions, and over the fifty years before that it was 1.8. Such is the impact of compound growth, for the proportionate increase has not accelerated to nearly the same degree. Between 1850 and 1900, the average annual percentage increase was 0.7, between 1900 and 1950, 0.6, and between 1950 and 1970, 0.8. In 1965, the United Nations projected the European population to the year 2000, and estimated that the absolute annual increase would remain the same, at about 3.5 millions, and thus that the

average annual proportional increase would again fall, to 0.6 per cent. These were the medium projections, the ones that seemed most likely on the basis of what had been happening up to the mid-1960's.

Now however, with a knowledge of what has been happening demographically in the later 1960s and early 1970s, it seems possible that even these medium projections may be too high. Because fluctuations in mortality are negligible, and because migration no longer has any pronounced effect on population growth, it is to variations in fertility that one must look to find an explanation of the changing projections. The experience of the United Kingdom illustrates the point.

In the ten years before 1965, the birth rate in the United Kingdom was rising. This was due to more women getting married, to more women getting married younger, and to more married women having their children earlier in their marriage. It also seemed that women having children in the late 1950s and early 1960s were going to have more of them than did the previous generation. Taking these trends into account, the Registrar General's office projected a population for the United Kingdom of nearly 80 millions in 2000. But events belied this. After 1965, the birth rate fell, at first steadily and then, in 1972, dramatically. Too much reliance cannot be placed, of course, on short-term fluctuations.

They may merely indicate that because of adverse economic circumstances, couples are delaying having a child for a year or two, and to not necessarily imply that they will in the end have fewer children altogether. Even then, such delays slow down the rate of growth by lengthening the interval between generations, and the decline in the birth rate has been such that one is now forced to conclude that couples building their families from the mid-1960s are almost certainly going to have slightly fewer children on average than those who were doing so before this time. The outcome is to lead one to lower one's projections for the future, and this is what the Registrar General's office has done. The latest projection for the United Kingdom in 2000 is for 66 millions. The British population, therefore, is hardly "exploding". And the situation is similar in many other parts of Europe. The end of the 1960s and the beginning of the 1970s saw an acceleration of the decline in the annual birth rate in almost all countries, an acceleration so pronounced that it could not be accounted for except by suggesting that marital fertility was falling to very low levels. In fact, in Denmark, Sweden and the Federal German Republic, it has fallen below that level needed simply to replace the population in the long run. It is therefore very possible, if not probable, that the absolute average annual increase in population to the end of the century will be below what it has been over the past twenty years. Nevertheless, even if the European population is not growing as fast as it seemed to be doing even ten years ago, neither is it actually declining. As such, it may be held to constitute a threat to the natural environment. I wish to argue against this, to argue that in itself it neither constitutes a major threat to the environment as a supplier of resources nor to the environment as an amenity. Not unnaturally, many of the arguments about the effects of population growth on the supply of resources have been proposed by biologists (such as Professor Ehrlich), for it is these people who have the concerns of the environment most at heart. In their arguments, however, they tend to extrapolate from their knowledge of the dynamics of animal populations to the dynamics of human ones. They suggest that just as certain non-human species can destroy their environment, and then themselves, by over-breeding, so can man. But this overlooks the point that alone among all species man can deliberately change his environment to improve its carrying capacity. This

is what the neolithic and industrial revolutions were all about. In ignoring this fact, the biologists as well as those, for example, responsible for the Club of Rome and MIT analysis of the limits to growth, produce an oversimple conclusion. Now of course, there is an obvious reply to this. Technical and economic revolutions, like the neolithic and even more conspicuously the industrial, succeed in improving the carrying capacity of the environment by exploiting it in new ways. In so doing, they put pressure on resources that were hitherto unexploited. And this cannot go on for ever. At some point, whatever revolutions are effected in technical efficiency and social regulation, the resources upon which such changes depend, in so far as they are in the earth and non-renewable, will run out. Doomsday may be postponed but not avoided. In general, this is surely a fair reply, and leads in the end to a position where one is required to agree that continual population growth is damaging to the environment and thus fatal to the species. But a corollary of accepting this reply is almost always taken to be that the economic growth and the population increase which accompanies it together threaten the natural environment as an amenity. This is misleading, for three reasons. First, sheer numbers, or rates of growth, are no threat to the environment. It is what people do in the environment that is crucial. The draining of the north-west European marshlands took place at a time when the population was not increasing at a very rapid rate, yet had a dramatic effect on the flora and fauna of the areas in which it took place. The rapid population increase in Europe in the nineteenth century occurred in the towns and cities. The natural environment, at least to begin with, remained relatively unaffected. Second, the economic development that accompanies technical change improves people's standards of living. A consequence of such improvement is that they have to work less hard (although their productivity may rise) and that they receive better education. This turns their attention towards their leisure time. And it is only then that the idea of the natural environment as an amenity comes to have any general currency at all. Ironically, it is the development which is held to threaten the environment which generates the very idea of the environment as an amenity. Thus, were it not for the consequences of greater prosperity, fewer people would have the time, the money and the inclination to support organisations like conservation societies

▷ "Many areas, from the limestone hills of the Mediterranean littoral to the forest clearings of northern Scandinavia, are being abandoned as the living they can provide falls short of contemporary standards."





"It has always been agriculture rather than industry which has constituted the greatest threat to the natural environment, in the sense that larger parts of more environments have been destroyed by grazing and cultivation than by the extraction of minerals and the polluting of land, air and water."

which are dedicated to preserving wild places. To this extent, the recognition of the environment as an amenity and action to preserve it are directly dependent upon economic growth. Andean peasants are not going to care about condors or Indian ones about tigers until they have enough time and money to enjoy these creatures in their leisure.

Third, it has always been agriculture rather than industry which has constituted the greatest threat to the natural environment, in the sense that larger parts of more environments have been destroyed by grazing and cultivation than by the extraction of minerals and the polluting of land, air and water. This is true of the poor countries today. It has been true of Europe in the past. But now, Europe is in a very fortunate situation in this respect. Many areas, from the limestone hills of the Mediterranean lit-

toral to the forest clearings of northern Scandinavia, are being abandoned as the living they can provide falls short of contemporary standards. This a tendency that is even more marked in the United States (one thinks, for instance, of the dozens of abandoned farms in New England). And many other areas, such as parts of upland France and northern Norway, are only populated at all because of what is seen as the political necessity of supporting uneconomic activities. Much of the environment that has been transformed by agriculture in Europe over the past two thousand years and more can soon revert or already has reverted to supporting ecologies in which man will be only a spectator.

One can therefore be more optimistic than some current arguments suggest. Not only is the population of Europe apparently ceasing to grow at even

the rate foreseen less than ten years ago, but a careful consideration of the simple-minded equation between population expansion and environmental deterioration reveals that present economic and social trends are in some respects actually beneficial. Of course, there are no advantages in continued population growth, and a mindless optimism is not going to preserve the natural environment as an amenity in the best possible way. The problem for the future, though, once European populations in their new prosperity put their support behind environmental preservation, will be to decide between the competing claims for the use of that environment as an amenity.



ADVERSE EFFECTS OF POPULATION DEVELOPMENT ON THE DUTCH ENVIRONMENT

Dr. L. B. J. STUYT
Minister of Public Health
and Environmental Hygiene
(from July 1971 to May 1973)

I. INTRODUCTION

The relation between the Dutchman and his environment is a very special one. In fact it may be said that the Dutchman by saving his country from disappearing beneath the waves, has created his own environment. Real stretches of nature that have been recognisable as such through the centuries are not a common occurrence in The Netherlands. The greater part of the land has been won from the constantly intruding sea and largely bears the stamp of the use to which the Dutch have put this conquest.

Although nature was given a chance in the new land, its general character was determined by human activities in farming and stockbreeding and by the dykes, canals and watercourses required for water control. The following maps show what would be left of The Netherlands if this water control were not applied and the dykes were demolished.

Water is the natural opponent of the Dutchman in his struggle to conserve his environment. For centuries it was his only enemy too. An end has now come to this situation. Through the development in population growth and

industrialisation, numerous new enemies have appeared within a few decades to threaten his environment. Air, water and soil pollution and noise nuisance are the names of these new foes, summoned up by the expansive activity of man himself.

II. THE DEMOGRAPHIC DEVELOPMENT OF THE NETHERLANDS

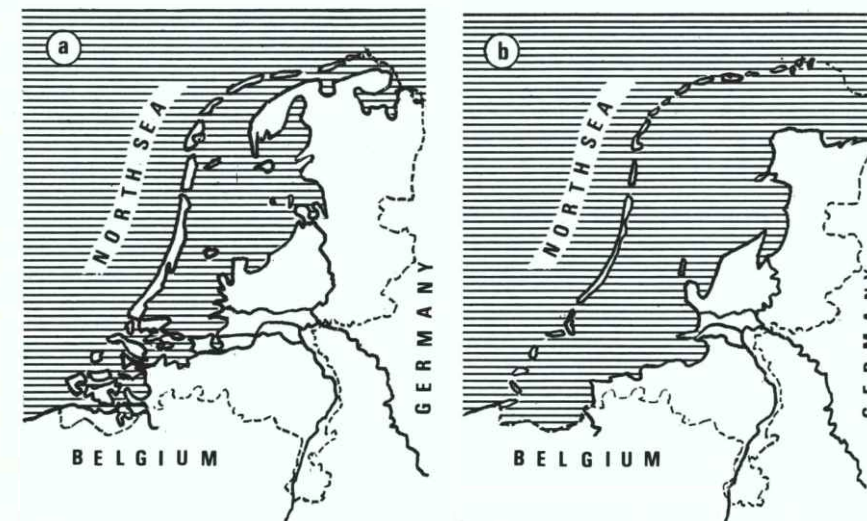
Up to 1870 the Dutch population increased very slowly. The difference between birth rate and death rate was so small that the annual growth percentage was far below 1%.

After 1870 birth rates and death rates began to differ so greatly, through new developments in health care and improvement of the economic situation, that one can speak of a strong population growth. Between 1870 and 1970 the population increased from 3.6 million to 13 million.

This means an annual average growth of 13 per 1000. In the nine member countries of the EEC the average annual population growth was only 8 per 1000.

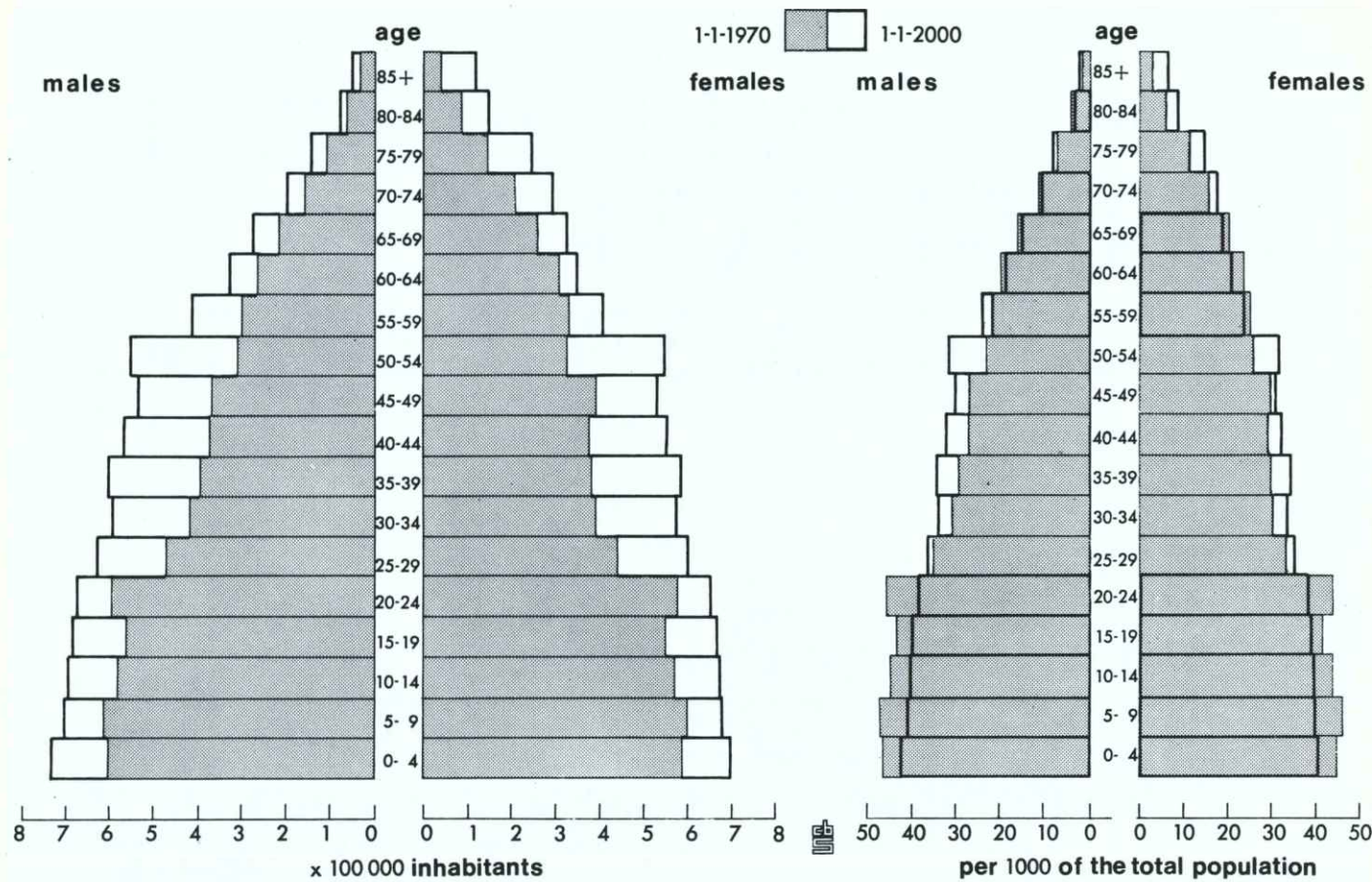
This sufficiently illustrates the exceptional position from the demographic point of view that the Netherlands occupies in Western Europe.

As a result of this demographic development The Netherlands now has a population density that is one of the highest in the world and has a relatively young age structure, as a result of which the population growth will still continue for some considera-



THE NETHERLANDS WITHOUT DYKES
a. at mean level [New Amsterdam datum-point]
b. at storm flood

POPULATION BY AGE, 1st JANUARY 1970 - 2000



ble time, even with the rapidly decreasing fertility that characterises our present day. For the year 2000 it is predicted that the Dutch population will number between 16 and 17 million (see above).

III. NEGATIVE EFFECTS OF THE POPULATION GROWTH

In the wake of this rapid population growth, major changes have been brought about in the Dutch environment.

In some cases these changes consist of radical intervention, such as preparing land for the construction of industrial estates, residential areas or roads. But more often they are stealthy processes which come to light only when the effect is intensified by cumulation.

Not infrequently it is a long process before the first warnings by experts have grown into general disquiet. For instance, botanists and zoologists were soon aware that the survival of all kinds of plants and animal species

was threatened by human activities. Nevertheless, quite a considerable time elapsed before this concern was shared by large sections of the population and acquired significance in the ranking of priorities for further activities. It is now realised in large parts of the country that fresh air, good drinking water, a quiet residential situation, good water for fishing and swimming in, recreation areas, and so on, are no longer freely available but have become scarce commodities which one has to take pains to acquire.

The rapid population growth was accompanied by the development of urban and industrial concentrations. Since 1900 the built-up area of The Netherlands has almost doubled (see Fig. 1). As the distance between the existing nuclei in The Netherlands is none too large anyway, there is a danger, notably in the west of the country, of a continuous belt of urban concentrations forming without any countryside in between, e.g. Rotterdam, Schiedam, Vlaardingen, Delft, The Hague, Leiden, Haarlem, Amsterdam, Utrecht.

In addition to this concentration of population, the surrounding countryside is becoming full, since many people are turning their backs on life in the cities.

This population concentration, the filling-up of the countryside and the growth of traffic, industrial development and the changes in farm management (bioindustry) have together confronted the country with the problems of noise nuisance and the pollution of air, water and soil. Nature is no longer capable of compensating for the consequences of human activities. Its regenerative capacity has proved inadequate for this. This means that without countermeasures these human activities form a direct danger to man himself, to both his physical and his mental health. And now, therefore, the moment has come when man is compelled to guide his actions directed towards himself not only by social and economic values but also, and much more strongly than before, by the environment as a limiting value. It is as well to point out at this stage that insofar as demographic development has been discussed in connec-

Fig. 1.

Use of land per 1000 hectares	1900	1970
Cultivated land	2116	2552
Woods and forests	252	298
Waste land (incl. reedland)	624	199
Water wider than 6 m	91	284
Other land ¹⁾	172	329
Total (divided into municipalities)	3255	3662 ²⁾

¹⁾ Built-up areas, industrial estates, metallated roads etc.
²⁾ Not yet divided into municipalities in 1960 and 1970: 408 (x 1000 hectares).

tion with the growing environmental deterioration, this does not mean that the one offers a full explanation of the other.

The demographic factors mentioned, however important they may be in their indicative value, form only one of the causes of the development that has taken place. It is an interplay of both demographic and also social, economic and cultural factors that has brought about the present situation. Isolating the demographic factor solely in this field cannot therefore offer a solution for the present problematic situation. Moreover, the demographic development is difficult to influence and changes in this field take effect in the longer term only.

Since nevertheless allowance must be made for these longer-term effects, as Minister of Public Health and Environmental Hygiene, I instituted in 1972 a Government Commission to study the population problem.

This Commission has on the one hand the task of analysing the factors that influence the demographic development in the coming decades and on the other hand of investigating the consequences of this demographic development for the state of health of the population and in particular for the changes that will occur in the environment. This Government Commission will report in 1974.

For necessary short-term changes with regard to environment the economic, social and cultural factors in particular must be considered in their inter-relation.

In 1972 The Netherlands Ministry of Public Health and Environmental Hygiene formulated in a "Priority Memorandum for Environmental Hygiene" a large number of priorities on the strength of which a policy programme is to be drawn up. The aim of this policy programme is to clean up the present environmental hygiene situation, a process which must be

completed within 5 - 10 years. The policy programme will be directed towards:

- limiting and if possible stopping or bringing under control various forms of environmental deterioration
- rectifying damage done
- taking preventive measures.

IV. STARTING-POINTS OF THE POLICY OF ENVIRONMENTAL HYGIENE

It would be beyond the scope of this article to give a detailed treatment of all aspects of environmental hygiene policy as it is being worked out on the basis of the "Priority Memorandum for Environmental Hygiene". However, it is extremely useful to consider the principal starting-points that play a part in drawing up this policy programme.

1. Co-ordination of policy

Environmental policy cannot be conducted by one ministry alone. Considerations of environmental hygiene play a part in many sectors of overall Government policy, e.g. economic development, energy policy, traffic policy, agricultural policy, physical planning, nature and landscape conservation, recreation policy. Only by a co-ordination of policy is improvement of the environmental hygiene situation possible.

For this task an Interministerial Co-ordination Committee for Environmental Hygiene has been instituted, which plays an important part in the preparation of new measures.

2. Information, education and participation of the population

An environmental hygiene policy cannot succeed without the active participation of the population. Without adequate cooperation on the part of the public and industry, even the most stringent environmental measures will be ineffectual. The responsibility for care of the environment is vested not solely in the authorities but also in each individual citizen. To invoke this sense of responsibility and to obtain co-operation on a wide scale the public must be carefully informed and educated. This will have to be the driving force for the further development of the already fairly universal interest in the problems of environment into a permanent state of mind.

Only in this way can active participation of the population come about, by which a major reduction of environmental pollution can already be effected without coercive Government measures. Moreover, an actively participating population will exert impulses that have a stimulating effect on policymaking bodies.

3. Intensification of scientific research

Environmental hygiene policy should, by its nature, be based on the results of scientific research. Much is already being undertaken in this field. Intensification of scientific research — preferably by financing per project — is considered necessary. This research must be directed towards increasing knowledge of the nature, extent and influence of all forms of pollution, and also towards the development of a clean technology. In addition there is a need for cost-benefit analyses as an instrument of policy analysis research.

Only by scientific research performed with a high degree of co-ordination is it possible to arrive at sound systems of standardisation and control that can be used on behalf of legislation.

4. Statutory measures

Attempts should be made to ensure that the various statutory enactments that are required display an interrelation derived from a common basic philosophy.

These statutory measures should be based on scientific advice and social preferences. A suitable advisory structure will have to be devised for this purpose.

Government policy will not always need to go into great detail. The greater the number of co-operative associations that can be set up per region and per sector in the field of environment, for instance between the producers concerned, the greater the efficiency with which broad official objectives can be achieved in such consultation within industry.

In the implementation of the statutory measures much of the responsibility bears on local authorities.

The fundamental principle behind the legislation is of an economic nature. It implies that the harm done to the environment has to be charged to the users of the environment. This principle, often referred to as "the polluter pays", does not imply, as is sometimes wrongly assumed, that the right to pollute can be purchased. It is a mat-

ter of charging the costs of preventive or curative provisions proceeding from the policy measures. In many cases such provisions are enforced by licences, prohibitory orders and other regulations. In addition the instrument of the levy can be used separately or in combination.

The advantage of applying levies lies in the possibilities of flexible adjustment within the framework of pollution control at source.

Levies may also form an effective incentive for the use of clean technology.

The proceeds of these levies will be used for other policy-supporting measures and, if necessary, for compensation.

5. International consultation

In the industrialised part of the world there cannot be a single country that is capable of solving the problem of environmental pollution entirely on its own. For winds, marine currents and

international rivers transport pollution from elsewhere across the frontiers. To a very particular extent that applies to the densely populated Netherlands which through its location in the delta of large international rivers and through the presence of large foreign industrial concentrations extending almost up to its frontiers is especially vulnerable to what happens elsewhere. The disaster of the poisoning of the Rhine by Endosulfan in 1969 greatly contributed towards this awareness. Conversely, The Netherlands too is obliged to make its contribution towards international concern for the conservation of a good environment, since air and water pollution in The Netherlands may affect Northern Germany and the Scandinavian countries, and also international waters.

A major prerequisite of a successful environmental hygiene policy is therefore to be found in constructive international consultation directed towards:

- an intensive exchange of experience (including research activities),
- harmonisation of environmental policy both with a view to a mutual

improvement of the situation and also in order to prevent an unnecessary disturbance of international economic relations,

- conventions and other agreements for common environmental interests, such as pollution of the sea,
- agreements regarding frontier-crossing pollution, standard-setting and monitoring systems for the pollution of international rivers and rules for disasters; prior consultation on new industrial installations in frontier districts which may have a major effect on environmental hygiene.

V. CONCLUSION

In the above it has been endeavoured to give an integrated picture of the factors that have played a part in the development of an increasing burden on the physical environment. Demographic factors are naturally of importance here. To make the influence of the demographic development clear, one must ask oneself what the

Rural charms of an old village.



Whole new towns have sprung up, built to new demands according to modern taste.

consequences would have been for the environment if there had simply been a numerical growth in the population and not the growth in prosperity as well.

It is not easy to answer this question, since demographic, economic, social and cultural factors are so bound up with one another that it is not possible to investigate the effects of the isolated factors. Nevertheless, the numerical strength of the population is a hard fact. But policy on this point is difficult to effect and only makes itself felt in the longer term. However, even without a clear population policy a spontaneously corrective development becomes visible from this interrelation of factors. The birth rate is now falling more sharply than was forecast only recently.

A close watch will have to be kept on this development so that, on the basis of the numerical relations in the population, an optimal harmony is fostered with the requirements that must be made of the quality of human existence. One of the most important components of the quality of human existence is formed by the environment in which man lives.

From the development that the twentieth century has displayed a tendency may be perceived increasingly to involve the international forum in making the policy that must be followed in the short and above all also in the longer term. Emigration and immigration have not been factors of preponderant

importance in the demographic development of The Netherlands. The increasing influx of foreign workers from many European countries and also from North Africa has caused the immigration factor to increase in importance in recent years, as a result of which an international dimension has become visible.

International consultation with regard to population problems and the attendant social and cultural factors will therefore be able to make a contribution to a solution for the present problematic relation between man and his environment.

For this article use was made of:

1. Data from the Central Bureau of Statistics
2. The Priority Memorandum on Environmental Hygiene of the Ministry of Public Health and Environmental Hygiene, 1972
3. The Water Management of The Netherlands, by M. Snydelaan, in "Planning and Development in The Netherlands", 1970



PUTTING A PRICETAG ON NATURE

Ir. M. G. WAGENAAR HUMMELINCK
State Forest Service in The Netherlands

Wild animals, wild plants and wild countryside are essential. Not only for man's enjoyment but also for his survival.

There are many aesthetic and ethical arguments for conserving wildlife. There are also scientific ones. The loss of diversity of animal and plant species will doubtless prove fatal to the ecological systems of our precious planet.

Of course you know. But there you are an exception. To you nature is in focus, but to the majority of mankind it is not.

For many ages nature has been the enemy of man, and destruction of nature was parallel with progress. In many parts of the earth it still is. We must realise that large sectors in our society hardly notice the beauty of nature; they do not possess the imagination to recognise its wonders. They can only appreciate nature by looking upon it as a supplier of goods, resulting in slaughter, exploitation or break-up of wildlife and natural areas. For ages this has been the pattern in the western world. It is a pity that in many parts of our planet this attitude is still considered as an attribute of civilisation.

Yet nature could serve mankind in many other ways other than just being a supplier of certain products. New conceptions about our environment have resulted in a renewed evaluation of the value of nature for mankind. Nature can evidently be highly instrumental in man's fight against the ill

results of over-population and a further deterioration of our natural environment.

But how do we sell the idea? And what kind of people ought to be interested?

A method to recognise the newly discovered values of nature is by establishing a clear and accurate recording of all the functions of nature. Then an attempt must be made to evaluate each function in such a way that it can be readily understood by those who are not particularly interested in conservation. Preferably this should be done by the presentation of actual figures. Alternatively when figures cannot be produced this could probably be done by comparison with such entities that do provide the possibility of having their values expressed in figures.

Which is actually the kind of people who ought to be interested in these figures?

People who have the authority to make final decisions whether or not nature is going to be protected in a particular area are usually government officials. Environmental planning is an important task. It often concerns decisions to determine which part of the available land will be reserved for nature. This, however, should be done on a competitive basis amongst other candidates for the use of land. Such competitors are: housing, industry, agriculture, roads, airports and the like. The main criteria in this matter usually will be the net output of the

use of the particular area. This output is expressed in terms of money. Thus the value of nature and the value of other rivals in the battle for space are brought under the same denominator. The evaluation of nature in terms of money will necessarily involve participation by scientists of different professional creeds. Biologists, economists, social geographers and many other experts will have to work together. It appears that notably the economists are having difficulties. The old law of supply and demand must be adjusted to a new situation. The price of a certain item cannot be determined by this law if the entity is freely and limitlessly available. This was, for instance, until recently the case with the availability of such things as pure water, pure air, silence, as well as natural areas. Lately, however, this situation has changed considerably. Instead of abundant, these goods have become scarce. To an economist this makes all the difference: for goods that are scarce are obedient to his law.

Sometimes it occurs that on the basis of supply and demand it is impossible to put a pricetag on a particular item. At the same time, however, it might be known what amount of money people are willing to pay for similar goods or services. In this respect it often pays to identify comparable situations. The monetary value of the entity under review might very well be indirectly arrived at by deduction from existing market quotations.



"Wild animals, wild plants and wild countryside are essential: not only for man's enjoyment but also for his survival."

The following may serve as an example: Trees in urbanised areas are able to render harmless various impurities in the air because of the way in which floating particles tend to settle on the leaves and stay there. The total surface of these leaves is enormous and therefore one tree can carry vast quantities of dust. Rain will regularly wash down these particles that, subsequently, are being deposited on the ground or into existing sewerage systems. When one day it will be necessary to clean the air artificially, we will be able to determine the monetary value of those air-cleaning activities of trees. This somewhat unusual example is not as unlikely as it seems. Very recently in Paris some experimental and rather expensive equipment was installed on the avenue Ledru-Rollin for the purpose of purifying the highly polluted air in that beautiful city.

In several countries more scientists than ever before are now participating in the research for reliable methods to measure the value of nature. In Holland the "Netherlands Central Bureau of Statistics" is investigating the deterioration of the human environment. Its first publication deals with a preliminary quantification of the emission of certain organic substances and also gives an estimate of the amount of money needed to eliminate these emissions.

This research is based on the assumption that increased production and consumption is mainly at the expense of the so-called collective goods.

Another approach to these problems has been initiated by the Netherlands National Appeal of the World Wildlife Fund. This organisation has come to the conclusion that the purchase of

land and the establishment of nature reserves as a way of safeguarding wildlife in itself is not enough. What is needed is an everlasting defence against aggression. This research is carried out at the Institute for environmental studies of the Free University in Amsterdam. A first report is dealing with the analysis of the general problems and the functions of nature regarding recreation, landscape and ecology.

(continued on page 16)



What would our world look like without birds? Our parks, lakes and skies empty of those who provide so many of us with so much pleasure? Still, this is a possibility, and 59 of the more vulnerable species who adapt themselves less easily to a changing environment, are now seriously threatened. In order to focus attention on these species, a study on European birds in need of special protection to ensure their survival on this continent was made by the Interna-

tional Council for Bird Preservation (ICBP) at the request of the Council of Europe. It is hoped that this survey will stimulate corrective action wherever possible as well as encourage further research into the threats to and the conservation requirements of the species in question. The European Information Centre for Nature Conservation is currently considering the possibility of publishing a fully illustrated version of this study.

The photographs on these pages represent a few of the species listed: (clockwise) - *Platalea leucorodia*, *Gypaetus barbatus*, *Plautus alle*, *Gavia immer* and *Phoenicopertus ruber*.



Purifying the polluted air; trees or machines?

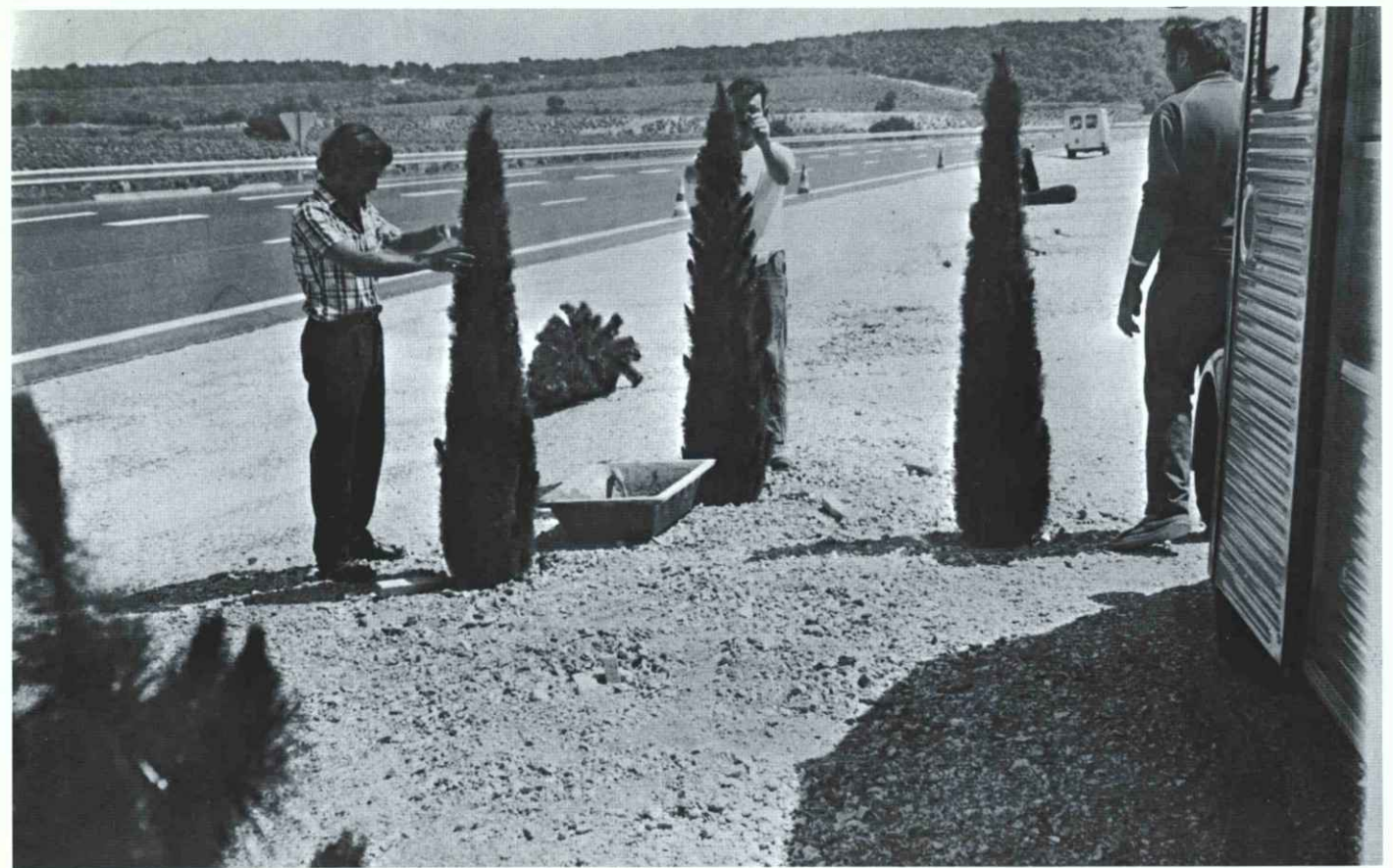
Nature is serving mankind in many functions.

A function that can be measured in money without great difficulties is the role of nature as a supplier of goods. In this case the law of supply and demand is often applicable and the market price is known. This goes for instance for meat and fish, wood, leather and countless raw materials. Sometimes the value of supplied goods or services can only be measured indirectly. Nature, for instance, is the source of many therapeutic chemicals, it is continually providing new breeding material to agriculture and stock-farming, and it is also a standing model to many sciences and arts.

For many resorts nature is acting as the best travel agent they could wish. Therefore it might also be of importance to know the amounts of money spent on recreation. The loss of such recreational facilities near urban districts will have as a result that people who formerly frequented these nearby places will now travel farther to find similar types of recreation; here they will push aside other visitors. This implies that more money is going to be spent on travelling. The costs for the longest distance should be used as a basis for calculating the total amount spent for these additional travel costs.

There are many other aspects. Nature is playing a role in education. It reduces the costs of public health. It can prevent erosion. Even the mere sight of nature means money: in Los Angeles trees cannot survive in the heavily polluted air alongside the highways. On the Jefferson Boulevard expensive artificial trees have replaced the dead ones.

It remains difficult, however, to put an accurate pricetag on many actual values nature is providing for. This does not imply that an attempt in this direction should not be undertaken. It has been argued that in the defence of nature often the value of a particular piece of natural land has to be compared with the value that land when used for building roads, houses, factories and the like. This evaluation always concerns long-term estimates. In this respect nature is occupying a strong position. In our calculations we have to compare the anticipated values of different end uses at present. The fixation of the yearly discount rate is an important point. We then must take into account that natural areas are very durable and that in the future demand will most likely be higher than supply. The value of newly built factories, roads and houses in future is far less certain. It is difficult to predict the attitude of consumers and the ex-



Modern landscaping? Last June, some 240 plastic covered metal trees, 1 m. 40 high, were "planted" on the motorway between Orange and Tavel (southern France). Will plastic birds soon be seen perching on their branches?



"... large sectors in our society hardly notice the beauty of nature."

igencies of traffic and housing in the next decades. These calculations are far less reliable than the assumption that the future need of nature will increase.

Many people are unable to grasp the value of natural areas to mankind. Let us help them by putting a pricetag on nature.



COSTS AND BENEFITS OF ENVIRONMENTAL PROTECTION

Giorgio NEBBIA
Professor of Resources and Ecology,
Faculty of economics,
University of Bari, Italy

Environmental deterioration — destruction of wildlife, soil erosion, bad regional planning pollution — is not the result of the devil's malignity but of a failure in social management of those collective goods, the natural resources, that are exploited for private advantage with social nuisance. The exploitation of natural resources would appear to be a good thing, since it is associated with an increase in private wealth, and the return of invested money, but it is bad in terms of the deprivation of such resources for use by the remaining part of the community.

At the origin of this situation lies our present choice of wealth indicators; we measure wealth in monetary terms and we lack adequate indicators for environmental commodities. If a man

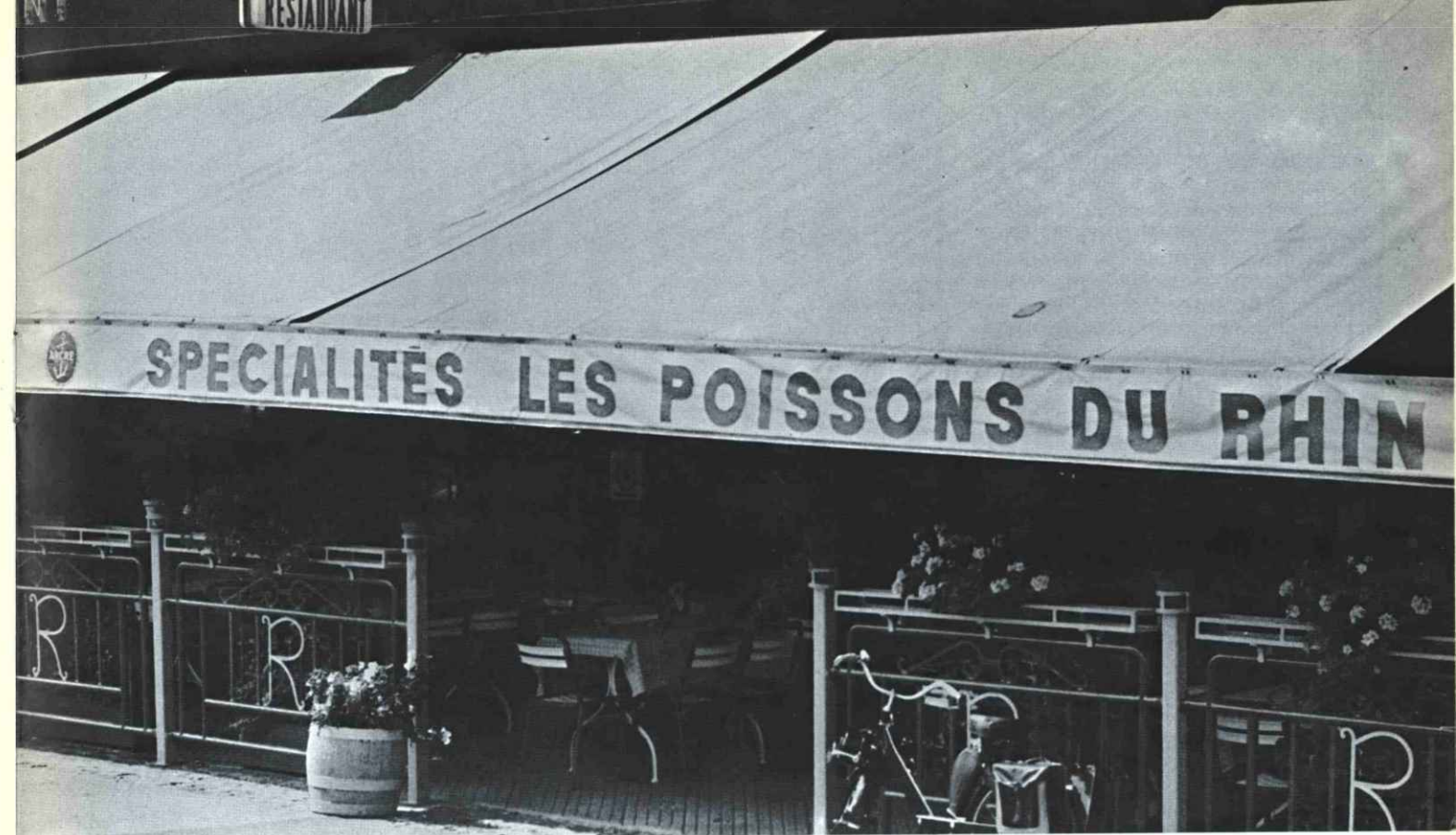
cuts down a forest in order to build a house or to obtain cellulose, the wealth appears to increase since the economic accountancy registers an increase in this kind of living space and in available paper, and such an increase is considered a benefit. In economic book-keeping, however, there is no provision and no figure for taking into account the damage resulting from the soil erosion following the tree cutting, the decrease in amenity resources, in silence, in wildlife, the disturbance to ecological equilibria. We know that such side effects, of negative value for individuals and society, do represent ultimate costs, but we have been so far unable to devise adequate indicators and numbers for them. In other words, we realise that certain economic benefits are accom-

panied by certain costs, but we measure only the former.

Let's consider, in particular, the relations between natural resources, production of commodities and pollution. We realise that an increase in our present production and consumption patterns is accompanied by two main negative side effects: the impoverishment of the reserves of natural resources and the deterioration in quality of those that remain — lakes, rivers, air, sea — because of the leftovers and wastes of human activities that are discharged into them.

The proposal of limiting the production of commodities, houses, transportation is essentially unjust especially in relation to the needs of the poor and less developed people; what we need is to increase the total social

Lessons learnt the hard way: cutting down trees may not only result in the disappearance of whole forests but may also be followed by severe erosion and the loss of many other natural resources.



"... all fish in the Rhine are unfit for consumption; it is dangerous to consume, or cause to be consumed, the products of any catch taken from it..." - la Fédération des pêcheurs du Haut Rhin.

wealth, both economically and ecologically. And to do so we must invent some indicators of social wealth comprising the amount of commodities and services plus the amount of environmental goods — clean air and water, forests, wildlife, and so on — upon which our welfare depends to the same, if not to a greater degree as upon the possession of material goods and machines. Should such indicators be available to us, the conservation of nature and the restoration of environmental justice would not be very difficult; the science of economics suggests incentives and disincentives, subsidies and taxes, to change our behaviour, technologies, discharges. Similar procedures have been adopted during the whole history of industrialisation to correct such unwarrantable situations as the exploitation of child labour, bad working conditions, the overaccumulation of capital; the reforms for the protection of the environment are not more complicated than any of these previous reforms.

The analysis of the costs of pollution is relatively simple in comparison with the evaluation of the costs of human intervention in more complex ecological cycles. An individual, whom we

shall call *the polluter*, keeps his own house or factory clean by discharging at no cost his residuals and wastes in the surrounding environment, e.g. discharging his gases through the chimney into the atmosphere or his acids into a river; there is another individual, *the polluted* who resents this behaviour because he becomes ill as a result of breathing dirty air and must then pay the bill for the medicine and physician, or because the fish he normally catches for food from the river have all disappeared due to pollution and he must now buy his food instead. The careless or selfish polluter has a benefit — the avoidance of spending money on waste treatment — and the innocent polluted has a cost. Although, in principle, the polluter might refund the polluted, in practice this is unattainable for several reasons: either the polluter does not know the polluted, who anyhow is generally not an individual but a crowd or group — or the suffering of the polluted does not have a single cause, but results from the overlapping of damages caused by many pollutants emitted by many polluters, and also effects of pollution may reveal themselves after only months or years. However we do know that the emis-

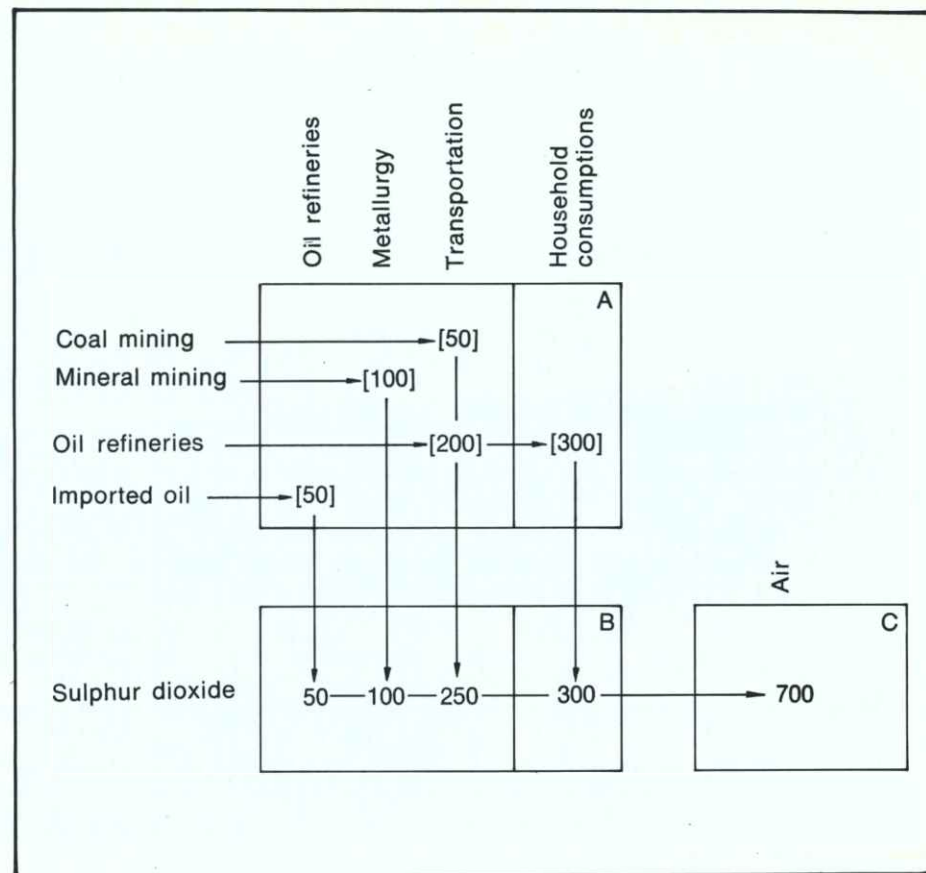
sion of certain wastes from the commoner natural resources gives rise to costs for at least one or more members of the collectivity or for the whole community, and that such emissions must be discouraged and reduced; this can be done by various means, e.g. by imposing taxes on the polluter to such proportions that he is induced to change his technology or behaviour in order to avoid paying them. The money collected through the taxes may be used to refund the polluted individuals, to build hospitals, to create recreative parks for the community, and so on.

In order to apply taxes or other disincentives to the appropriate degree, we need a large amount of information that we do not have at the moment; first of all, it is necessary to identify who pollutes, the amount and type of residuals and their distribution in the various receiving bodies, such as rivers, air, lakes, soil, sea. In a narrow sense this is but an ecological extension of the traditional economic accounts that every country prepares to identify the flux of goods or money from one activity to another and to know the inter-relationships between the various activities. Such an extension may be represented in the

form a so-called "waste matrix", an example of which is presented in the drawing on this page.

A waste matrix has essentially three tables, the first (A) being the traditional input-output table of economic activities, consumptions and services, containing, in physical (tons, calories, etc.) or monetary units the amount of transactions between the various sectors. The second table (B) contains, in physical units, the amounts of residuals (gases, chemicals, acids, waste heat, noise, radio-activity) generated by each production or consumption activity; and the third table (C) contains the distribution of the various residuals in the various receiving bodies. The information included in the last such table allows us to know, on the basis of the nature of the residuals, the dimensions and nature of the receiving bodies, if the immission of a residual will cause pollution, i. e. an appreciative and long-lasting change within the environmental body. The drawing describes a fully hypothetical situation regarding the discharge of one just one residual, sulphur dioxide, in just one receiving body, the atmosphere. For simplicity, in table A, instead of the amount of commodities sold, say, by coal mines to the transportation sector, in square brackets is indicated the amount of sulphur dioxide generated following such transactions: so, in an oversimplified way, the transportation systems using coal as a fuel generate 50 units of sulphur dioxide, while those using fuel oil, sold by oil refineries, generate 200 units of the same waste, in total 250 units, in comparison with 50 units generated during the refining of the imported oil, 100 units generated during the smelting of minerals, and 300 units generated by domestic heating boilers that burn fuel oil, sold, as usual, by refineries. In total, 700 units of sulphur dioxide are discharged into the atmospheric environment.

A waste matrix contains the information that allow a policy maker to understand what happens if he wants to reduce the air pollution, say, from 700 to 500 units in the present example. Let's assume that this be done by discouraging the use of sulphur-containing fuels in domestic heating, for instance through taxes on the amount of sulphur contained in the fuels, or through incentives for the use of natural gas or electric heating. The waste matrix, eventually combined with the general national economic accountability, tells that a decrease in the use of fuel oils will cause a reduced output from oil refineries and this in turn will have effects on the amount and quality of imported oils, on the cost



of the low-sulphur co-products of fuel oils, on the demand for natural gas, and so on.

A real operative waste matrix, as is being developed by various economists, is more complicated and takes into account the imports, into the economic sector (A), of environmental goods (air, water, oxygen) not associated with monetary transactions; the transfer of residuals to waste treatment activities, where they are converted from one form to another (e.g. from organic solids to gases by fermentation); the imports and exports of wastes into and from the considered region. A waste matrix may be prepared with very different degrees of aggregation at the level of small economic units (a plant, a town), or at the level of a water basin, a geographical region, a nation or a group of nations.

The development of waste matrices may also lead to a better understanding of the transactions on a subcontinental scale like Europe, where many neighbour countries exchange economic goods and environmental bads, depend on different raw materials and have different technological cycles and consumption patterns.

There is still a long way to go before environmental deterioration will be

stopped and nature restored, and, after the enthusiasm and fashionable attention by the great public, there is now hard work for scientists, economists and policy makers to find economic and social instruments through an interdisciplinary work with which to correct the present situation and to build a more just society and a greater general welfare. This work probably will not reward ecologists and economists with the success as TV stars, but will contribute more silently to a better society.



Topical problems of environmental protection in Austria

Dr. Ingrid LEODOLTER
Federal Minister of Health
and Environmental Protection

After the Stockholm Conference on Man and his Environment, June 1972, and after the first European Ministerial Conference on the Environment, March 1973 in Vienna, it became widely recognised for the first time the full extent to which political, economical, technical juridical, social and psychological problems are involved in the destruction or impairment of the environment. Every country is now clearly aware that intensive use must be made of the short length of time still available before the destruction of the environment becomes irreversible. In view of such worldwide dimensions, new methods of approach have also been attempted in Austria.

The Austrian Federal Constitution has skillfully proved its regulative power for all aspects of national life. However, it dates back to 1920 when "environmental protection" was not yet known and was not, of course, a national task. This is why the Austrian Federal Constitution does not concede responsibility with respect to environmental protection.

In the law covering the establishment of the Federal Ministry of Health and Environmental Protection, enforced on 1 February 1973, it is stressed that measures of environmental protection to be taken at a central level cannot be the responsibility of one Ministry, but have to go with the technical fields concerned. Following this basic concept, co-ordination only is the main function of the Federal Ministry of Health and Environmental Protection. Hence this Ministry avails itself of an Interministerial Committee, in the framework of which all Ministries concerned are co-operating in matters of environmental protection.

Recently a first general survey on the Austrian legislation dealing with environmental protection at all three levels of administration (central administration, provincial governments, local administration), has been condensed, based on statements received from the corresponding administrative services and the "Scientific Council on Environmental Protection to the Federal Ministry of Health and Environmental Protection" ("Wissenschaftlicher Berater für Umweltschutz beim Bundesministerium für Gesundheit und Umweltschutz").

Within this legal framework, the Ministry of Health and Environmental Protection is making the first step towards a methodical standardisation of permissible levels of the most important nuisances, e.g. of noise, air pollution, water pollution.

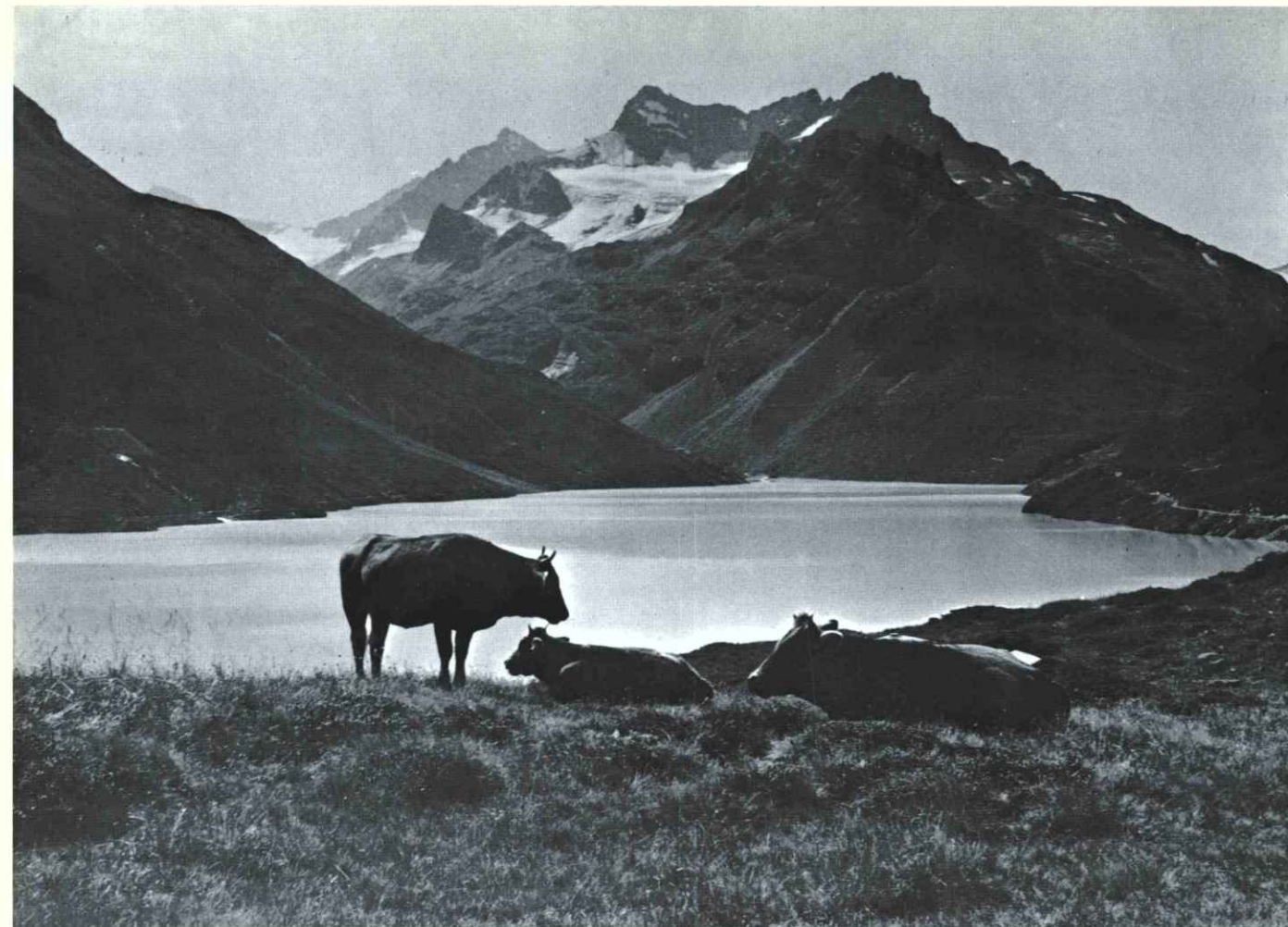
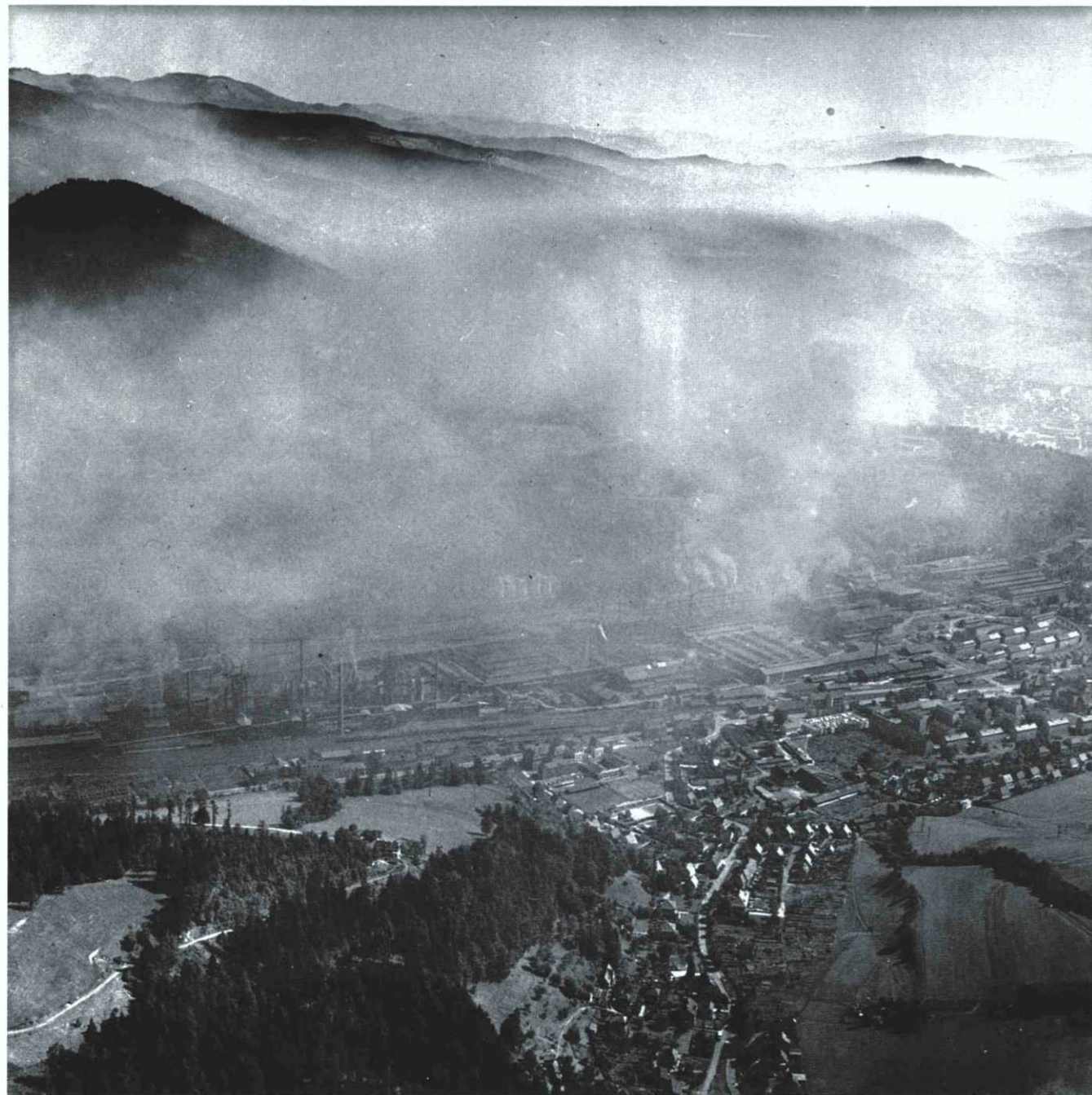
The control of noise emission is provided for in various areas of legislation — building, traffic regulations and

trade; but there is no clear-cut responsibility for the control of noise immission, which is of prevailing interest in environmental protection. Hence, in co-operation with the other Ministries concerned, with the provincial governments and with the "Federation of Cities and Communities" ("Städte- und Gemeindebund") the Federal Ministry of Health and Environmental Protection prepared a recommendation on permissible levels of noise, decreed in February 1973. The experience to be gained from the application of this recommendation in the

provinces will serve as a useful contribution to laying down a standard of permissible levels of noise at the Federal level. Preparatory to its legislation on the control of air pollution the Ministry of Health and Environmental Protection will, by analogy, set up Federal levels in the form of recommendations. A network of measuring stations established by this Ministry all over Austria is supplying the basic data to this end and will be used in future for evaluation purposes. In order to get information on the con-

dition of air, water, soil and vegetation as well as on space-relevant factors, space exploration systems have increasingly been used. They have proved to be adequate for detecting both the heaviest damages done to the environment and their causes. In spite of these and the many other first measures taken to fulfill the general criteria necessary for the work of environmental protection, discussions concerning the possibility of environmental protection becoming — by force of constitutional legislation — a responsibility at central level also in

The demands of a modern society: Austria too knows grave pollution problems.



Austria's special character has made it one of Europe's most popular tourist countries.

Austria, are gaining ground. Many renowned politicians, lawyers, scientists, and other experts have already recommended such a development and the Austrian mass media are also reflecting certain trends towards this aim.

In all cases, Switzerland is mentioned as a comparable model, where the central administration has been entrusted with the responsibility of decreeing "regulations concerning the protection of man and his natural environment against noxious or molesting influences" — by amendment of the Constitution.

In addition, outstanding elements and organisations of social life in Austria have also joined in this demand, for instance the "Arbeiterkammertag". Meanwhile, the Federal Ministry of Health and Environmental Protection is trying to make the best of the possibilities offered by the existing constitutional and other legal structures in order to meet the local and regional needs. It is faced with the task of striving for full realisation of the prin-

ciples of a co-operative Federal Republic and seeking co-operation with the other services of the central administration and with the provincial governments.

However, the Federal Ministry of Health and Environmental Protection has also to observe a progressively developing consensus that a unified legal responsibility is the pre-requisite to effective environmental protection. This Ministry must also ensure that this basic problem comes under public discussion.

To give the urgent necessities of life preference over a wrong interpretation of federalism is such a compelling argument, that even Switzerland, a country well known for the meticulous observation of her federal principles, has made a remarkable exception in favour of environmental protection.

Beyond all responsibilities or competences of the federated parties, the fact cannot be overlooked that even in mountainous Switzerland, a country which has so many features in common with Austria, the dust in the air

doubled during the past 40 years. A renowned Austrian lawyer has summarised his opinion as follows:

"In legal-political discussions, dogmatic legal arguments can only have a ministering function. In cases of urgent national or legal political necessities, the otherwise understandable animosity against amendments of the Constitution should be put aside in Austria".

Careful optimism in this respect may be justified. There is no acceptable alternative, considering the compelling arguments of reason.



...NEWS...NEWS...NEWS...NEWS...NEWS... FROM STRASBOURG

EUROPEAN COMMITTEE FOR THE CONSERVATION OF NATURE AND NATURAL RESOURCES 12th Session

Strasbourg, 2 - 6 July 1973

The Committee discussed a paper prepared by the Secretariat in the light of the European Ministerial Conference on the Environment held at Vienna this year (the Conclusions are given in "Nature in Focus" No. 15 page 26) together with the revised work programme and proposed restructuring of the organs of the Council of Europe which deal with problems of the natural environment.

PROGRESS REPORT

A progress report was reviewed on various current activities including

- study of the causes of regression of the Mediterranean maquis (see also "Nature in Focus" No. 14 page 19);
- study of traffic problems in protected areas and their surroundings, with particular reference to the effects of access by the public on the conservation of the soil and vegetation;
- study of erosion problems in Mediterranean regions;
- ecological consequences of tourism and changes affecting land-use in sensitive mountain regions in Europe;
- survey of the motivation of visitors to protected areas;
- European Convention on the Protection of International Fresh Waters against Pollution.

EUROPEAN CONFERENCE ON PROTECTED AREAS

Before the advent of the second Ministerial Conference on the Environment, which will probably take place in Brussels in 1975 or 1976, a technical conference on "Nature Parks and recreation areas" will be held in

Germany under the aegis of the Council of Europe, at the invitation of the Federal Minister of Agriculture, Dr. Ertl (West Germany).

ECOLOGY APPLIED TO LAND USE

It was generally agreed that the international course on ecology applied to land-use (7-13 May 1973, Monks Wood Experimental Station — for further details see "Nature in Focus" No. 14 page 20) was a great success. The Committee took note of the invitation of the Italian delegation to hold a second course in Italy in 1974 on problems specific to the Mediterranean region, and the invitation of the Austrian delegation to hold a third course on applied ecology in Austria on the problems of mountainous regions.

main tasks of an ad hoc working party, which must take into consideration the work already done by Messrs. Perring and Walters (see "Nature in Focus" No. 14 page 19) and the results of the symposium to be organised at the end of this year by the French Government (under the aegis of the Council of Europe) at Arc et Senans about plant species in danger in Europe.

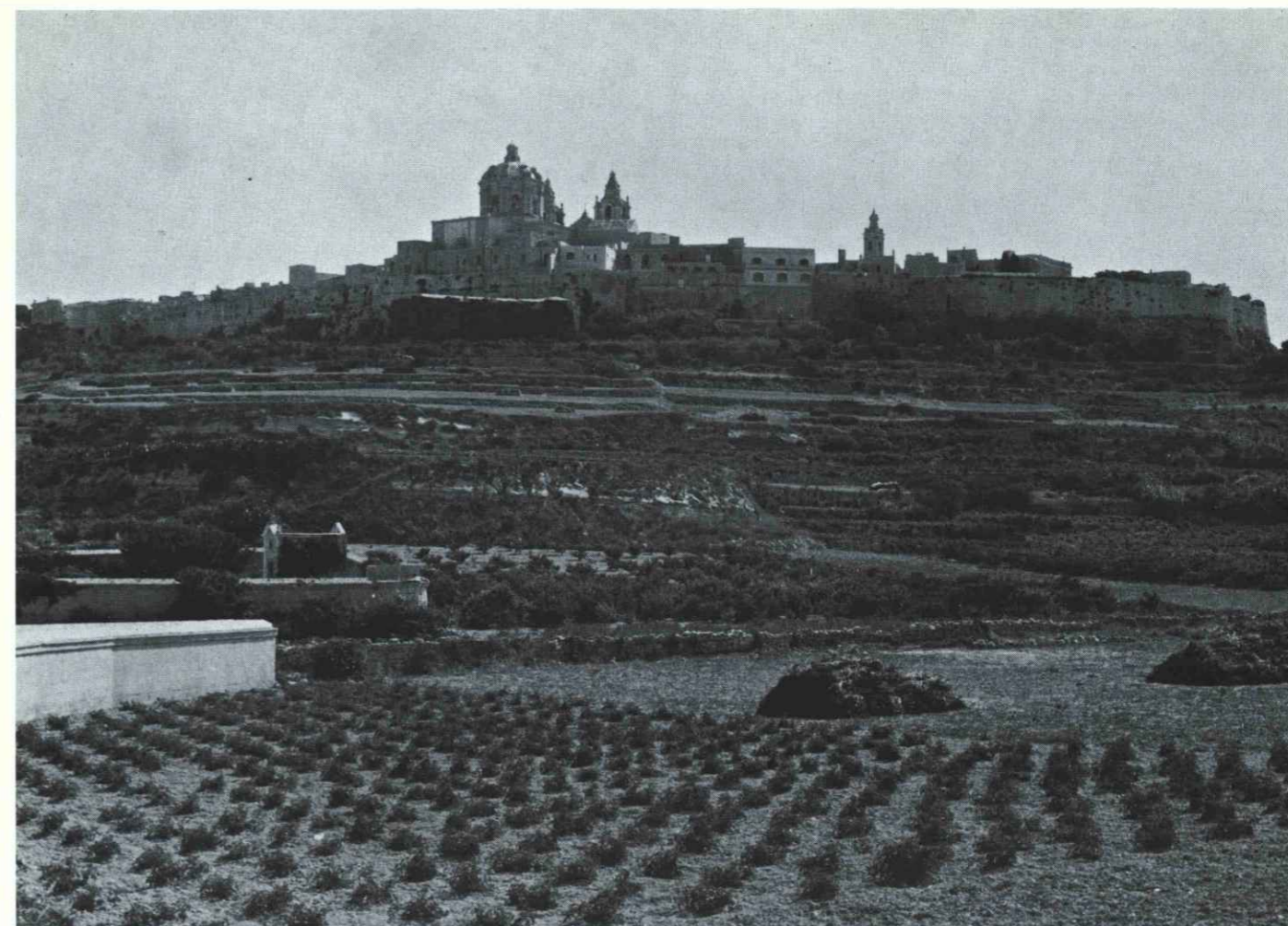
Mr. DOETS was elected President and Messrs. ESPING and PLATTNER Vice-Presidents for the next meeting.



SPECIES REQUIRING SPECIAL PROTECTION IN EUROPE

The Committee recognised the magnitude of the problems of protecting plant and animal species. The study of these problems should be one of the

Among the habitats most in danger in Europe are the hedgerows. A study has been carried out under the auspices of the Council of Europe on the causes and possible remedies of this problem, to be published in 1974.



Malta's pilot project will centre on the walled city of Mdina, the island's Medieval capital.

ZURICH: THE LAUNCHING OF A FUTURE FOR OUR PAST

Some 300 delegates from 28 European and 3 non-European countries — government officials, parliamentarians, local authorities, representatives of international organisations, journalists, architects, landscape designers, town planners and conservationists — attended the Launching Conference for the European Architectural Heritage Year 1975, which was held, at the invitation of the Swiss authorities and under the auspices of the Council of Europe, in Zurich from 4-7 July 1973. Aware of the increasing risk of losing partially or completely all that is most precious and delightful in Europe's architectural heritage, the Conference urged governments to review legislative powers and administrative practice in order to step up protection for buildings and areas of historic interest and to give support, including financial, to the EAHY campaign and the

national committees created to help run it. The Conference addressed a special Appeal to local authorities on whose help the campaign and its practical results must depend to a very large extent.

The Conference furthermore endorsed a "European Programme of Pilot Projects" which is being launched in 17 European countries. This programme aims at stimulating particularly worthwhile preservation projects and using them to assemble as much useful information as possible for the benefit of all those trying to promote and implement active conservation of Europe's architectural heritage.

On the basis of 5 reports, examined by the 3 commissions of the Conference, 1 general resolution and 3 specific resolutions were adopted on:

- Legislation on the integrated protection of conservation areas of cultural interest
- conservation, restoration and rehabilitation of old districts
- promotion of public interest.

These basic guidelines for the EAHY campaign will now go to governments and the Council of Europe's expert Committee on Monuments and Sites. Mr. Duncan Sandys of Great Britain, President of EUROPA NOSTRA and President of the Zurich Conference, in his statement during the Opening Session, outlined the aims of the campaign: "Our purpose is to sound the alarm and call for action. We confidently believe that the campaign, which we are launching today, will make a powerful and enduring impact upon public attitudes and government policies".



A Future for Our Past



*Under the patronage of the Council of Europe and through its Information Centre for Nature Conservation, marmots (*Marmotta marmotta*) have been reintroduced into the Romanian mountains. Towards the end of June, as a gift from the Austrian hunting and conservation authorities, 19 animals were sent to Romania to be used as a breeding stock for what is hoped will be a new population of these animals in the national park Retezat from where they disappeared a few decades ago.*

NOTES

THE "HOHE TAUERN" NATIONAL PARK, AUSTRIA

Oberforstrat
Dipl. Ing. Dr. Karl Breiteneder

The three provinces of Carinthia, Salzburg and Tyrol have agreed to create an Austrian national park in the "Hohe Tauern", one of the most beautiful and noteworthy Alpine regions. The creation of a national park, that is to say, the promotion of a natural region to the status of a national heritage, will ensure that future generations receive intact a typically Austrian landscape. Although the establishment of new nature reserves is now regarded as being one of the main objectives of regional planning in the widest sense and although protection of nature is also protection of the environment, the main thing is still to ensure that the necessary protective measures are observed as widely and effectively as possible. It will thus be necessary, in the future national park, to make clear

distinctions between closed reserves, where absolute priority will be given to the protection of animal-life, plant-life and landscape; protected zones, mainly intended for leisure and recreation, and development zones, where regional policy comes into play. Like any regional planning initiative, the establishment of nature reserves or protected zones has certain social consequences.

Here as elsewhere, one finds oneself facing a series of conflicting requirements — communications and recreation, mass tourism and mountaineering, agriculture and forestry, mining and local industry, nature-conservation and hunting.

Closed to the builder, nature reserves and protected zones serve aims, in the context of regional planning, which are bound to conflict sooner or later with the interests of certain parties. On the other hand, it is obvious that only regions which are suited to the purpose can be turned into protected zones. If we wish to pass these regions on to future generations in their unspoiled state, this means that immediate action is necessary.

It is the opening-up of previously undeveloped mountain regions which is causing these conflicts of interest. These regions are now exposed to economic pressures, in the form of development projects, from which even the most remote and inhospitable fastnesses are not safe.

This leads to the construction of hydro-

electric power-stations, power-grids, motorways and, above all, the facilities "demanded" by tourism access roads, cable cars and ski lifts, the inevitable result being the wholesale conversion of farms and chalets into restaurants and mountain hotels and the transformation of hamlets and villages into booming tourist centres, complete with soaring blocks of flats and the whole associated infrastructure.

This is where opinions start to differ: developments which one man finds cautious and inadequate are, for another, the first step in the rapid destruction of the countryside.

Here again, it is the establishment of closed reserves which will present the biggest problem for the "Hohe Tauern" National Park. This stage will come when the three provinces concerned have turned the region into a nature reserve. The very concept of a nature reserve implies a policy of strict conservation, the only exceptions being made in the cases of mountain agriculture, forestry and hunting, with a view to maintaining the traditional uses of the region. The regulations applied must, however, enforce the more or less total protection of animals, plant-life and landscape. This is the only way in which the idea of an "Austrian National Park" capable of going beyond its American models, can be realised.

If we can persuade politicians of this, we shall also have solved a social problem of burning immediacy.



ZUSAMMENFASSUNGEN

BEDROHT DAS BEVÖLKERUNGSWACHSTUM DIE NATÜRLICHE UMWELT? — S 3

Geoffrey Hawthorn,
Lecturer in Sociology,
Cambridge University and
Fellow of Churchill College

Die auf den Zahlen von 1965 basierenden Prognosen über das Bevölkerungswachstum in Europa (mit Ausschluss der UDSSR) erscheinen heute als überhöht. Ein allgemeiner, wesentlicher Rückgang der Wachstumsraten lässt erwarten, dass das absolute und proportionale jährliche Wachstum in Zukunft geringer als in den letzten beiden Jahrzehnten sein wird. Selbst dann wird die Bevölkerung noch wachsen, aber es wäre zu einfach, dies als bedrohlich anzusehen. Zahlen haben weniger Gewicht als ökonomische und soziale Veränderungen. Einige dieser Veränderungen rechtfertigen eine optimistische Sicht der Chancen für die Erhaltung der natürlichen Umwelt in Europa.

UNGÜNSTIGE AUSWIRKUNGEN DER BEVÖLKERUNGSENTWICKLUNG AUF DIE HOLLÄNDISCHE UMWELT S 7

Dr. L. B. J. Stuyt, Minister für öffentliche
Gesundheit und Umweltschutz
(Juli 71 - Mai 73)

Die Bevölkerungsdichte der Niederlande ist eine der höchsten in der Welt. Für das Jahr 2000 wird eine Gesamtbevölkerung von 16 bis 17 Millionen vorausgesagt. Die vorangeschrittene Verstädterung und Industrialisierung, der Verkehr usw., die mit dem Bevölkerungswachstum einhergehen, haben zu bedeutenden Umweltveränderungen geführt, Luft-, Boden- und Wasserverschmutzung inbegriffen. Es muss jedoch betont werden, dass der demographische Aspekt nicht isoliert zu betrachten ist. Die Situation ist ein Ergebnis des Zusammenwirkens von sozialen, wirtschaftlichen und kulturellen, wie auch demographischen Faktoren, die in ihrem Zusammenhang betrachtet werden müssen.

Im Jahre 1972 wurde die Regierungskommission für Bevölkerungsfragen gebildet, mit der Aufgabe, die Faktoren zu analysieren, welche die künftige demographische Entwicklung und ihre Folgen auf die Volksgesundheit und die Umwelt beeinflussen. Im selben Jahr verfasste das nie-

derländische Ministerium für Gesundheit und Umwelthygiene ein «Memorandum bezüglich der Prioritäten für die Umwelthygiene», auf welchem ein Grundsatzprogramm zur Bereinigung der gegenwärtigen Umweltsituation für die nächsten 10 Jahre aufgebaut werden soll. Die wesentlichen Ausgangspunkte umfassen: Koordinierung der Politik auf interministerieller Ebene; Information, Aufklärung und Beteiligung der Bevölkerung; Intensivierung der Forschung; Einleitung statutorischer Massnahmen; internationale Konsultationen. All diese Probleme sollen bis in die Einzelheiten erörtert werden.

NATUR MIT PREISSCHILD — S 12 M. G. Wagenaar Hummelinck

Auf Anfrage des World Wildlife Fund prüft das Institut für Umweltforschung in Amsterdam verschiedene Möglichkeiten, den Wert der Natur für den Menschen in Geld auszudrücken. Jahrhundertlang wurde das Zurückdrängen der Natur mit dem Fortschritt gleichgesetzt. Wir besitzen noch nicht das ökonomische Instrumentarium, diesen Prozess aufzuhalten. Wenn der Wert eines besonderen Aspekts der Natur oder einer Landschaft in Zahlen dargestellt werden könnte, wäre es leichter, diesen Wert mit anderen Interessen, wie Strassenbau, Hausbau, Industrie oder Landwirtschaft zu vergleichen. Dann wäre es (vielleicht) möglich, die Verantwortlichen vom Sinn der Erhaltung der noch lebenden Natur zu überzeugen.

KOSTEN UND NUTZEN DES UMWELTSCHUTZES — S 18

Dr. Giorgio Nebbia,
Professor für Hilfsquellen
und Ökologie, Ökonomische Fakultät,
Universität von Bari, Italien

Einer der Gründe für die fortschreitende Beeinträchtigung der Umwelt ist der fehlende Gebrauch angemessener sozialer Indikatoren, die Kosten und negative Auswirkungen berücksichtigen, welche mit dem Fehlgebrauch natürlicher Ressourcen verbunden sind und welche den Vorteilen erhöhter Produktion von Waren und materiellem Wohlstand gegenüberstehen. Es geht nicht darum, diesen Wohlstand zu beseitigen, sondern die neuen sozialen Benachteiligungen des technologischen Zeitalters zu korrigieren. Hierzu müssen un-

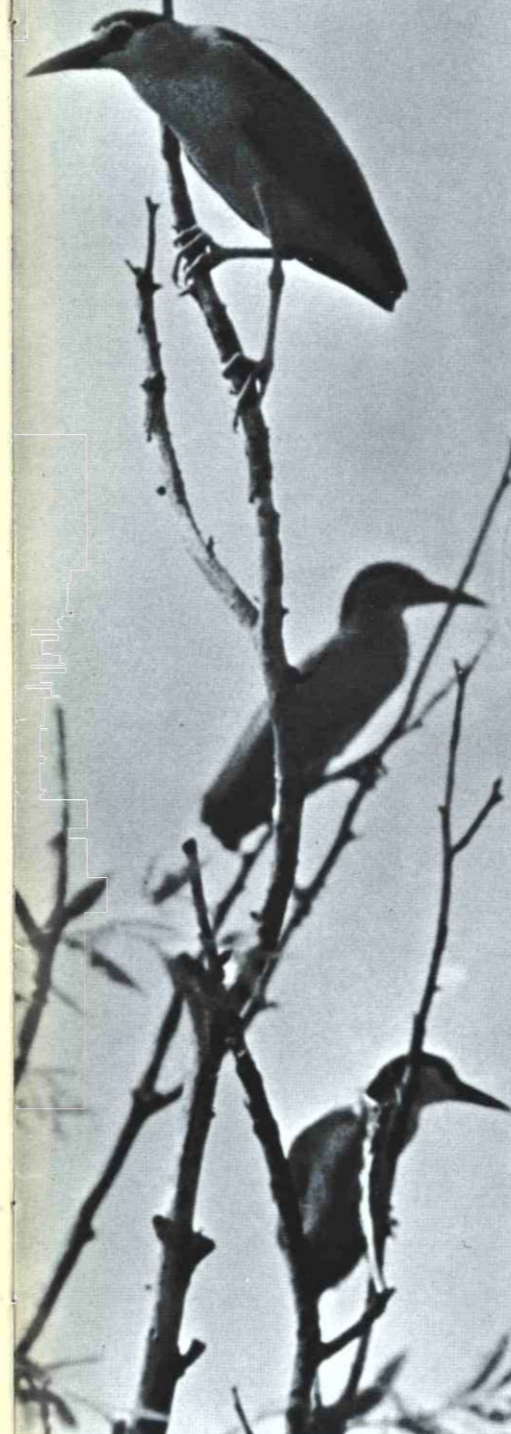
sere Kenntnisse des Zusammenhangs zwischen wirtschaftlichen Aktivitäten und ökologischen Zyklen erweitert werden, d.h., Ökonomie und Ökologie müssen miteinander verbunden werden. In die übliche Bewertung des Bruttosozialprodukts müssen einige Indikatoren der Umweltqualität eingeführt werden, die die Erarbeitung eines angemesseneren Index ermöglichen, das sog. «Gross National Welfare».

AKTUELLE PROBLEME DES UMWELTSCHUTZES IN ÖSTERREICH S 21

Dr. Ingrid Leodolter
Bundesminister für Gesundheit
und Umweltschutz,

Nach der Stockholmer Konferenz der Vereinten Nationen über Mensch und Umwelt und der Ersten Europäischen Ministerkonferenz über Umwelt in Wien, wurde zum erstenmal die volle Bedeutung der Probleme sichtbar, die durch die Zerstörung und Beeinträchtigung der Umwelt ausgelöst wurden. Heute ist sich jedes Land bewusst, dass es die kurze Frist bis zur unwiderprüflichen Zerstörung der Umwelt zu nutzen gilt. Auch in Österreich hat der Anstoss durch die weltweiten Probleme neue Ansätze zustandegebracht. Neben den zahlreichen Initiativen zur Verwirklichung der allgemein verbindlichen Kriterien für den Umweltschutz wurde eine Diskussion über die Möglichkeiten einer zentral verantwortlichen Stelle für Umweltschutz als Bestandteil der österreichischen Verfassung eingeleitet. Viele bekannte Politiker, Anwälte, Wissenschaftler und andere Experten sind bereits für eine solche Entwicklung eingetreten.

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