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NATURE IN FOCUS

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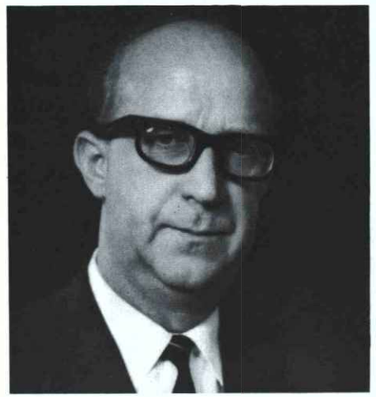
EDITORIAL



INGEMUND BENGTSSON,
Minister of Agriculture, Sweden.

One of the results of modern chemistry is the development of pesticides including herbicides, fungicides, etc. It is true that poisonous substances like arsenic and mercury compounds were used quite a long time ago in order to protect crops from damage by insects, fungi, etc and that man also tried to use chemicals against rats and mice and other pests. However, the present widespread use of a great number of pesticides could not have taken place without the evolution in science and technology during this century.

No doubt modern pesticides have contributed to greater harvests and moreover to harvests of better quality. Thus these chemicals have helped man to produce more food for the increasing number of people in the world. Thanks to pesticides millions of people have escaped from malaria and other vector-borne diseases.

The list of benefits of pesticides could easily be enlarged. And yet, are pesticides useful in the long run? Has mankind already paid a price which will turn out to be too high? It is well known that many pesticides have lost their value for the purpose of protection due to resistance phenomena which have occurred. Some of those pesticides which have been used in enormous quantities are very persistent. Observations show that they can be spread all over the world although their usage might have been restricted to certain areas. Thus pesticides have contributed to the pollution of natural resources, especially water and soil. Most scientists seem to agree that some pesticides have already caused disturbances in certain biological systems. In some cases there has been severe damage to wildlife. Teratogenic properties of some pesticides and suspicions of genetic risks have made the pesticide problem still more complicated.

Whatever risk there may be, whatever benefit the use of a pesticide may mean, there is for each of them a risk/benefit equation. It is a necessity that this equation be solved in each single case. For the future, no use of a new pesticide should be permitted before there is evidence of a positive final outcome of the equation. As far as those pesticides are concerned, which have already been introduced, it is urgent to solve the equation in order to ensure that the continued use of the products is based on knowledge and safety evaluations and not subject to hope and fear.

However, the task of solving these equations will be dependent on a tremendous work by scientists and administrators and a close co-operation between the proper agencies. If we shall succeed a close co-operation between nations is a necessary condition. In this wide field we must share the human brain resources.

Work to be done on an international basis might include among other things harmonisation of legislation, standardization of test methods and of data and evidence to be shown before acceptance of new pesticides, co-ordination of research projects, etc. Many organisations have already given tribute to a successful international co-operation. The Council of Europe is one of them. Obviously there is need for a co-operation between countries both on a regional level as, for example, Europe and on a world wide basis.

COI

INTRODUCTION

This series of articles has been prepared by Hector Hacourt, Ingénieur Agronome, who is Secretary to the European Committee for the Conservation of Nature and Natural Resources.

Pesticides — we see the word almost every day, in newspapers, specialist reviews and other publications. What we are told about them varies widely, ranging from shouts of alarm to recognition of beneficial and indispensable services.

Before we form a definite opinion on the subject, we have to consider the services of pesticides to public health and agriculture. Pesticides have been real weapons for the defence of mankind and his daily bread, and the principle of this struggle is, and always will be, a valid one.

There are, however, a number of findings, such as the increased resistance of certain parasites, the disappearance of natural predators, and the presence of pesticides in the remotest corners of the world, that give us grounds for asking whether man has not misused these poisons, with an implicit faith in their universal utility, whatever the quantity used.

This, then, is one little-known aspect of the action of pesticides, and it would be of interest to our readers to see some of the opinions of those directly concerned with these problems. The five articles which follow present the views of research workers, manufacturers and users of pesticides, and include a survey of how the subject is dealt with in the laws of different countries. We would like to thank the authors for providing these articles and hope that they will give us all a clearer picture of how pesticides are used in the modern world.

PESTICIDES
and productivity in agriculture

by ROBERT HAURET,

vinegrower in Anjou, Member of the French National Assembly and of the Consultative Assembly of the Council of Europe.

Pesticides confront the farmer with a number of problems. Immediately after the last war, the possibility of using large quantities of DDT against insect pests created a certain euphoria among fruit-tree and vine-growers in particular.

Unfortunately this satisfaction was short-lived. Many insect pests which at first succumbed to DDT developed races which were immune to the poison. This phenomenon of habituation rapidly set in and the application of DDT became virtually ineffective.

Then began the race to find new products as agriculture had now entered the era of relentless productivity and farmers could not risk seeing their more intensive crops destroyed without doing everything possible to save them.

Industry then placed on the market a range of new products called pesticides. The farmer at once recognised their great effectiveness and had no choice but to begin using pesticides immediately.

The early stages resembled the experience of the sorcerer's apprentice, as the rational use of these extremely toxic substances was not all plain sailing.

To begin with, those using these products sometimes met with accidents and suffered serious poisoning. Agricultural workers were not then used to handling products whose mere emanations in hot weather might in the long run cause distress. Fortunately, these accidents are now becoming rarer.

But the sorcerer's apprentice had not come to the end of his discoveries. The war on plant pests such as fungi and insects was quickly won; but, the farmer soon found to his consternation that another scourge appeared, requiring a new and still more toxic treatment.

The violence and blind, unselective efficiency of the product used resulted not only in the total disappearance of the target insect, but also in the disappearance of an entire sector of life. In this sector useful insects were massacred and the natural balance upset with the result that harmful insects, which had previously been effectively kept down by other insects which also succumbed to the chemical treatment, reappeared in large numbers.

For example, I have seen the proliferation of red spider mites *Tetranychus* in the vines after a series of pesticide applications. This mite causes serious depredations.

Considerable efforts have been made by industry to prevent the misuse of pesticides, but sometimes these efforts are hampered by the need for high concentrations to combat habituation. A book published a few years ago in the United States, 'Silent Spring', illustrated, probably with a certain degree of exaggeration, the scale of devastation caused by the irrational use of pesticides. This led to perhaps the first large scale public awareness of these problems. The authorities are now worried by the risk of pesticide residues in fruit or in the soil indirectly causing discomfort to the consumer.

The incontrovertible fact is that we are upsetting the natural balance. One need hardly mention the wholesale destruction of bees, although their valuable contribution to the balance of nature is undeniable. In my own vineyard I have seen the havoc caused to birds, in particular to partridges whose fledglings are quite literally poisoned when pesticides are used to treat the vines against grape worm, one of their principle foods.

Industrialists have not remained insensitive to criticism: they are encouraged to produce pesticides which decompose relatively quickly in sunlight or in the soil and so will not last long enough to affect other animals which may eat the poisoned pests. We have not yet achieved complete satisfaction but the desire to protect nature, the user and the consumer is wholehearted. As far as the protection of consumers is concerned, strict rules have been laid down for the last application of pesticides before harvesting and accidents are becoming less and less frequent.

Agricultural productivity leaves practically no choice of method for the protection of crops. But the alarm has been given in time, and here again the Assembly of the Council of Europe deserves thanks for its constant efforts in this direction and in promoting conservation.

PLANT PROTECTION
and the management of the environment

Y DEMARET,

Secretary General of the International Pesticides Manufacturers' Associations.

The recent Declaration on the Management of the Natural Environment of Europe, which has been widely distributed by the Council of Europe, offers a constructive approach to the problem of nature conservation, which was until recently the concern of a limited number of specialists only.

Its title, preferring management to mere conservation, reveals a dynamic attitude. The partial protection stage — national parks, nature reserves, protection of outstanding sites — is past: all sectors of the environment are interdependent and a comprehensive strategy is therefore essential. This is fundamental to the task: it is no longer a matter of condemning some human activities rather than others. Most human activities can involve threats to nature and the risks increase proportionately as man develops his resources and as his needs grow. Lastly, the Conference Recommendations reveal the delegates' realisation that each must face up to his share of responsibility.

Pesticide manufacturers have long since faced up to theirs. Contrary to what some people may think, they have long been familiar with the idea of the interdependence of the various sectors of the environment and they act accordingly.

Consequently they find the attacks to which their products are subjected most unjustified, since pesticides have become a determining factor in world agricultural production as well as an essential tool for the safeguard of public health and an effective aid to the rational management of natural resources.

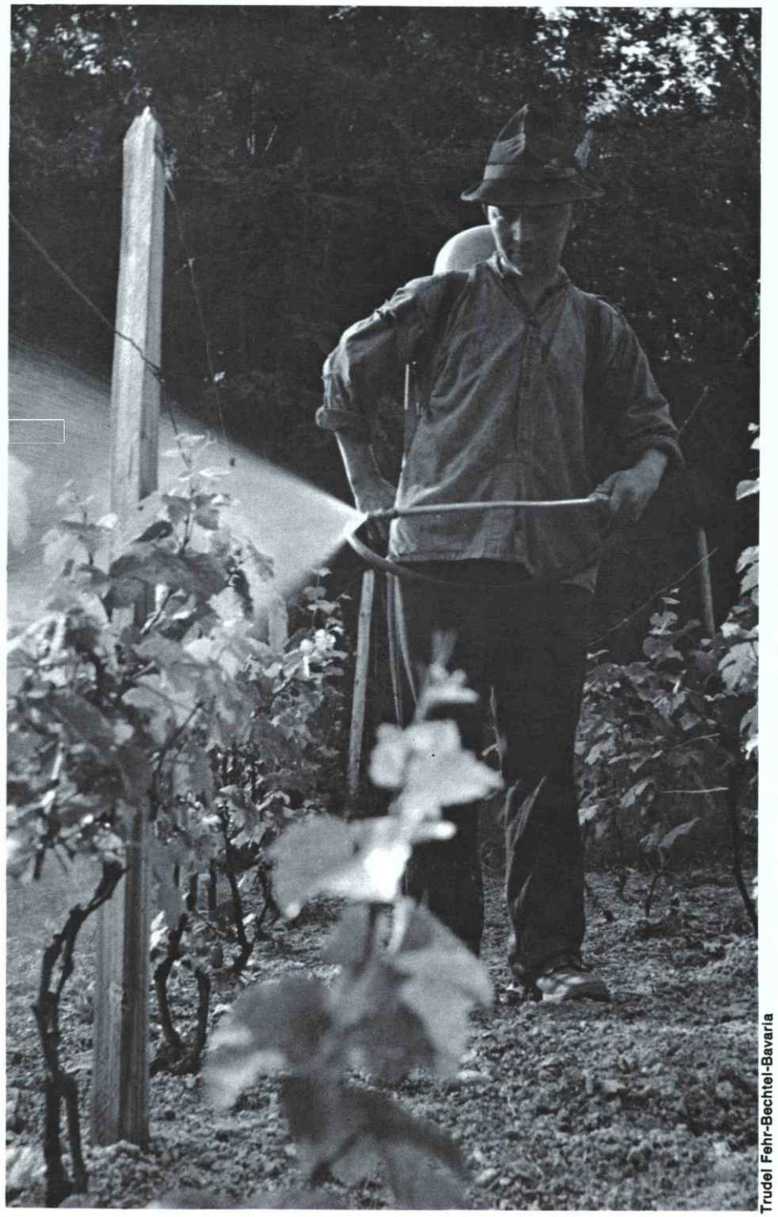
Quarter of world crops could be saved

The agricultural uses of pesticides are by far the best known. Where agriculture is highly developed, pesticides must be applied regularly, since modern agricultural techniques create extremely favourable conditions for the proliferation of pests of all kinds. Large areas planted with single selected crops would be laid waste by all kinds of pests and disease if they were not protected by pesticides.

Where archaic farming methods are used, as they are in vast areas in the developing countries, pests destroy a huge proportion of potential crops.

In a paper delivered at the CENECA colloquy on 'The country community: the

Sorcerer's apprentice or Nobel prize winner?
The time-honoured practice of spraying vines with sulphate to prevent fungal blight has been developed until today a whole battery of different pesticides is used about whose long term effects on the environment very little is known.



Trudel Fehr-Bechtel-Bavaria

custodian of nature' (see p 18) held in Paris in March 1970, F Colin and P Desaymard quoted figures compiled by HH Cramer in his book 'La protection des Plantes et des Récoltes dans le Monde' (1967). They commented on these figures as follows:

'Total world losses caused by crop pests as a proportion of potential production are estimated at 35%: 40% of which are due to animal pests, 12% to plant disease, 9% to weeds.

'The present value of actual agricultural production, 140 000 million dollars, represents scarcely double the losses sustained which amount to some 70 to 90 thousand million dollars.

'Assuming that losses are some 50% lower in properly treated crops than in inadequately treated crops, it may be estimated that world losses would be reduced to 52 thousand million dollars if all crops were properly treated and they would rise to 106 thousand million dollars, if all were inadequately treated.'

It should be noted that the advanced countries still suffer considerable losses and that the situation where untreated crops are concerned is catastrophic. The untreated crop areas, moreover, are mainly in the developing countries, where there is the most crying need for food.

Of course chemical pesticides are not the only weapons. Critics of pesticides often talk of biological control and some even go so far as to suggest that it can replace chemical pesticides. The idea is attractive in theory: to combat living organisms with their natural enemies in order to protect crops would have great advantages. But biological control has been found to depend on a combination of conditions which can rarely be obtained.

There has also been talk in recent years of integrated control. For example, alternating crops on the same soil, and certain practices such as sowing and harvesting crops at carefully chosen times, help to keep pests at bay or at least to reduce the damage they cause.

But while these technical and biological methods must be used wherever possible, there is no reason to believe, at the present state of knowledge, that they can one day replace the use of chemicals.

Furthermore, progress on the chemical front continues unabated. Before the second world war, a small number of chemical pesticides was known, the main basic substances being sulphur, copper, arsenic, lead, nicotine, pyrethrum, Rotenone (Derris) and certain petroleum oils.

Nobel prize for DDT

Since the discovery of DDT as an insecticide in 1939 — for which the discoverer received a Nobel prize — synthetic products have multiplied: there are now several thousand. Phytopharmacy is following, with a certain time-lag, the same path as pharmacy for human use. Beginning with effective but non-specific products, further research has already produced more specialised active substances — sometimes too specialised, certain people say — often less toxic and leaving little or no residue on or in the plants or in the soil and water.

From the earliest stages of research, new products are subjected to rigorous and repeated tests in the laboratory, under glass and on specimen crops. Their toxicity is tested on laboratory animals. Their behaviour on and in treated plants and on the soil is studied. A great deal of effort is devoted to establishing whether they leave any residue. If there is any residue, tests are carried out to discover its metabolic effects on various animals.

Subsequent research is devoted to field trials over larger areas to establish whether the new products are sufficiently effective, whether they are poisonous to plants and whether they have any undesirable effect on soil fauna. Finally, long term toxicological tests are conducted to establish whether the new active substances are harmless to their users and handlers and to the consumers of treated agricultural produce.

Where a pesticide is likely to be spread over large areas, efforts will be made to establish whether it will have any influence on the environment. Toxicological tests may be carried out on several species of birds and fish. If there are any risks involved, the manufacturer will approach the institutions — private or official — concerned with nature conservation. In this way he will be able to collaborate in tests and to gather a wider range of observations.

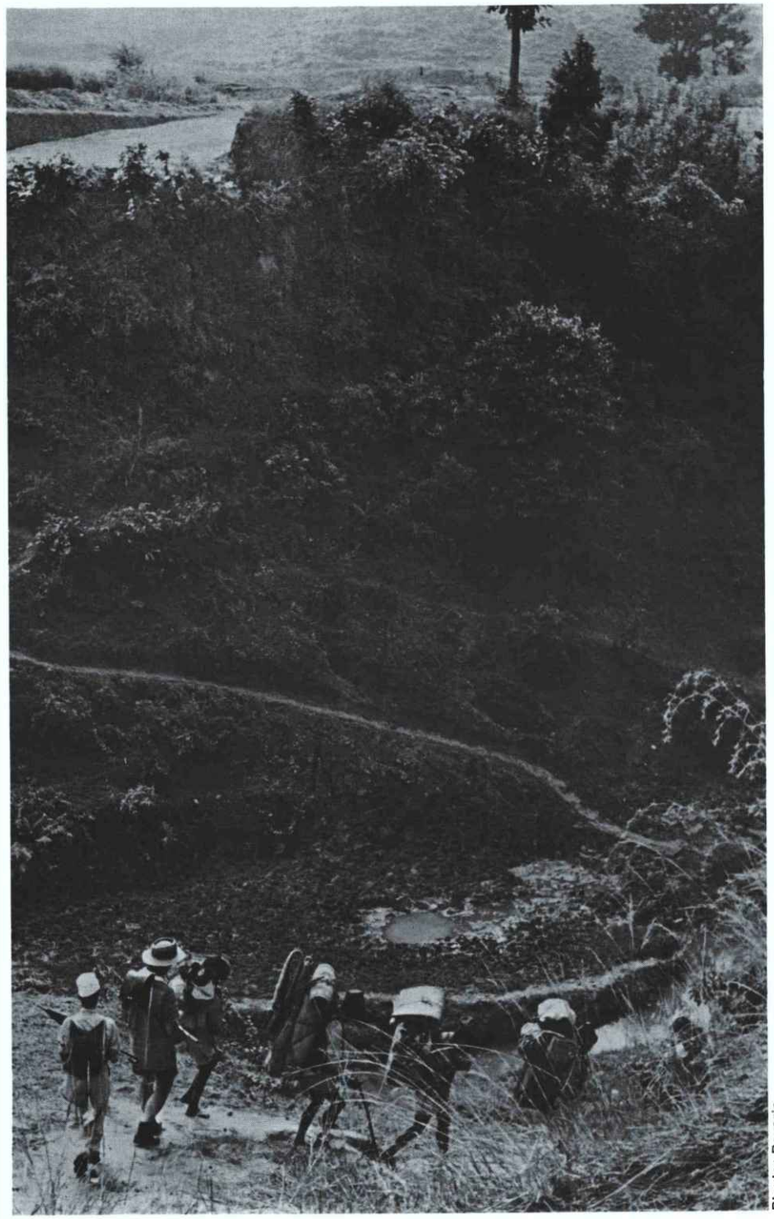
After it has been submitted to all these tests, the new product still has a considerable obstacle to overcome: it can only be marketed if its sale is authorised by the authorities. This aspect of the matter must be emphasised, since public opinion is generally too little aware that the use of pesticides is strictly controlled in all the advanced countries and in a number of other regions throughout the world.

Manufacturers are required to submit to the competent authorities all the data which they have accumulated in the course of their research and testing. The authorities will check whether the new product is unduly dangerous and whether it is sufficiently effective. Furthermore, authorisation will only be given for specific uses and the methods and periods of application will be laid down.

Phytopharmacists would be only too happy to be able to develop products which were both effective, specific and completely harmless to man and his environment, but there is little likelihood of this ideal being achieved in the foreseeable future.

This may be seen from the recent declarations by FAO which, while recognising the drawbacks of certain organo-chlorine products — although they have often been exaggerated — said that in the developing countries, they are cheaper, easier to use and safer to store and transport. For this reason, for want of a suitable alternative, the experts have recognised that their replacement by more expensive and often more toxic products is beyond the financial means of some countries and could involve risks for which the users are not prepared.

Malaria control team in Nepal.
To stamp out malaria every stream and puddle in which malaria-carrying mosquitoes may breed has to be sprayed. Warnings about the environmental risks of such widespread use must be weighed against the certainty of saving millions of lives.



Bleuler-Bavaria

This explains how it comes about that long-standing products, sometimes technically and scientifically out of date, are still used. Phytopharmacists, who are biologists before they are chemists, provide farmers with pesticides which they know will, if used judiciously and with appropriate precautions, benefit agriculture for the good of all, while ensuring rational exploitation of the land.

DDT saves lives

Where public health is concerned, pesticides are essential to the control of the diseases which are endemic particularly in tropical and subtropical zones. Millions of people owe their lives to pesticides. Last November, the British Medical Journal quoted an example which needs no comment: 'In India alone, deaths from malaria have fallen from 750 000 to 1 500 per annum since DDT has been in use.' Here too, as in agriculture, health experts are obliged to compromise. On 27 January 1970, WHO issued a press statement under the heading 'Major catastrophe would result from abandoning DDT for malaria control'. In the text, which followed, James W Wright, Head of the Vector Biology Division, concluded in these terms:

'When we consider the continued use of DDT, any risks there may be must be weighed against the advantages. In countries where diseases transmitted by mosquitoes present no great problems, it may be justified to restrict the use of DDT, but in the developing countries, and particularly in the tropics, malaria is such a sanitary and socio-economic problem that DDT must be used until a more economic and effective method of control can be found. The success of malaria eradication campaigns depends basically on the existence of an insecticide which is harmless to man, effective against mosquitoes and cheap.'

Our aim here is not to defend DDT in particular; the example is chosen as being very typical. It is clear that national and international authorities and the experts who advise them are conscious of their responsibilities, and see to it that pesticides are used in conditions of adequate safety. That is the raison d'être of existing regulations and that is why other regulations are being prepared. The pesticide industry's only regret is that the lack of co-ordination between the various countries' regulations is likely to raise technical obstacles to the international exchange of pesticides and agricultural produce.

Even forests have to be carefully managed and protected, because of the imperative need to exploit them rationally. Artificial stands are more vulnerable to parasites and pesticides must help the forester to create and maintain new equilibria. Finally, only in infertile or remote regions or ones containing remarkable biotopes, where total conservation will be maintained — or instituted — will pesticides be banned.

It is clear, therefore, that the problems must be viewed as a whole and it must be recognised from the outset that, while pesticides are not always free from disadvantages, a dynamic approach to management of the natural environment is inconceivable without them.

The industrialists who produce them have an unequalled fund of scientific and technical knowledge and are aware of their responsibilities. They are ready to collaborate with the authorities in drawing up adequate regulations and ensuring that the users of pesticides and the public at large are properly educated and informed. In this connection, the manufacturers have wishes of their own; they consider that liaison between official circles and industry is not always satisfactory, especially where environment questions are concerned. While hastening to admit that certain national authorities have long since realised nothing but good can come of trusting and collaborating with industry, they cannot but observe that they are all too often faced with incomprehension or mistrust. And in fact, such collaboration is even more essential where the environment is concerned than in agriculture and public health.

It is clear that the observation of the environment as a whole is beyond the scope of pesticide manufacturers, whatever their research resources. For this reason close collaboration is essential between official authorities, nature conservation specialists and pesticide manufacturers.

In this way, and in this way only, can the problem be solved.

PESTICIDES

the scientist's point of view

NW MOORE

Nature Conservancy, Toxic chemicals and wildlife research division, Monks Wood Experimental Station, UK

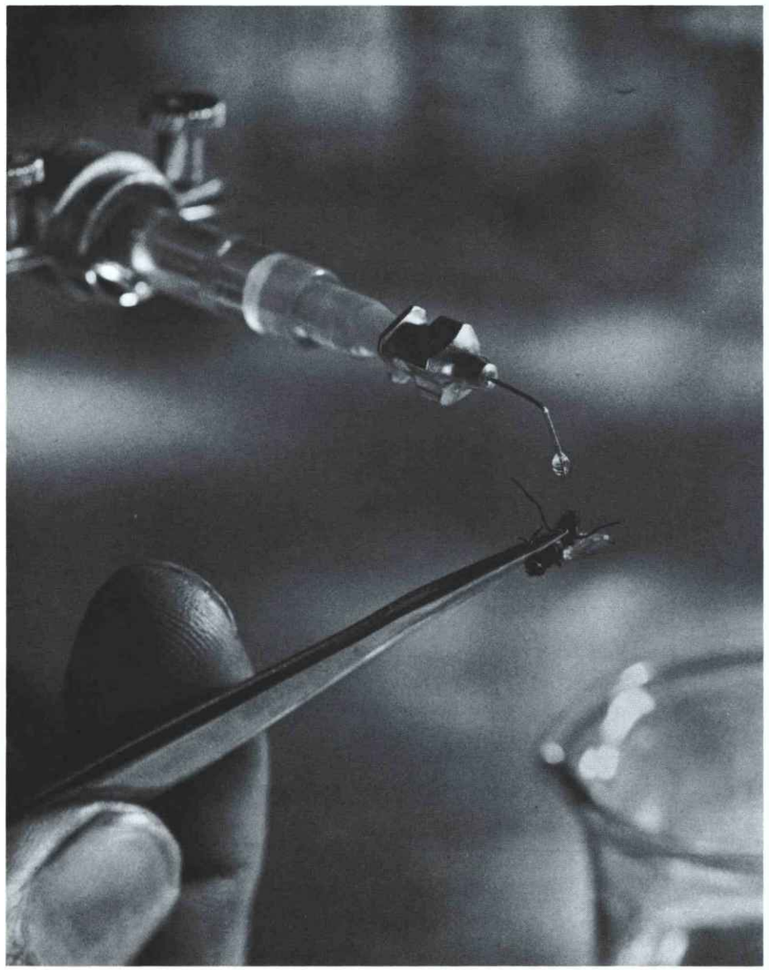
A new factor in the biosphere

Prevention of disease, increased food production, protection of stored food, protection of forests, destruction of game birds and fish, environmental contamination, threats to mankind and his environment — all these concepts are associated with pesticides. It is not surprising that the general public is both interested and concerned. But scientists are involved in other ways as well — they invent new pesticides, they asses their effectiveness and their hazards, and they study the new type of ecological problem which is posed by their existence. For, while it is true that pesticides have been used for centuries — the insecticidal properties of nicotine were known in the 18th century — their wide scale use and the dependance of people and organisations upon them is less than a quarter of a century old. For the first time in history, living organisms throughout the globe come into contact with completely new, man-made, toxic, organic substances. It is not surprising that pesticides cause problems which tax the ingenuity of scientists.

The effects of pesticides

For years pesticides have been considered as if they were medicines applied to treat an ailing crop; like medicines, they sometimes produce unwanted side effects. But this view is superficial because it does not recognise some important facts which apply to all pesticide use. Firstly, no pesticide, whether weed killer, fungicide, rat poison or insecticide, is ever specific to the pest against which it is used. Since many different organisms live in field crops, forests and in the marshes which are sprayed to control the carriers of disease, every application of a pesticide will always kill organisms other than the pests at which they are aimed. Secondly, the side effect concept fails to recognise that each species, including the pest, is part of complex societies or ecosystems. Even closely related species may differ widely in their response to the same chemical so different species in the sprayed ecosystem will suffer different effects. In turn, these effects will change ecological relationships — between competitors and between prey and predator. Thus the use of a pesticide against one species is bound to affect others. So long as the area treated is small this will not have permanent effects, because the gaps in the sprayed area will be made good by colonisation from surrounding fields, hedges, woods and marshes. On the other hand, when animals are affected by spraying over large areas, as when hundreds of hectares of forests are sprayed from the air, or when many adjoining fields of one crop are treated at the same time, the effects may be considerable. Permanent effects may also occur when persistent compounds are used. Pesticides like DDT and dieldrin persist because they are not quickly broken down either by physicochemical or biological processes. As a result they become widely dispersed in the environment as a whole producing a special type of pesticide problem.

Testing for toxicity.
The application of a carefully measured drop of an experimental chemical to a housefly typifies the patience of present day research in the laboratories of pesticide producers.



Shell

Environmental contamination

For most purposes persistence is undesirable because it leaves a residue on food. There are, however, a number of pests which cannot be controlled by compounds which are rapidly changed to harmless metabolites. Persistent pesticides, notably the organochlorine insecticides like DDT, and organomercury fungicides, are effective but they become widely dispersed in the environment and can affect species outside the areas which were originally treated. When persistence is combined with fat solubility, as in the organochlorine insecticides, these substances or their toxic metabolites, accumulate in the fat of animals so they can be transferred from prey to predator. Food chains in nature are normally quite short, rarely more than four or five links, but the concentration factor is often sufficient to cause species at the ends of food chains to receive large amounts of pesticides. Throughout the northern hemisphere there have been serious declines in many species of birds of prey since the introduction of organochlorine insecticides. These have been caused mainly by a mixture of acute poisoning, which has killed large numbers of individuals, and by sublethal effects which have altered the thickness of eggshells and affected reproduction. Certain organomercury fungicides have had similar effects on birds of prey in parts of Scandinavia.

Virtually all animals analysed whether from land, freshwater or the sea, and whether from sprayed areas or remote polar regions (see DDT in polar bears, p 22) contain detectable residues of organochlorine insecticides. Thus environmental contamination by persistent pesticides is already affecting some species over very large areas of the earth.

Pesticides are widely used because they have been very successful in reducing disease and in protecting food supplies before and after harvest. The very effectiveness of pesticides has caused problems, for constant large scale use, particularly of persistent compounds, produces new problems which did not arise when the chemicals were used much less. Dif-

ferential effects on beneficial predators and parasites enable other species, which hitherto had been kept in check by these species, to increase in number and become pests for the first time in agricultural history. The creation of the red spider mites *(Tetranychus)* as pests throughout the world is a well-known example: vast sums of money are spent every year in combating these and similar pests which have arisen as the result of extensive spraying programmes.

Many species including disease carriers have developed resistant strains, which can no longer be controlled by many pesticides. In other words, useful tools in agriculture and preventive medicine have been thrown away because they have been used excessively and uncritically. In California certain crops can no longer be grown in some areas since their insect pests cannot be controlled by pesticides. There are several localities in the United Kingdom and on the mainland of Europe where rats can no longer be controlled by Warfarin, one of the safest and most effective rodenticides in current use. An analogy can be drawn with medicine, where too frequent use of antibiotics has lead to the emergence of resistant strains of bacterial disease. In both cases insufficient attention was given to the ecological aspects of the situation. This is a scientific conclusion of great practical importance for it points to ways of using pesticides (and drugs) more efficiently in the future.

The scientist's role in the pesticide field

Despite the risks of producing new pest problems and new environmental contaminants, man is likely to need pesticides for many years to come, so it is pertinent to question the present role of scientists in the pesticide field and to suggest changes which may occur. At present most scientists working on pesticides are studying toxic effects of new compounds or of compounds whose safety to man or animal is in doubt. In the future the scientist is likely to have other roles as well. The ideal pesticide would be specific to the pest against which it is used, because such a compound would have no harmful toxic effects on other species, and the indirect ecological effects resulting from its use would be confined to those caused by the decline of the pest population itself. Unfortunately, very little is being done to discover specific pesticides because their relatively restricted sales would be unlikely to recoup the cost of the research needed to discover them. So far, governments have not supported research for specific pesticides, but it is to be hoped that they will eventually see the wisdom of this.

The penalties for ignoring the ecological basis of agriculture are already becoming apparent especially in states like California where large amounts of pesticides are used on a multiplicity of crops. Repeatedly the effectiveness of a pesticide is found to decline in time, due to the creation of new plant or animal pests or to the evolution of resistant strains in the original pest. Clearly crop protection will have to become much more scientific, particularly during the next few decades, that is, during the period before the human population becomes stabilised. In practice, this means that farmers will have to integrate different methods of crop protection particularly by using beneficial insects, parasites and cultural methods and combining these methods with chemical ones. Some research on biological and integrated control is being done in a few European countries but much more extensive research on these subjects is in progress in California, where the need for it is more obvious; in California it is being applied with success in perennial crops as different as alfalfa and grapes. Again, the public cannot expect chemical firms to undertake research, which by reducing the amounts of pesticides sold might cause them to lose money, and again it is to be hoped that governments will support work which will eventually increase the effectiveness of agriculture.

Cooperation among scientists is becoming increasingly effective thanks to international agencies, particularly the Council of Europe, the Organisation for Economic Cooperation and Development, the Food and Agriculture Organisation, the World Health Organisation and the International Union for Conservation of Nature and Natural Resources. Such cooperation is even preventing wasteful overlap in scarce research resources. The number of scientists working on pesticides is, however, relatively small, so it is extremely important that the results of their research should be available to all countries, particularly to those which do not have scientists working on pesticides. The communications gap is shown by the fact that some pest control operators in Asia are still using endrin to control rice pests in areas where the fish in the paddy fields are an important source of protein for the local inhabitants. The information that endrin, like endosulfan, is unusually toxic to fish has been available for many years in the scientific literature, but it has not reached some of the people who would most benefit from it.

One of the first requirements for reducing unnecessary hazards is to standardise efficient methods of testing chemicals before they come onto the market. An important step in this direction was the publication of the second edition of Agricultural Pesticides (see p 16).

The reduction of environmental contamination by pesticides is a much more difficult problem for, as we have seen, the needs of different countries vary greatly. Many nations in the northern hemisphere have restricted, or could restrict the use of DDT and other persistent organochlorine pesticides so that they were no longer serious environmental contaminants. On the other hand, the precipitate banning of DDT in some tropical countries could cause human deaths. Clearly all nations cannot do the same thing — those that can do without these compounds should ban or restrict them as far as possible for the benefit of all nations, but only small restrictions are possible at the present time in many tropical countries. Since the countries with less need for persistent compounds are richer and are benefitting from the sales of these pesticides, and also have larger scientific resources than the others, they have an obligation to look for adequate substitutes for DDT which can be used in tropical countries.

Need for international cooperation

Pesticides are now used in all nations, but the needs of different countries vary considerably; for example, there is now no need to control mosquitoes in the United Kingdom for medical reasons, whereas in many tropical countries malaria, yellow fever, and sleeping sickness remain serious threats to their inhabitants. The forests of North America are much more susceptible to insect attack than are those of Europe. Non-edible crops like cotton and tobacco are grown in some countries but not in others. These differences cause the great differences in pesticide use among the nations. Nevertheless, all countries need to control pesticides so that their use does not cause death or illness of people and domestic animals, or unnecessary harm to wildlife. Yet many countries still have no registration scheme. The scarcity of expert scientific advisers undoubtedly contributes to this disturbing fact.

Finally, it must be recognised that pesticides do not respect international boundaries. They are distributed throughout the world by trade, and the more persistent compounds are also dispersed by air and water and in the bodies of migrating fish and birds. Even if a country stopped using pesticides altogether its environment would still contain measurable quantities of DDT and other persistent compounds acquired from other nations.

International aspects are particularly important when pesticides contaminate a river which flows through two or more countries. Last year the pollution of the Rhine by the organochlorine insecticide endosulfan, a compound which is particularly toxic to fish, provided a timely warning of this type of hazard (see Nature in Focus autumn 1969, p 12). There is clearly an urgent need for international cooperation to prevent such incidents in the future.

Conclusion

Pesticides are valuable in preventive medicine and agriculture, but by their nature they are particularly likely to produce harmful side effects. In order to obtain the advantages of their use at the same time as restricting their disadvantages, we must keep them under rigorous and continuing scrutiny. The scientific world has an important obligation to provide this scrutiny, and political and economic forces, both national and international, have an important obligation to heed the advice of the scientists.

the problem of PESTICIDES in Africa

BABA DIOUM
Director of water, forests and hunting
Senegal

The developing continent of Africa may seem at first sight to be pursuing two separate objectives: the promotion of its economic and social development; and the conservation of its natural resources.

A closer study reveals, however, that these are really two aspects of the same objective : namely the promotion of man's interests — man healthy in body and mind, well-fed and well-dressed, but also living in a healthy environment.

Nevertheless, this does not seem to be borne out by the facts. For some, development ultimately means increasing production so as to provide adequate sustenance for the population. They believe that the quickest way to develop Africa is to clear large tracts of land and launch agricultural projects accompanied by a merciless war on all pests.

It must be admitted that if a rapidly growing population is to be fed, more must be produced. That is logical. But how can more be produced without the natural environment being destroyed or made uninhabitable for man, whose interests it is wished to promote.

To be sure, modern agricultural techniques must be used, but they must be chosen carefully and used properly. This is not, however, being done: many brands of pesticide which have been prohibited in the countries where they are manufactured, because they are obsolete and highly dangerous, are now being poured into Africa. Naturally, a manufactured product is intended to be sold. But if it has proved harmful in the country in which it was made, disposing of it elsewhere ought to be regarded as a deliberate crime.

Arthur Christiansen

Birds as pests:
Flocks of millions of quelea which descend like swarms of locusts threaten grain crops over thousands of square miles of Africa. Cheap 'blunderbuss' pesticides are often used against them rather than the more selective, but more expensive, 'queleatox'.

PESTICIDES and the law in Europe

F PETTINI,
Council of Europe

More than one European country has taken steps to ban the use of DDT in its territory. Yet this product is widely used in African agriculture. Multi-purpose persistent substances such as aldrin, dieldrin and turagil are being used in all forms to combat termites, rats and other pests.

Parathion is sprayed over wide areas from aircraft to exterminate the quelea *Quelea quelea,* a small grain-eating bird. This product, which should be banned because of its persistence and toxicity, can be bought more cheaply than the more selective queleatox. These are only a few of the many examples that could be quoted.

It is no exaggeration to say that combating pests and diseases by such means threatens the existence of wildlife in Africa and, in the long run, that of man himself. The reason why the more advanced countries are now being overwhelmed by their own development is that they have not always given thought to respecting the numerous mechanisms which govern nature. There are therefore many specific examples from which Africa can learn, in order to avoid making the same mistakes.

The industrialised countries could help by taking practical steps.

When a pesticide is declared harmful in one country, it should not be allowed to be marketed in any other country.

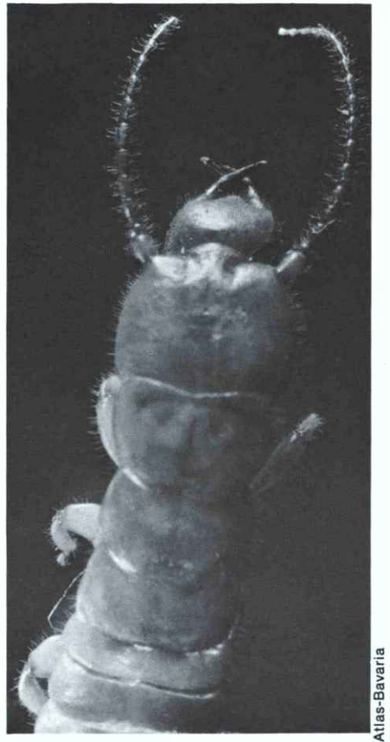
Whenever a pesticide is found to be harmful, all existing stocks of it should be destroyed as soon as possible.

Action could be taken in this field by the six countries of the European Economic Community, which have such close links with eighteen African countries.

The many Euro-African periodicals might include a regular section on pesticides, naming the products available on the market and describing their advantages and disadvantages. Such information would be intended for African users who, in the absence of precise data, base their choice merely on advertisements.

Nature conservation and the control of pollution ought to be treated as the worldwide problems which they in fact are. The continents are linked together by the seas; distances are progressively shrinking as means of communication develop; international trade is making countries interdependent.

Products laboriously extracted from the African soil may be consumed throughout the world and vice-versa. Our concern about pesticides is consequently a matter of importance, and in this field more than in any other cooperation is vital because the very existence of the human race is at stake.



Atlas-Bavaria

Tropical troublemaker: termite whose jaws, when multiplied a millionfold, the size of some colonies, wreak havoc in timber. Even dynamite has been used against its nests and this insect is yet another target for chemical attack.

National legislation

A concern for the systematic regulation of the production, sale and use of agricultural pesticides has become apparent in the national laws of the majority of Council of Europe member states, especially over the last twenty years. Previously, provisions governing the use of pesticides were scattered among various legal texts concerning, for example, the protection of game and trade in poisonous substances or medicines.

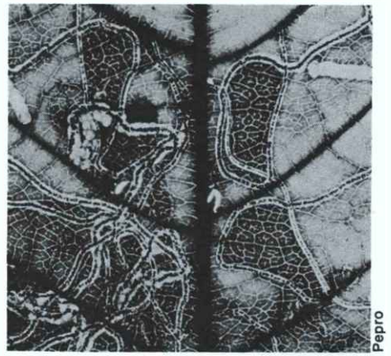
It is because of their rapid diffusion after the second world war that agricultural pesticides were differentiated from similar chemical products and laws introduced to control their use. Control machinery, which is similar in all the systems examined, consists basically of a procedure authorising the production or import of a pesticide for sale, together with provisions to protect the health of those who may come into direct contact with pesticides. The guiding principle behind pesticide control was primarily the protection of human health, particularly by avoiding poisonous residues in foodstuffs, and skin contact with toxic products. Measures to protect the environment, on the other hand, are not as numerous as they should be.

Protective measures for the natural environment

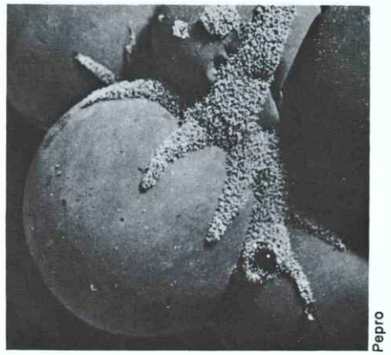
Human health may, however, also be jeopardised through contamination of the natural environment upon which man relies for all his needs. Such threats become all the more menacing when harmful insects build up resistance to pesticides and a new generation of pests appears adapted to the milieu created by chemical products. Then the dose of poisons must be increased and environmental pollution becomes more serious. It is thus increasingly urgent to contemplate measures of pesticide control which also take into account the safe-guarding of the natural environment.

Water

Such measures have been introduced, to varying degrees, and at different times, in the laws of almost all European countries. Outstanding among these are the protective laws which make it illegal to store pesticides or clean spraying apparatus near wells, canals, lakes, ponds, rivers, etc whenever groundwaters might thereby run the risk of being polluted by infiltration.



Pepro



Pepro

Top: Leaf miners burrow relentlessly through the life-giving tissues of a plant. Bottom: Like a monster from outer space Botrytis **fungus spreads over grapes. Pesticides can prevent this wanton destruction of crops, but at what price to the environment?**

Plants and animals

Legislation for the protection of animals, plants, flora and the soil, on the other hand, is rarer. The oldest — and perhaps the only — law on the protection of animals is found in the United Kingdom. The 1911 Protection of Animals Act and the 1962 Animals (Cruel Poisons) Act make it the responsibility of the pesticide user to take all necessary precautions to prevent the poisoning of domestic animals and wild birds. In Scandinavia, there are laws for the protection of game and useful insects, including bees. The importance of such measures is obvious in view of the current widespread reports of the increasing destruction of thousands of birds which eat insects and other food contaminated by pesticides.

Soil

Soil productivity may be lowered by toxic substances changing its organic composition. The only relevant law appears to be the one passed in the Netherlands in 1962, empowering the competent minister to prohibit the use of a pesticide whenever it might affect the productive capacity of the soil.

A French Ministerial Order issued in 1956 lays down the safety precautions for aerial spraying, a particularly dangerous procedure in that it is non-selective.

The principle behind protection of the environment

Some countries have introduced more effective statutory control by regulating the procedure allowing a new toxic product to be manufactured and sold: permission to manufacture a new pesticide is granted or refused not only in relation to its effect on public health but also in view of the absence or presence of danger to the natural environment.

Examples of laws applying this principle may be found in Germany, the United Kingdom, Austria, France, Greece, the Netherlands, Scandinavia and Cyprus. In the German Federal Republic, the 1968 law on the protection of plant life aims both to protect plants by the use of pesticides and to avoid the damage to human and animal life entailed by the use of pesticides or other plant protection methods. Further, pesticides are considered by the law-givers as only one of the means of protecting plants against diseases and insect pests, among other methods such as, for example, the use and protection of animals, plants and viruses instrumental in preventing or combatting the appearance or spread of harmful organisms or diseases.

In the Safety Precautions scheme of the United Kingdom, pesticide manufacturers are obliged to provide detailed data of experimental tests on the toxicity to mammals and human beings of a chemical product, as well as its possible effects on wildlife, including birds, bees and fish. These data are, moreover, repeatedly compared with the actual effects during the product's commercial use.

Protective measures provided by various laws are also important. Although the destruction of harmful insects is considered imperative in the interests of agriculture (Agriculture Act 1947) the spreading of pesticides and toxic substances in general is restricted, if wild birds are likely to be jeopardised, according to the Protection of Birds Acts 1954/1967.

Water and fish (especially salmon *Salmo salar)* are protected in England, Wales and Scotland by rules governing the storage of all toxic materials, of pollutants in general, or their discharge into inland or coastal waters. These laws grant River Authorities and Sea Fisheries Committees extensive powers through a system of controls, permits and far-reaching statutory competence.

In Austria, the 1948 Plant Protection Act laid down that provincial regulations on pest control should prohibit the use of pesticides whenever they endangered animals and useful micro-organisms.

In Greece, under the 1952 Act on the elimination and prevention of plant diseases, the authorities granting a permit for a pesticide must take into account the danger it represents to useful plants and insects.

In the Netherlands a pesticide may be sold only if it involves no threat to the productive capacity of the soil, to plants or parts of plants and to animals which it is sought to safe-guard.

In Norway and Sweden the issue of a pesticide manufacture permit is dependent on the results of chemical and biological tests to determine, on one hand, the effectiveness of the product and on the other its toxicity for human beings, plants and animals (Norway), or for game, useful insects and plants (Sweden).

Legislation in Cyprus has laid down that authority for the manufacture of a pesticide may be refused if, on the basis of data furnished by the applicants, it is considered that the product is very noxious or even merely generally harmful to vegetation, animals or human health. The Council of Ministers has special authority to impose statutory protective measures to prevent environmental pollution.

Finally, there are fairly extensive protective measures for the natural environment in France. Apart from the 1954 Order mentioned above, the Committee on pesticides may, before authorising a product, require the applicants to produce a technical report on its properties and possible toxic effects on man and useful animals.

International action

The pollution of international rivers and lakes, the contamination of plants and whole areas visited by migratory birds, the pollution of the sea beyond territorial limits — all such considerations clearly demonstrate the international aspects of the problem of pesticide treatment. The solution is of concern to everyone who, as tourists, may derive profit and pleasure from the natural environment of other countries.

In fact, this problem has earned an ever-increasing share of the work of the international organisations which deal in various ways with the problems of the protection of natural resources and environment. As early as 1950, when the International Convention for the Protection of Birds was signed in Paris, the twelve contracting parties * undertook to study and adopt appropriate measures to prevent the destruction of birds by water pollution or by other causes, including insecticides. Since then, the European Continental Section of the International Council for Bird Preservation has continued the campaign for such measures. It has constantly reiterated the view that the excessive and indiscriminate use of poisonous chemical products and the pollution caused by them, particularly those with prolonged effects, constitute a threat to bird life, and repeatedly recommended governments to promote effective control of the use of such products. In 1969 the Food and Agriculture Organisation (FAO) and the World Health Organisation (WHO) provided governments with guide-lines for legislation concerning the registration for sale and marketing of pesticides, in which it is suggested that marketing and distribution regulations should include measures to protect the environment and wildlife resources.

At the same time, the International Labour Organisation (ILO) is pursuing its work of compiling guide-lines concerning health precautions to be observed in manufacturing and using pesticides.

In 1962, the Council of Europe published a booklet 'Agricultural Pesticides', containing guide-lines on the information, concerning toxicity and residues, to be furnished to the competent national authority by a manufacturer wishing to market a new pesticide. The second edition, published in 1969, also contains guide-lines on information concerning wildlife, particularly birds, fish, bees and all forms of organic life in areas to be treated.

In 1970, a resolution dealing with the protection of the environment by pesticides control, indicating what guide-lines should be followed by legislators in this field, was adopted by the Committee of Ministers of the Council of Europe.

These examples of measures to protect the environment when pesticides are used clearly show that the problem is being debated and solved to some extent in several countries, at least from the legislative point of view. The development which has characterised laws on pesticide control in the various countries also illustrates the extent to which the experience of recent decades and the new techniques of combatting plant diseases resulting from progress in phytology, biology and ecology have been incorporated into the most modern legislations. The laws of such countries have succeeded in reconciling two requirements: to ensure the protection of plants against diseases by permitting the use of certain toxic products, while at the same time guaranteeing plants and people against the risks of indiscriminate use of such products.

There has so far been no such legal development in certain Mediterranean countries, where the use of pesticides is nevertheless called for, in view of the importance of agriculture and the proliferation of harmful insects. Such countries may find the national laws and the work carried out at international level, examples of which have been mentioned, an excellent foundation on which to base control machinery capable of ensuring effective protection of the environment.

Protective clothes for pesticide users are mandatory in many states (above). A large part of world food is maize but 35% is lost to pests (below). Pesticide laws protect crops, users and consumers but should also protect environment.

Niagara Chemicals

** Austria, Belgium, Bulgaria, Spain, France, Greece, Monaco, the Netherlands, Portugal, Sweden, Switzerland, Turkey. The Convention has been ratified by Belgium, the Netherlands, Spain, Sweden and Switzerland.*

CONCLUSIONS

Man thus has at his disposal a fantastic arsenal of chemicals, which he has tended to misuse since the first, admittedly spectacular, results. Some anxiety is now felt at certain unpredictable developments which, in some cases, have led to a total disruption not only of the balance of nature, but also of the calculated results — the resistance to insecticides of certain harmful insects, for instance. The most telling example is probably the red spider mite (Tetranychus urticae) **which is resistant to DDT, dieldrin and its derivatives, and other poisons.**

The first four articles show how research scientists, manufacturers and users are now increasingly aware of the dangers that may arise from the abuse of pesticides, while recognising the help they can be to human activities if used judiciously. For all pesticides, we must find out not only the effects they are intended to produce (protection of crops and produce, cleaning up of certain environments, etc) but also their possible effects on the natural environment, especially in the long term. An exchange of information with close and sincere collaboration between all concerned is a vital necessity for the well-being of each one of us who are, after all, consumers. We might thus often avoid mistakes and wasted effort, always a costly business.

In the last article, the author shows, by examples taken from the laws of various countries, the interest of the authorities in controlling the manufacture, marketing and use of pesticides. In some countries there is no specific legislation on this subject, and in others the laws are still far from complete. The governments must make an effort. Harmonisation of these laws is a very important task facing international organisations concerned with environmental problems, and the Council of Europe has not been behind hand in the matter. Its Committee of Ministers has recently adopted, in June, a resolution on pesticides which might serve as a framework for future legislation (see below p 16).

In conclusion, we cannot remain silent on the vital problem of informing the public about the dangers inherent in excessive use of toxic substances. There are too many products on the market, often masked by reassuring labelling, which may lead to serious accidents if wrongly used. It is not just information but actual education of the public that should be undertaken under the responsibility of national authorities.

We sincerely hope that these articles will arouse the interest of our readers, who will certainly have comments of their own to send in. It may well be possible to print some of them in a future issue of Nature in Focus.

Shell

DIPLOMA FOR BOSCHPLAAT

The Boschplaat nature reserve in the Netherlands has been awarded the Council of Europe's Diploma for nature conservation.

The Diploma was created in 1965 and is awarded for landscapes, nature reserves or natural features of a European interest where measures for protection reach the necessary standard. It is granted for renewable periods of five years and the holders, the private or governmental authorities in charge of ensuring protection, are required to send in annual reports to the Council of Europe on the management and protection of the area concerned.

Boschplaat on the West Frisian island of Terschelling is the largest state nature reserve in the Netherlands: 4400 hectares at low tide, of which about 1500 hectares or (during gales) more are regularly covered by high tide.

It is managed and wardened by the State Forestry Service and regularly investigated from the adjacent Biological Field Station of the State Institute for Nature Conservation Research (RIVON).

The Boschplaat reserve consists of an area of dunes poor in lime with fresh wet dune valleys gradually merging into huge sand flats with brackish and salt vegetation and with isolated dune groups. These transitions create a high diversity of characteristic communities with many rare plants and animals.

The Diploma was presented by Lujo Tončić-Sorinj, Secretary General of the Council of Europe, at an official ceremony held on the island itself on 20 October. An illustrated booklet on the reserve has been published (in English) to mark the occasion and copies may be had from the European Information Centre for Nature Conservation.

Photographs on centre pages:

1. **The Boschplaat provides food and shelter for millions of birds**
2. **Avocets** (Recurvirostra avosetta): **attractive birds which occasionally nest in the reserve**
3. **Salt marsh: flat but everchanging and strangely beautiful scene**
4. **Sea holly** (Eryngium maritimum): **one of the first plants to colonise the sand dunes**
5. **Spoonbill** (Platalea leucorodia): **some of these graceful birds are established on the reserve**

Jan van de Kam

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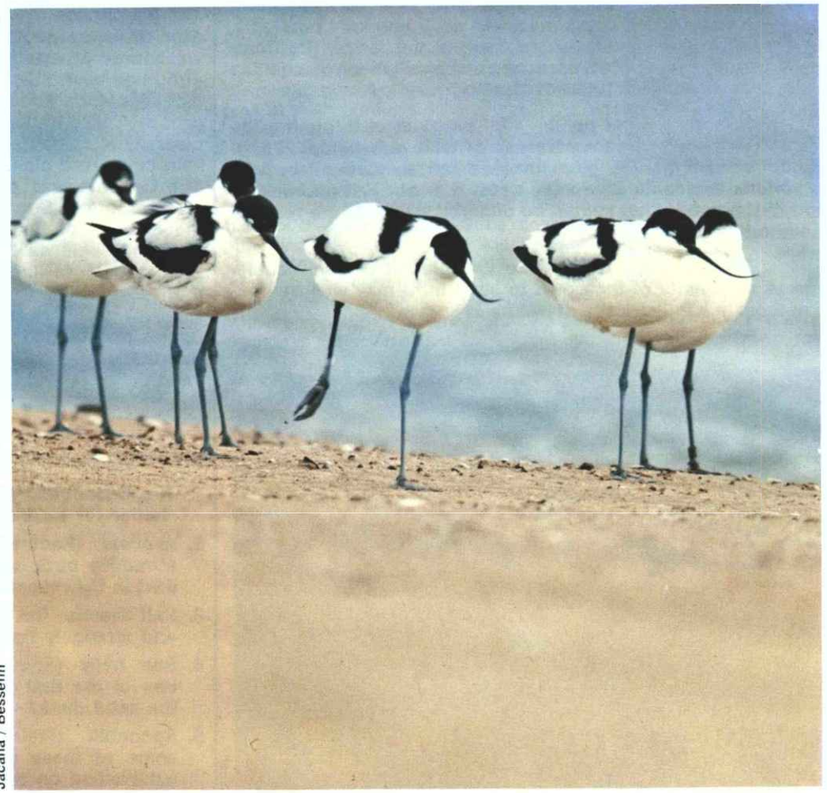

Jacana / Besselin

BOSCHPLAAT

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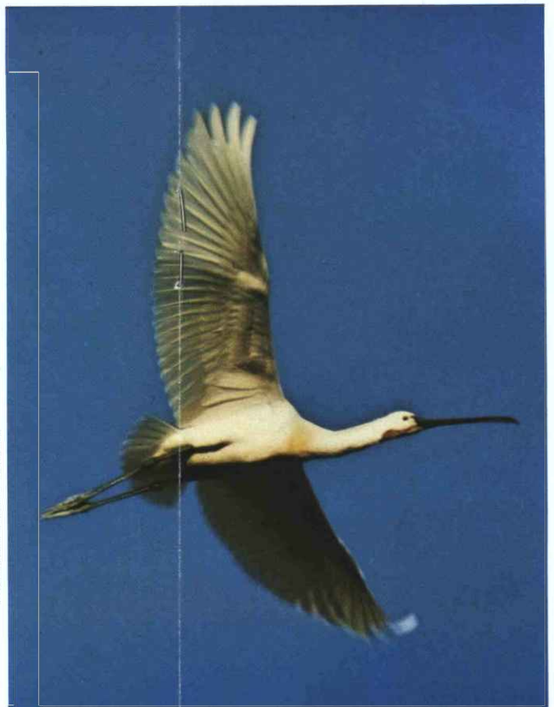

Jacana / F Bel-G Vienne

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NHPA

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

COMMITTEE OF MINISTERS PRONOUNCE ON PESTICIDES

Protection of the environment figures alongside protection of public health in a resolution of the Committee of Ministers recently submitted to Council of Europe member states. The resolution specifically refers to the control methods which are set forth in the second edition of the publication 'Agricultural pesticides', it being understood that such controls should also cover harmful effects on wild fauna and flora, bearing in mind the factors of concentration within the food chain.

Several important points are made in the recommendations. The body responsible for the authorisation of the use of pesticides should contain a biologist who may advise on environmental problems. Pre-marketing studies should also aim at a reasonable assessment of a pesticide's effect on the ecological balance of the environment and on the physical, chemical and biological properties of soil and water, and endeavour to discover any cumulative effects which might follow the repeated application of a single pesticide and, if possible, any combined effects of applications of different pesticides. It should be possible to withdraw the authorisation to use a pesticide if the regular application of the product has shown unduly harmful effects on the natural environment. Packaging and labelling of pesticides marketed for sale should bear exact instructions concerning the active ingredients of the product; the method of using and transporting it and any safety measures to be taken in this connection; the hazards which it might present to the environment, especially for fauna and flora (for example, game, fish, pollinating insects) in particular by its excessive use or prolonged effects; the disposal of waste material and emptied containers and the cleaning equipment used during application of pesticides.

Precise principles are also laid down for protecting the environment during the application of pesticides.

AGRICULTURAL PESTICIDES — 2nd EDITION

This 50-page booklet has been drawn up with a view to harmonising, as far as possible, the requirements of governments in respect of the information which manufacturers are expected to provide when seeking permission to market their products. Since the preparation of the first edition of the booklet, considerable progress has been made in regard to the assessment of toxicity risks from the use of pesticides and food additives.

The revised edition will give pesticide manufacturers useful guidance in preparing data for presentation to the authorities in support of applications to market new products. The text has been brought up to date and chapters on wildlife and on labelling have been added.

COOPERATION IN SCIENCE AND TECHNOLOGY

The Consultative Assembly of the Council of Europe has resolved to encourage through action in national parliaments, the early holding of a European Conference of Ministers of Technology of all interested member states to agree on a programme for European scientific and technological cooperation. It has also resolved to keep on its agenda the question of improving the system of intergovernmental scientific and technological cooperation through the introduction of modern management methods and planning, with a view to making it a theme for the third Parliamentary and Scientific Conference to be held in 1971.

ENVIRONMENTAL INFORMATION FOR PARLIAMENTS

The Declaration on the Management of the Natural Environment of Europe (see Nature in Focus spring 1970 p 5) will be given a wide circulation by the Consultative Assembly of the Council of Europe. The Assembly has also resolved to take steps to secure the institution in national parliaments of a system of information on environmental problems, capable of guiding the legislature in framing and passing bills on this subject.

COUNCIL OF EUROPE FILM WEEK

Reindeer are the livestock of the originally nomadic Lapps of north Finland. Twice a year the Lapps corral their reindeer to cut the owner's mark on the newborn and to sell and slaughter some of tne animals. There are also competitions in the traditional skills of lassoing and driving the reindeer. But even here life is changing and much of the old is being replaced by new habits and inventions. ▶

Hans W Silvester-Bavaria

This was the theme of one of the films (entitled 'Poro' or 'Reindeer') selected for widespread distribution at the Seventh Council of Europe Film Week held during the 20th International Berlin Film Festival, 30 June to 3 July. Several of the entries were of special interest to naturalists and one of the films which was awarded a certificate of merit was 'Alexander von Humboldt', a life of the celebrated 19th century naturalist and explorer. This film is available in German, English, French, Spanish and Brazilian language versions. The Council of Europe's aim in organising these film weeks is to encourage the production of short cultural and educational films of the highest standard and to promote their distribution in member countries and throughout the world. The Council of Europe provides financial aid for dubbed versions of the selected films.

Further information on the international availability of these two films may be had respectively from:

Filmiryhmä Oy, Kruunuvuorenkatu 5,
Helsinki 16, Finland; and
Inter Nationes, Filmreferat (II/3),
53 Bonn-Bad Godesberg, Kennedy Allee 91
Federal Republic of Germany.

EUROPHOT INTERNATIONAL PHOTO COMPETITION

The competition is open for everybody interested in the ECY-1970.

Three categories are foreseen:

A. professional photographers
B. amateur photographers
C. students of photographic schools.

Photographs accepted: black and white and color prints. The larger edge should be less than 60 cm and the shorter not less than 24 cm. Prints can be sent unmounted or mounted on cardboard.

Number of prints: maximum 6 per participant.

Mentions: name and address of the participant, eventually name of association or club of which he is a member, or school he attends.

Entries: latest date for receipt: 15th December 1970.

Judging: The jury, of which the members will be designated by Europhot, and approved by the Secretary General of the Council of Europe, will meet in January 1971.

Awards:

— Visits to National Parks or Nature Reserves certified by the Council of Europe with travel and living expenses offered by the Council of Europe;

— Gold, silver and bronze medals of Europhot and other organisations sponsoring the contest.

— Free participation at Europhot Seminars.

Address: Europhot, 19, rue de l'Aurore, 1050 Brussels.

Except if otherwise stated, prints may be reproduced for contest and exhibition interest. The pictures are submitted at one's own risk and Europhot cannot be responsible for lost or damaged pictures.

ECY

Belgian Prince speaks out

We all seek more economic progress and welfare, but... the economist should learn to measure the reactions of his technological and industrial production upon the environment... Protective measures would no doubt have a restrictive effect upon economic life, but isn't it life itself that we are discussing? We observe that in a country like the United States, where the market economy is being celebrated as a fixed rule, the Government is withstanding the resistance of economic circles because the danger has become so overpowering.
Will Europe in her turn be able to accept this demand of priority and organise her future accordingly?
His Royal Highness Prince Albert of Liège

Public relations for nature in France

Technical resources must be used to combat the undesirable side effects of our technological society. The damage caused by one technical agent can be repaired by another...
Proper use of the various facilities will be expensive, and it will be difficult to decide in each case who will foot the bill. For this reason a direct relationship between pollution and making good the damage caused should be established through the slogan 'those who pollute will have to pay'.
Once individual responsibility for pollution has been determined, protection should be possible by means of collective taxation on polluters.
The French Minister of Agriculture, M Jacques Duhamel

Support countryside recreation says German Agriculture Minister

...agriculture and forestry have preserved the countryside by a sustained and moderate use of the soil for many centuries and have at the same time provided recreation facilities for the general public from which there has been no economic return. In our days the area of derelict land and the pressure on the countryside is permanently increasing. Agriculture and forestry have their own means of improving the situation but they also need public support which should be given as a 'reward' for the benefits the general public has always received.
The German Federal Minister for Food, Agriculture and Forestry, Josef Ertl

Don't blame 'them' says Irish Minister

...those who find cause for concern... should guard against the convenient placing of all responsibility on the commercial undertaking, the farmer, the local authority, the Government or merely on the ubiquitous, faceless 'they', the nebulous recipients of all blame and no praise. Rather I think it is for each and every one of us — and I include the Government — to examine carefully during this year what we are all demanding of our environment and the extent to which such demands, if not properly controlled, may be jeopardising our heritage, and the heritage of our children.
Mr Sean Flanagan, Irish Minister for Lands

'Good intentions' in Italy

The little that has been done to date merely vindicates those who assert bitterly that all Italy can boast of in the field of nature conservation is good intentions. The charges levelled against Italy at the recent meeting of the Strasbourg Assembly should act as a spur to put through a nature conservation programme, based on a united course of action and an overall plan for intervention, as outlined in 'Projetto 80'. Italy should not shirk the task, even if it means fresh financial burdens; mankind must not fall into the abyss in which its existence would otherwise be incarcerated, and in any case all efforts to protect nature and to restore a vast national heritage would also benefit the national economy correspondingly.
Mr Bo, Italian Minister without Portfolio

'The water tower of Europe'

Switzerland, the water tower of Europe, can safely promise her neighbours that in ten years' time the water which is borne by rivers and streams beyond her frontiers will be of satisfactory quality.
In the centre of Europe, the Swiss people are the guardians of a wonderful corner of the earth, whose facets are many and varied. But this privilege carries a duty. We therefore want to protect and care for our landscapes, the unique natural beauties of our land, as well as other riches, less visible but just as precious. The generations to come will then continue to feel at ease in our attractive country and Switzerland's many visitors from Europe and elsewhere will be able to enjoy her natural beauties whilst restoring their strength and spending pleasant holidays on her soil.
Mr HP Tschudi, President of the Swiss Confederation

Turkish President encourages international cooperation

...we have to consolidate and develop our detailed policy for the conservation of nature and coordinate our efforts within the framework of international cooperation with the guidance and initiative of the Council of Europe by participating in these activities in full understanding and with a responsible approach...
Cevdet Sunay, President of Turkey

Prime Minister welcomes Council of Europe support

I believe firmly that the standards and agreements envisaged by the Council of Europe, will in the near future, become, on a much greater scale, the model for all countries. Turkey is following with great interest the efforts made for the conservation of nature by the Council of Europe and is taking an active part in them.
We are convinced that our country will gain immensely by making use of the scientifically based conservation work and of the administrative and legislative experience of industrially advanced European countries.
Turkish Prime Minister, Süleyman Demirel

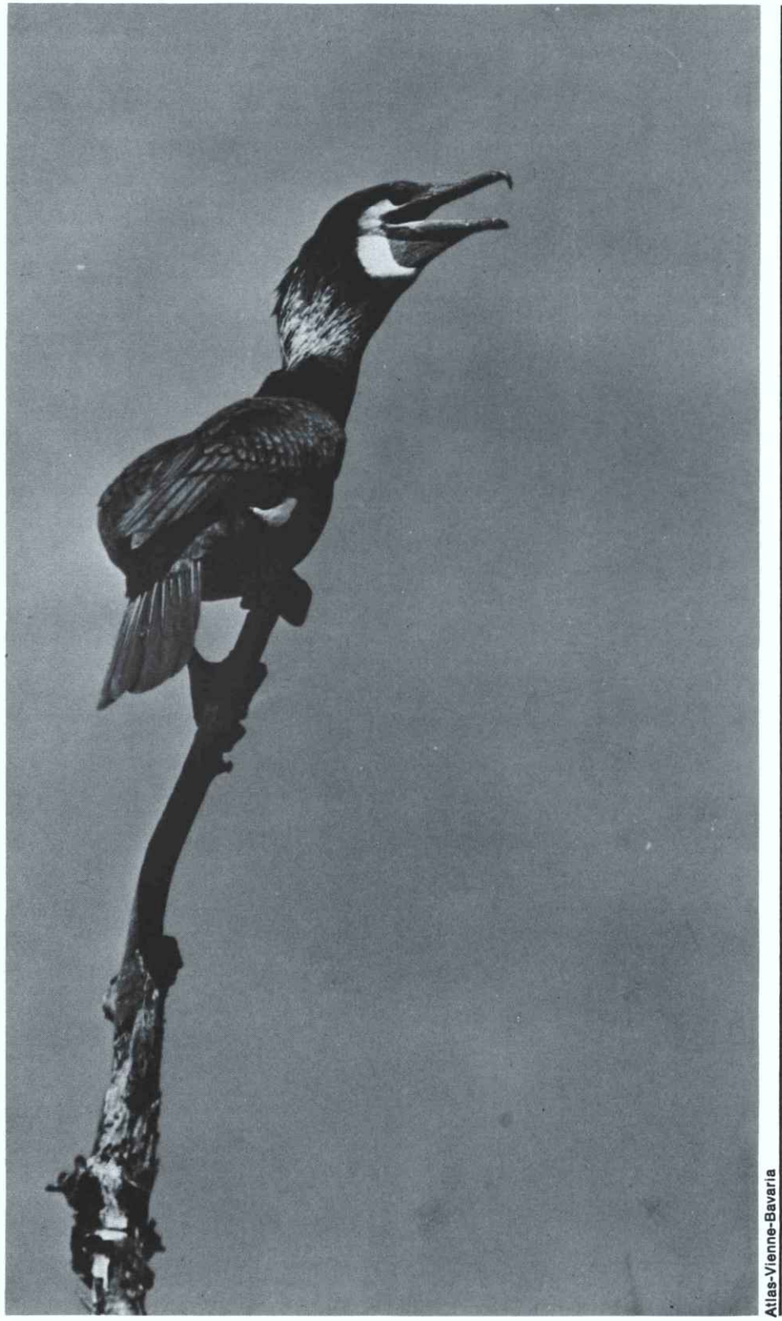
The symbiosis of town and country

...changing rural society, and changing urban society, must find a compromise, meeting all the vital and legitimate interests of all concerned. In order to accomplish this compromise, many habits and traditions will inevitably have to be overthrown, on both sides. Nevertheless, we are justified in believing — and I myself am firmly convinced — that the symbiosis of town and country can enrich every part of modern society.
Sten Renborg, Deputy Director Economic and Social Affairs, Council of Europe, at an International Symposium on 'The country community, the custodian of nature', sponsored by the French Ministry of Agriculture on the occasion of the 'Salon international de l'agriculture'.

Citizen and city in the year 2000

What we need in every government is a Ministry of Environment and in every parliament we need a committee on environment problems. In Europe we need a common policy for creating the human environment with institutions to deal with it on a supranational basis. On a worldwide basis we need a general agreement on noise and pollution with binding rules and an international control with sanctions. We need management of soil and water in Europe, a common policy for the use of land for recreation, agriculture and other policies and we need a greater coordination by means of an international institution with special powers, its own budget on a supranational basis to execute and control development policy, to create human environment for the citizen in the less developed countries and to give them, in this way, real freedom.
Dr L S Mansholt, Vice-President of the European Communities

Precarious perch.
A cormorant on its look-out post in the midst of a marsh in the Marchegg reserve. Cormorants are more common on coastal cliffs but when nesting inland they often use dead trees. In this new World Wildlife Fund-supported reserve on the Austrian-Slovakian border many other birds also breed among the interesting plants of the woods, marshes and water-meadows bordering the river March.



Atlas-Vienne-Bavaria

New nature reserve in Austria

As the crow flies, Marchegg, on the frontier of Slovakia, lies only forty kilometres from the centre of the Austrian capital, Vienna. The boundary between the two countries here is the River March, which flows down from the Carpathians to the Danube. Along its western banks, for eleven kilometres, there now stretches one of the most interesting nature reserves in Central Europe.

The reserve is essentially a strip of woodland with many fine stands of common oak, elm, ash and alder, intersected by marshy clearings and small lakes. Large water-meadows border the woodland, part of which is invaded every spring by water from the river as it becomes swollen by the melting snow. This periodical flooding gives the area a distinctive character and no doubt largely accounts for its abundance of flora and fauna.

The appeal of the Marchanen for botanists is that here begins the flora peculiar to Eastern Europe, such as the Tartar maple *Acer tataricum*, the summer snowflake *Leucojum aestivum* and a blue-flowered clematis *Clematis integrifolia*. But the fauna is no less noteworthy. Red deer *Cervus elaphus*, roe-deer *Capreolus capreolus* and wild boar *Sus scrofa* abound, otters *Lutra lutra* frequent the fish-filled waters and even passing lynxes *Lynx* have been reported. Two heronries and a small colony of cormorants *Phalacrocorax carbo* have established themselves in the tops of the lofty trees; there is a colony of ten or so pairs of white storks *Ciconia ciconia* — the only tree-dwelling colony in Austria — and in a more remote spot a pair of black storks *C. nigra* nest. The area is also inhabited by the rare saker falcon *Falco cherrug*, five species of duck and a large number of passerine birds. The woodland birdlife is of an extraordinary variety and profusion.

Undoubtedly what has enabled this natural paradise to survive until today is its frontier position and the continuance of the large estates. But, when the owner of the Marchauen was on the point of selling, it was feared that this remarkable area might be split up and perhaps rapidly deteriorate. In response to an appeal from Austria, the World Wildlife Fund stepped in. After lengthy negotiations and with the help of a generous (interest-free) loan from a benefactor, the Fund made a 50% contribution towards the purchase of the 1180 hectares which are of the greatest importance from the point of view of fauna. The other half of the £190 000 was provided by the municipality of Marchegg, which is to be congratulated on this far-reaching decision. The reserve is to be

managed by the municipality of Marchegg and the Austrian association of the World Wildlife Fund (Österreichischer Stiftverband für Naturschutz).

This is an important contribution by Austria and the World Wildlife Fund to European Conservation Year 1970. Most of the large reserves and national parks in Europe are in mountainous or, to a lesser extent, marshy areas; it is much more difficult and expensive to preserve extensive landscapes in cultivated and populated areas. The Marchegg nature reserve is a stretch of low-lying woodland, and what increases its value even further is the fact that it is not far from a capital. The effort was therefore well worth making.

Together with the Seewinkel nature park in Burgenland, the Marchegg reserve in Lower Austria is evidence of the World Wildlife Fund's considerable contribution to nature conservation in Austria.

New parks and nature reserves for Portugal

A Bill on parks and nature reserves has been approved by the Portuguese National Assembly. This Act, enabling parks and nature reserves to be set up along modern lines, will be completed by an order setting out detailed provisions for implementation. A number of other orders and amendments to existing orders are envisaged for the purpose of improving and supplementing existing nature conservation laws.
The creation and inauguration of the National Park of Peneda-Gerês, some 60 000 hectares of a mountainous area of northern Portugal, is planned for this October. It is an area of great natural beauty, with rare plants and animals not found in other parts of the country. The park will contain different kinds of reserves, ranging from closed reserves to plant and animal reserves, and scenic preservation areas.
Several other reserves in various parts of Portugal are also envisaged.

The **Arrábida Reserve,** in an area of great natural beauty, will preserve vegetation of outstanding interest, which, according to Chodat, forms 'the most astonishing shrubland to be found in Europe'.

The **Sagres-São Vicente Reserve,** in the extreme south-west of the peninsula, contains a number of endemic plants and typical plant combinations. Large numbers of migrating birds which nest in Europe and winter in Africa have to pass this way. It is also an area of great historical interest, for it was from here that Henry the Navigator directed the voyages of discovery that were to spread European influence throughout the world.

The **Paúl do Boquilobo Reserve** is in an area of marshland that forms an outstanding refuge for water birds, and which is the nesting place of the second largest heron colony in Europe.

The **Fisgas Reserve,** situated in the mountain of Marão, in northern Portugal, is for the special preservation of the golden eagle *(Aquila chrysaetos).*

The **Contenda Closed Reserve,** set in the midst of the National Hunting Reserve, will serve as a refuge for the lynx and other species in danger of extinction.

The **Berlengas Islands Reserve** is for the preservation of sea birds; an underwater park is also envisaged here.

A full ECY programme for Portugal

Poster competition

There was a wide response to a European Conservation Year poster competition organised by the General Directorate for Water and Forests (DGEF) and the Nature Conservation League (LCN), both because of the publicity it received (advertisements in the main Portuguese newspapers costing a total of 21 606$) and because of the value of the prizes, totalling 50 000$.
From each of the first two prize-winning designs 50 000 posters and 10 000 car stickers were printed.

Letter seals and postage stamps

The DGEF has printed three designs of decorative letter seals for European Conservation Year, depicting three species in need of protection: the lynx *(Lynx pardina)* the azurewinged magpie *(Cyanopica cyanus)* and the rose-laurel *(Rhododendron penticum L ssp boeticum).*
Three special issues of stamps mentioning nature conservation are to be put out by the postal authorities this year.

Press coverage

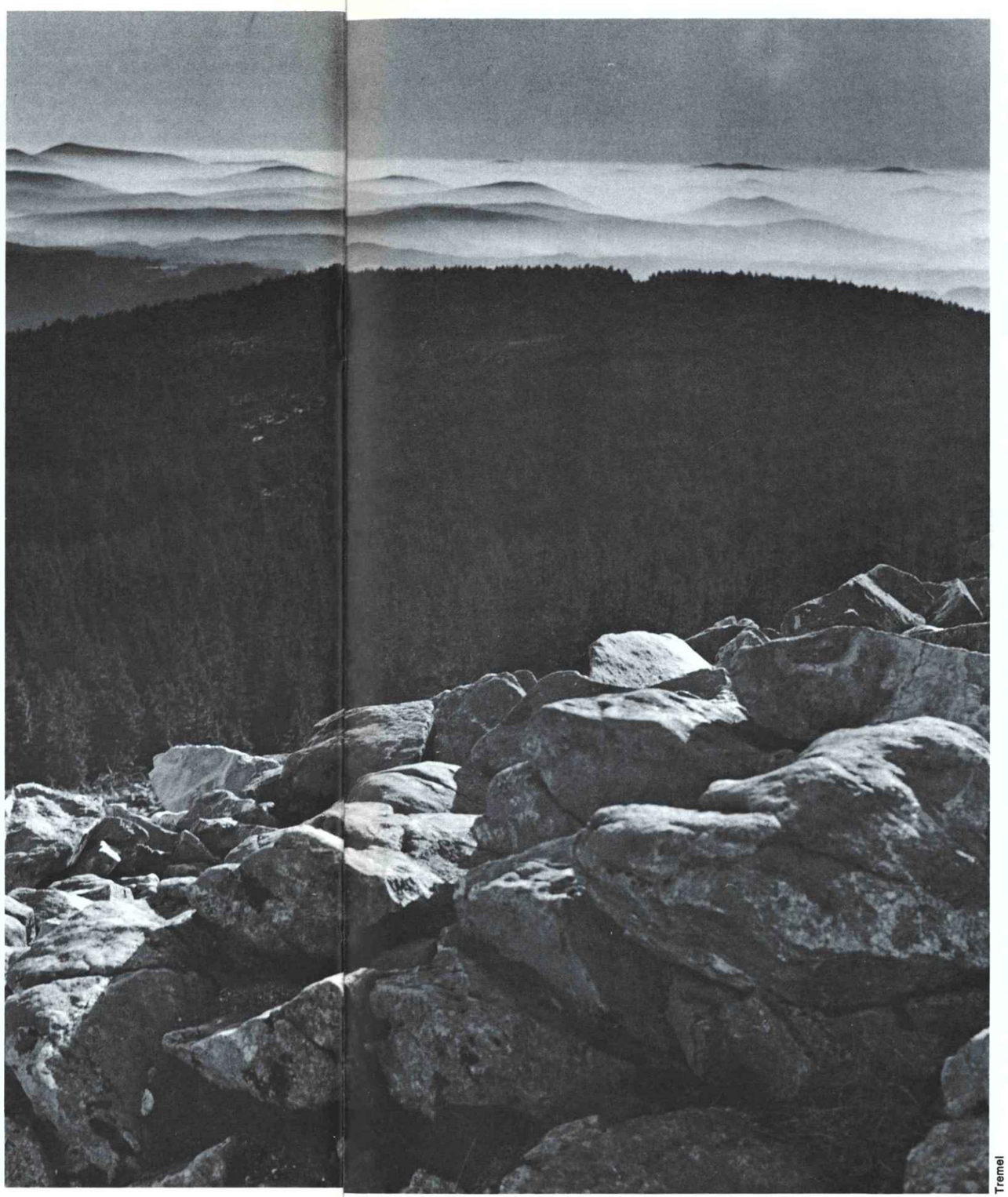
The daily papers of the main towns, and the regional papers and periodicals have published many articles and news items relating to various aspects of nature conservation.
Various programmes on nature conservation have been broadcast on television.

Film production

The DGEF has commissioned a series of shorts films on nature conservation to be included in newsreels shown in the main Portuguese cinemas.
Two of these short films have already been made and shown, one on air pollution and the other on water pollution. The technical backing for this project is provided by the DGEF and the LCN. Shown together, these short films will produce a film covering a wide range of conservation subjects.
The DGEF has held a public competition for the production of a 35 mm colour film on the future national park of Peneda-Gerês. This film will cost 330 000$, and should be ready by October.

Exhibitions and Conferences

At a number of exhibitions, the DGEF has focused its attention on the problems of the conservation of nature and natural resources.
Several conferences have been held in a number of Portuguese towns, and a formal meeting to mark European Conservation Year was held in Lisbon in July, and was attended by the Head of State, and the Head of the Government.



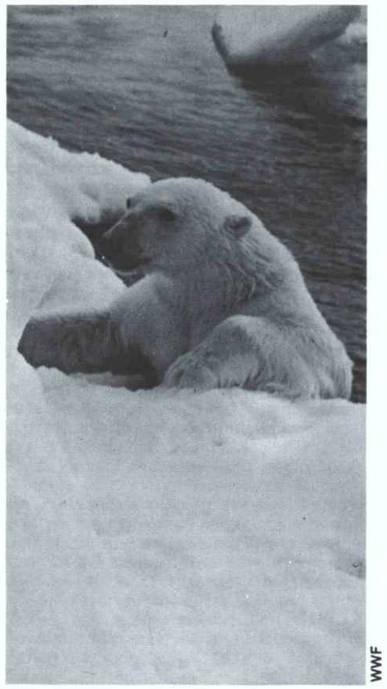
Tremel

First German National Park

Although Germany has more than 40 Nature Parks until now she has had no National Parks. On 7 October, however, the truly magnificent Bavarian Forest National Park, 30 000 acres (12 000 ha) of mountainous forest, will be officially opened. The Park, which borders Germany's frontier with Czechoslovakia, includes the famous peaks of Rachel and Lusen rising from 750 to 1450 metres. Several nature reserves within the park offer unique biotopes and interesting features for the biologist.
The Park will be managed and wardened by a special authority of the Bavarian State Forest Service. It will serve scientific purposes, be a significant recreational region, and form a refuge for endangered wildlife. To meet all these aims several zones will be established and the Bavarian National Park will thus become one of the outstanding contributions to ECY. (The photo shows a view of the National Park from Mount Lusen.)

Nationalparkamt, Bayerischer Wald,
8356 Spiegelau, Germany

SHORT NOTES



WWF

DDT in polar bears

Preliminary testing has revealed unexpectedly high concentrations of DDT residues in Canada's high Arctic polar bear population. The pesticide concentrations were found in fat samples taken from polar bears killed in a remote Arctic region. Studies are being undertaken to determine pesticide levels in bears in different areas of the Arctic by sampling every year.

Canadian Council of Research Ministers.

DANISH CONSERVATION OF NATURE ACT

The Royal Danish Ministry of Cultural Affairs has taken the helpful initiative of producing an English translation of their new Conservation of Nature Act 1969 (Act No 318 of 18 June).

This piece of modern legislation is designed to protect the nature and landscape values of Denmark and to afford to the population the widest possible opportunity to enjoy these values.

The powers conferred by this Act shall be applied in particular: to preserve and care for large landscape areas and other areas which by reason of their scenic value or situation are of essential importance to the public; to preserve and care for areas, flora and fauna, as well as geological formations, whose preservation is of essential interest for scientific, educational or historical reasons; to provide for public access to the countryside where this is of essential importance to the open-air recreation of the population.

NEW NATURE PROTECTION DEPARTMENT FOR FRANCE

The President of the French Republic, M Georges Pompidou, has established a General Direction for Nature Protection within the Ministry of Agriculture. M Marcel Blanc has been appointed Director-General.

The purpose of the new General Direction is to study, encourage and co-ordinate within the Ministry of Agriculture, all action aimed at the conservation of nature, maintenance of biological equilibria and the management of rural areas with a view to developing and utilising all their potentials for man and his leisure time activities, including fishing and shooting. It includes the former Forest Department with its various functions (drawing up the forest policy, forest inventories, reafforestation, oversight of the National Forest Agency, etc) and the Departments of Game and Fish, of the National Stud, of Rural Areas, National Parks, reserves and natural areas. The new Direction is also responsible, for relationships with international nature conservation organisations.

FRENCH POLLUTERS WILL PAY THE PRICE

Six major river basin authorities in France will use money collected as fines against polluters to improve water quality in the rivers. The French government is encouraging the basin authorities to act at local level to implement what is in fact national law. Each authority has a board that includes national and local officials along with local water users. The rate is set for each region according to conditions in the region. This rate is multiplied by the amount of pollution to determine the fee a polluter should pay. About 10 000 communities and thousands of industrial concerns are expected to pay fees totalling £12 million a year. Most of the money will finance new treatment plants.

VOLUNTARY CONTROL OF SKIN TRADE IN GERMANY AND IN USA

The German hides and skins trade recommends that imports of the skins of leopards, jaguars, cheetahs and tigers be stopped for a long period of time. The firms represented have also undertaken not to treat or sell the skins of species mentioned above until legislation or an international convention on the matter to prevent any over-exploitation of such species, has been introduced.
The World Wildlife Fund (WWF) reports on farsighted action taken in the United States concerning the protection of endangered spotted cat species. The Furriers Joint Council and the WWF have reached an agreement whereby members of the Council will no longer cut, fashion or fabricate skins of endangered spotted cats. This includes leopard, cheetah, ocelot, jaguar and smaller spotted and striped cat species.

SOS NATURE HOSPITAL

The first SOS Nature Centre was recently inaugurated at Hosingen, in the Grand Duchy of Luxembourg, in the heart of the Germano-Luxembourg Park.
With its wide range of equipment, the centre will enable European wild animals to be treated, rehabilitated and kept under observation, particularly those which are especially useful in maintaining the balance of nature.

The centre's first patient is a tawny owl, named Noémie. One of her wings was broken by gunshot in contravention of regulations to protect this highly useful bird of prey.

The foundation stone of the centre's operating unit was laid by Dr Mornet, President of the European Union of Veterinary Surgeons, with a membership of more than 15 000 veterinary surgeons in ten European countries. At the ceremony Dr Mornet said: 'After being picked up by a team of young people working for Operation 'Noah's Ark — SOS Nature', Noémie was treated by a French veterinary surgeon, then brought to Hosingen, where she has found a new home and regained her freedom. May she be a symbol of what we are trying to achieve with this European union of all veterinary surgeons, namely to protect nature and maintain the natural balance in Europe.'

Bavaria

This trade, which threatens the world stocks of big cats, may soon be controlled, thanks largely to initiatives by the WWF and the IUCN.

HAVENS OF HEALTH

Many private, governmental or international organisations are trying to put a brake on the all-prevailing poisoning of our environment. An interesting initiative has now been taken in Switzerland by Mrs Luce Dierker.

The idea to establish 'human reserves', that is, relatively extensive stretches of land on which the inhabitants undertake to live without using pesticides, while observing the laws of nature and avoiding every form of pollution. These areas, known as 'îlots de santé' (havens of health) must meet certain standards. They must be away from noise, the springs pure, the fields and orchards not chemically treated, so the inhabitants can be sure of really 'healthy' living conditions.
A study group for the creation of havens of health, composed of biologists, ecologists, physicians and other specialists, will shortly define the precise criteria to which land destined to become a haven of health must conform.

A noteworthy fact is that these unpolluted spaces will not be open solely to the privileged, for it is intended to have both luxury havens and havens for social purposes; the profits from the first kind will enable the second to be organised.

The scheme is at present gaining ground, and large territories have already been acquired for the purpose in Switzerland, Scandinavia, South America and Australia.

ITALY TO BAN BIRD NETTING

After a widespread outcry from European nature conservationists at the legalising of bird netting in Italy last January, the Italian Delegation has told the Council of Europe that the Italian Minister of Agriculture intends soon to introduce a new law to forbid this practice.
Bird netting is still carried on in many parts of Europe and the Italian authorities hope that other countries will soon follow suit to put an end to what is everywhere recognised as a severe threat to bird life. The Council of Europe's conservation experts, when they met in Strasbourg in the European Committee for the Conservation of Nature and Natural Resources, paid tribute to the Italian Minister of Agriculture, Lorenzo Natali, for this initiative. Statements from national delegations and the International Hunting Council revealed a thriving trade in netted birds between several member countries and the experts agreed that only coordinated legislation in all parts of Europe against netting and the importing and exporting of birds could solve the problem. The chief species involved are song-birds to put in cages and small birds for making patés.

The capturing of birds should be banned except for the purposes of scientific research. This Indian ornithologist is studying the role of birds as carriers of disease. ▶

PROTECTION OF BIRDS OF PREY IN SPAIN

Decimated by unwarranted destruction and by poisoning from chemical pesticides, in increasing jeopardy from the deterioration of their habitat and the dwindling of their means of livelihood, many birds of prey are seriously threatened in Europe and indeed throughout the world. To combat these threats to their survival, the Nature Conservation Association of the Province of Navarre in Spain, has launched a large-scale protection campaign in the Monreal-Pamplona area in the Western Pyrenées. The scheme has financial support from the European Association of Free Nature Reserves (EUREL) and the World Wildlife Fund. It includes the establishment of a large nature reserve, the building of a biological research station and the artificial feeding of birds of prey with offal (under the supervision of the Spanish public health authorities). The campaign is another contribution to European Conservation Year 1970, but the scheme will be a continuing one.
World Wildlife Fund

Paul Almasy-Bavaria

USSR: NEW REGULATIONS FOR PROTECTION OF MARINE LIFE

A new regulation on the protection of marine life in the Soviet Union bans private hunting of seals, Kamchatka otter and other marine animals. Only government enterprises and cooperatives are allowed to hunt these animals. In each hunting area inspection bodies will annually determine a hunting quota in accordance with recommendations from research institutes.
Pacific seals and Kamchatka otters *Enhydra lutris* have been placed under special control since their stocks had been greatly depleted by hunting. A 30 mile zone where fishing and work of any kind are banned, including the erection of navigation signs, has been set up around the seal colonies on the Komandorskiye Islands. The area is out of bounds to ships.
New fishing regulations are being enforced in the Far East waters, the biggest Soviet fishing area which greatly restrict fishing for salmon *Salmo salar,* sturgeon *Acipenser* and herring *Clupea harengas.*
IUCN Bulletin

WWF

A rare sea otter feeding, now to be protected in USSR waters. ▶

HARDANGER VIDDA THREATENED

Between Oslo and Bergen at about 1200 metres altitude lies the Hardanger Vidda. The vast high plain interspersed with hills, marshes, lakes, gravel slopes and meadows is a mixture between tundra and pasture land on the mountain side. It is a large and easily accessible recreation area. The landscape is especially attractive through its grandeur and its natural peculiarity. The fauna and flora are polar and represent therefore in this southern region an irreplaceable rarity for scientific research. Archeologically, the area contains interesting traces of post-glaciation cultures. Hydro-electric schemes have already for some time been built in its peripheric areas. Only in its centre and northwestern areas can untouched lakes and rivers still be found, and that is where the Eidfjord works are planned. This would diminish the recreational value as well as the uniqueness of the landscape considerably. Large areas would be destroyed which are of great value to scientific research.
IUCN Landscape Commission Newsletter 2.

Enrico Mariani-Bavaria

Rolling landscape carved by ice, typical scenery near Hardanger Vidda. ▶

CIRCUMPOLAR CONSERVATION

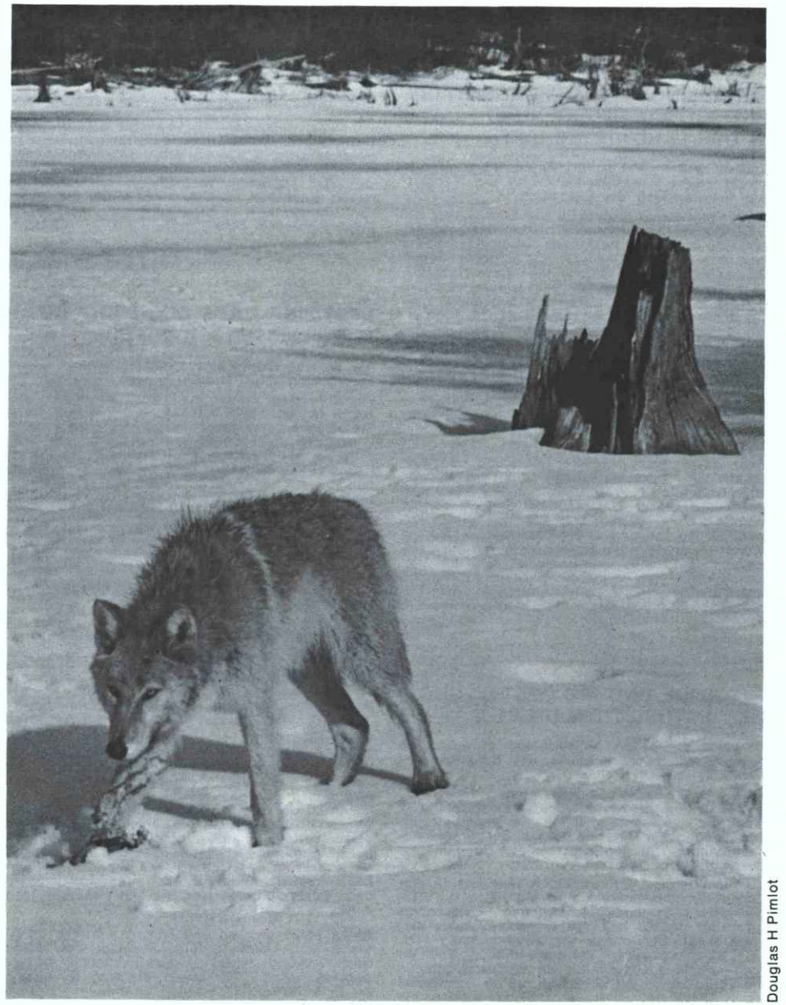
'The world needs an embodiment of the frontier mythology, the sense of horizons unexplored, the mystery of uninhabited miles. It needs a place where wolves stalk the strand lines in the dark, because a land that can produce a wolf is a healthy robust, and perfect land. The world desperately needs a place to stand under a bright auroral curtain on a winter's evening in awe of the cosmic cold and silence. But more than these things, the world needs to know that there is a place where men live amidst a balanced interplay of the goods of technology and the fruits of Nature. Unless we can prove that a modern society can thrive in harmony with the land, the bits of wilderness that we salvage in Alaska will be nothing more than curious artifacts in the sad museum of mankind.' (Dr Weeden of Alaska, at a recent conference on productivity and conservation in northern circumpolar lands).

The Conference passed four resolutions dealing with conservation matters in Artic regions. The first urged all circumpolar nations to develop long range plans based on inventory and research to safeguard northern resources, people and environment. The second called on Canada to get on with proper regulations, provide an administrative and enforcement staff and increase research efforts. The third enjoined all circumpolar countries 'to initiate research and management programs and take all necessary legal action to ensure the survival of adequate populations of threatened species'. The fourth brought to the attention of the Canadian Government a statement of concern expressed by the Eskimo delegation.
IUCN Bulletin April / June 1970

ENGINEERS DISCUSS BIOLOGY IN CZECHOSLOVAKIA

The relationship between engineering and biology in improving cultural landscape was the subject of an international symposium held at Brno from 9-12 June. Contributions from Brazil, Canada, the United Kingdom and the Netherlands included general papers on the engineer and the human environment and several useful papers on coastal engineering, reservoirs, highways and tipheap reclamation *(see Nature in Focus summer 1970 p 24).* The symposium followed the first meeting of the permanent commission on landscape planning of the IUCN. The Czech authorities marked this occasion with the special publication of a booklet in Czech and in English on the complex landscaping in South Moravia, by Prof Dr Ing Vlastimil Vanicek CSc of the University of Agriculture, Brno.

'The big bad wolf'.
This myth could cause the wolf's extinction as a species. The wolf's survival is threatened throughout the world. They are poisoned and shot not only as 'man's traditional enemy' but also to supply a newly developing trade in their skins. Yet these magnificent animals are now known to be among the most intelligent of beasts and to play a very important ecological role in predator prey relationships.



Douglas H Pimlot

ZUSAMMENFASSUNGEN

SCHÄDLINGSBEKÄMPFUNGSMITTEL UND ERTRAGSSTEIGERUNG IN DER LANDWIRTSCHAFT — p 3

Robert Hauret, Weinbauer, Anjou; Abgeordneter in der Franz. Nationalversammlung und Beratenden Versammlung des Europarats.

Die Landwirtschaft begrüsste die Entwicklung der Schädlingsbekämpfungsmittel nach dem Kriege, erkannte aber sehr bald, dass deren Anwendung Probleme aufwarf. Ungeübte Landarbeiter trugen Gesundheitsschäden davon, die landwirtschaftlichen Erzeugnisse, Vieh und Wild wurden vergiftet. Resistente Schädlingsstämme entwickelten sich, die höhere Chemikalien-Konzentrationen erforderten, und das wiederum erhöhte die Verseuchungsgefahr. Die Ausmerzung einer Schädlingsart brachte das ökologische Gleichgewicht durcheinander, so dass ehemals harmlose Insektenarten, die bisher von dem betreffenden Schädling vertilgt wurden, nunmehr in uneingeschränkter Entwicklung selbst zu Schädlingen wurden. Hierfür mussten dann wiederum neue Mittel eingesetzt werden.

Trotz dieser Schwierigkeiten muss die Landwirtschaft zur Aufrechterhaltung der Produktivität auch weiterhin Pestizide einsetzen. Die öffentliche Beachtung dieser Gefahren hat jedoch sowohl Hersteller als auch Abnehmer bewogen, vorsichtiger im Umgang und gründlicher in der Erprobung zuverlässiger Methoden in der Pestizidanwendung zu sein. Behördliche Regelungen zum Verbraucherschutz sind inzwischen in Europa fortgeschritten, nicht zuletzt aufgrund der Bemühungen der Beratenden Versammlung des Europarates.

PESTIZIDE UND DIE GESTALTUNG DER NATÜRLICHEN UMWELT — p 3

Y Demaret, Generalsekretär der Europäischen Gruppe nationaler Verbände der Schädlingsbekämpfungsmittelhersteller

Fast alle menschlichen Tätigkeiten weisen Vor- und Nachteile auf. Neuzeitliche landwirtschaftliche Methoden schaffen günstige Bedingungen für Schädlinge aller Art, die wegen der Produktivitätserhaltung mit entsprechenden Gegenmitteln bekämpft werden müssen.

Der unmittelbare wirtschaftliche Wert von Schädlingsbekämpfungsmitteln wird geschätzt: der Gegenwert der landwirtschaftlichen Erzeugnisse entspricht 140.000 Mill. US Dollar pro Jahr; Verluste durch Schädlinge werden mit 70.000 Mill. US Dollar angegeben. Bei ausreichender Behandlung aller landwirtschaftlichen Produkte könnten die Verlustziffern auf 52.000 Mill. US Dollar gesenkt werden, bei fehlender Behandlung würden sie dagegen auf 106.000 Mill. US Dollar ansteigen. Rein biologisch ausgerichtete Schutzmassnahmen können die Pestizidanwendung nicht ersetzen.

Toxisch weniger gefährliche Mittel werden nach sorgfältigen Labor- und Freilandversuchen mehr und mehr eingesetzt werden können und sollen nur nach einer behördlichen Anerkennung abgesetzt werden dürfen, obwohl auch die herkömmlichen, nicht mehr zeitgemässen Mittel in Entwicklungsländern aus Preisgründen sowie zur Erhaltung der öffentlichen Gesundheit weiterhin Anwendung finden werden; so lassen sich durch das DDT z.B. jährlich viele Hunderttausende von Menschenleben retten.

Je weiter die Intensivbewirtschaftung auf der Erde fortschreitet, um so mehr Pestizide wird man, z.B. in Wäldern, anwenden müssen.

Untersuchungen über die Auswirkungen auf die gesamte Umwelt können dabei auf dieser Ebene nicht den Herstellern zugemutet werden; hier wird das staatliche Versuchs- und Forschungswesen eingesetzt werden müssen. Die Hersteller sind ihrerseits nur allzu sehr zu einer engen Zusammenarbeit bereit.

PESTIZIDE - AUS DER SICHT DES NATURWISSENSCHAFTLERS — p 6

NW Moore, Naturschutzverwaltung, Monks Wood Forschungsstation, Grossbritannien

Pestizide sind in der medizinischen Phophylaxe sowie in der Landwirtschaft von grossem Wert. Sie zeichnen sich jedoch besonders häufig durch schädliche Nebenwirkungen aus. Um ihre Vorteile bei gleichzeitiger Einschränkung der schädlichen Begleiterscheinungen nutzen zu können, müssen sie unter strenger und ständiger Kontrolle gehalten werden. Hieraus ergeben sich einerseits wesentliche Verpflichtungen für die Naturwissenschaften und andererseits für Politiker und Wirtschaftler zur Befolgung wissenschaftlichen Rates.

ZUR FRAGE DER SCHÄDLINGSBEKÄMPFUNGSMITTEL IN AFRIKA — p 9

Baba Dioum, Direktor für Wasser-, Forst- und Jagdwirtschaft, Senegal

In Afrika sieht man im wirtschaftlichen und sozialen Fortschritt und in der Erhaltung der natürlichen Hilfsquellen keine Konfliktsituation, sondern nur Teile des gemeinsamen Zieles: eine zufriedene, gesunde Bevölkerung in einer ungestörten Umwelt. Die Förderung der ersten Gruppe auf Kosten der zweiten kann auf lange Sicht keine Vorteile bringen. Moderne landwirtschaftliche Verfahren müssen angewandt werden, in der Praxis ist das vielfach jedoch noch nicht der Fall. Veraltete Mittel, die in ihren Herkunftsländern längst verboten sind, werden weiterhin nach Afrika gebracht.

Afrika sollte sich an den Fehlern Europas orientieren und seine Naturgüter nicht übernutzen oder verseuchen. Die Industrienationen, besonders die sechs EWG-Staaten, die enge Bindungen zu 18 afrikanischen Staaten unterhalten, können dabei helfen, indem der Absatz eines Mittels in Afrika immer dann verboten wird, wenn das betreffende Mittel bereits im Herkunftsland für schädlich befunden ist.

Eine unabhängige Beurteilung von Pestiziden sollte in Euro-Afrikanischen Zeitschriften veröffentlicht werden. In der enger zusammenrückenden Welt machen die gegenseitigen Abhängigkeiten mit z.B. in Afrika auf verseuchtem Boden erzeugten Nahrungsmitteln, die in Europa abgesetzt werden, eine internationale Zusammenarbeit — besonders im Hinblick auf die Anwendung von Schädlingsbekämpfungsmitteln — notwendiger denn je zuvor.

UMWELTSCHUTZ DURCH NATIONALE UND INTERNATIONALE ÜBERWACHUNG VON SCHÄDLINGSBEKÄMPFUNGSMITTELN — p 10

F Pettini, Europarat, Strassburg

Seit etwa zwei Jahrzehnten befasst man sich in Europa mit Gesetzen zur Überwachung von Pestiziden. Die Überwachungsmaschinerie weist dabei keine nennenswerten Unterschiede auf: Genehmigung zur Herstellung entsprechender Mittel, ihre Einfuhr und der Absatz sowie Vorkehrungen zum Schutz der Gesundheit von Produzenten und Abnehmern. Mit Ausnahme der Trinkwasserverseuchung hat man sich dabei jedoch wenig um den Schutz der Umwelt gekümmert.

Gesetze zum Schutz von Flora, Fauna und Boden sind für einige Staaten angeführt. Eine Auswahl moderner Gesetze gestattet die Anwendung von Pestiziden nur nach ausdrücklicher Erforschung ihrer Auswirkungen auf Gesundheit und Umwelt. Beispiele für Österreich, Zypern, Frankreich, Griechenland, Norwegen, Schweden und Grossbritannien sind angeführt. Die bisherigen internationalen Bemühungen werden kurz umrissen und die Notwendigkeit weiterer Massnahmen besonders in Staaten ohne ausreichende Gesetzesregelungen hervorgehoben.

ERSTER DEUTSCHER NATIONALPARK — p 21

«Waldwoge steht hinter Waldwoge,
bis eine die letzte ist
und den Himmel schneidet.» Adalbert Stifter

Zu den mehr als 40 Naturparks in der Bundesrepublik Deutschland tritt nunmehr ein erster Nationalpark hinzu. Am 7. Oktober wurde der Nationalpark Bayerischer Wald, ein Gebiet von über 12.000 ha ausgedehnter Gebirgswälder, offiziell seiner Bestimmung übergeben. Der Park erstreckt sich entlang der deutsch-tschechischen Grenze und erreicht in den bekannten Gipfeln des Rachel und Lusen, von denen der Wanderer weit in die Ferne schaut (siehe Abbildung), Höhen bis zu 1450 m ü.M. Zahlreiche Naturschutzgebiete innerhalb der Parkgrenzen von einzigartigen Biotopen bieten dem Biologen manch interessantes Studienobjekt.

Eine eigene Nationalparkbehörde ist innerhalb der Bayerischen Staatsforstverwaltung errichtet worden. Der Nationalpark wird nicht nur der Wissenschaft dienen, eine Zuflucht für bedrohte und aussterbende Tiere und Pflanzen sein können, sondern soll darüber hinaus auch zu einer bevorzugten Urlaubsgegend ausgebaut werden. Um allen diesen Zwecken gerecht zu werden, sind verschiedene Zonen ausgeschieden und unterliegen unterschiedlichem Schutz und Kontrolle. Insgesamt wird der Bayerische Wald damit zu einem der bedeutensten Beiträge innerhalb des Europäischen Naturschutzjahres. H.K.

NATIONAL AGENCIES OF THE CENTRE

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Leiter der Abteilung
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For the attention of the
Director of the
Department of Forests
Ministry of Agriculture
and Natural Resources
NICOSIA

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