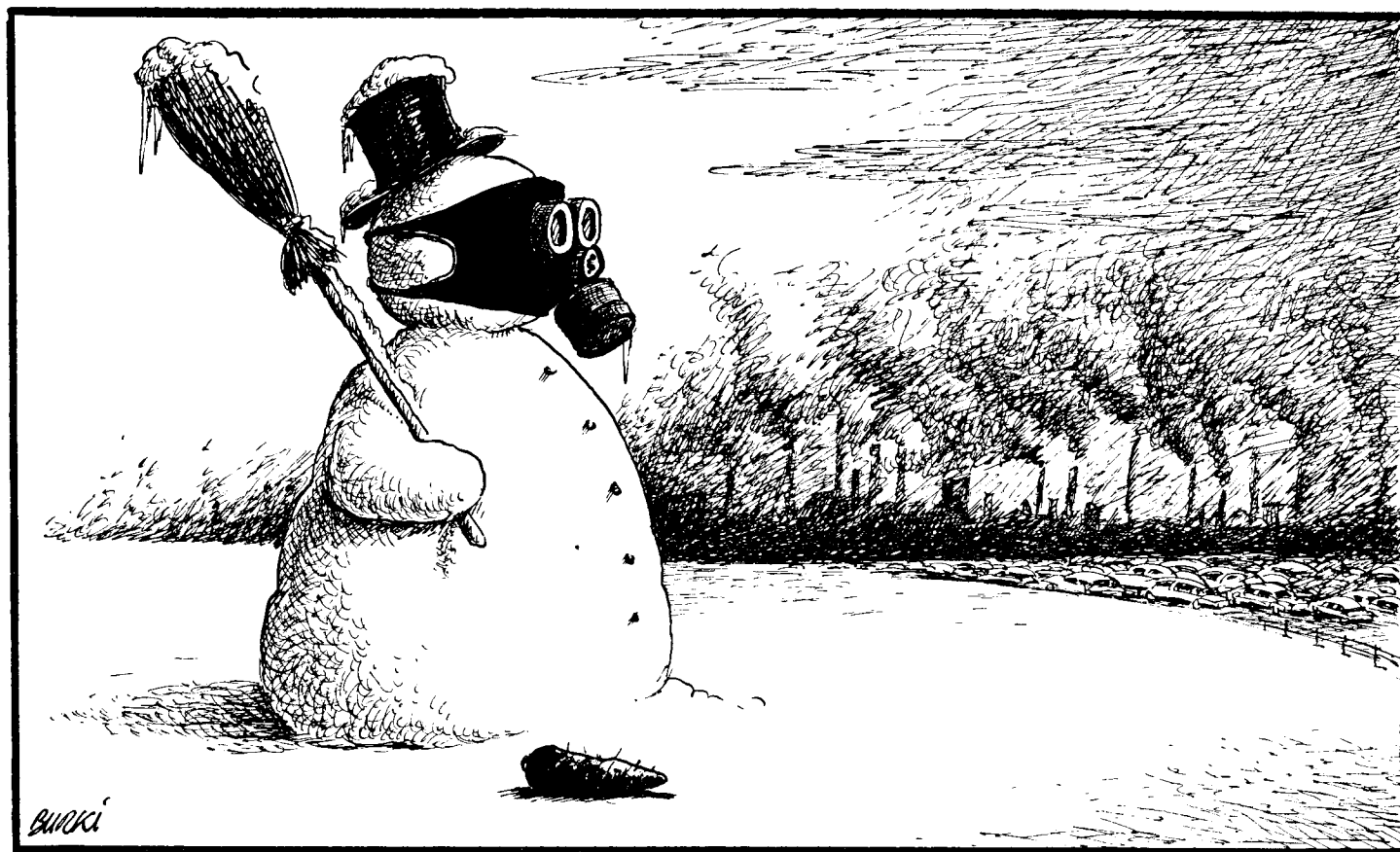


Acid News

A Newsletter from the Swedish and Norwegian NGO Secretariats on Acid Rain



Smog.

Drawing: Burki, © 24 Heures

International Acid Rain Week

Dutch set the pace

The fourth week in April (19th to 27th) is the time set for environmentalists all over the world once more to make special efforts to arouse public opinion against air pollution and acidification.

Last time a variety of organizations put on a fine show, staging events in at least seventeen countries. Great inventiveness was shown in finding ways to make people take notice — and, as it turned out, the press as well.

Previously we have listed ideas for various kinds of action, as for instance in Acid News 1/85. This year however I am going to describe the way they arranged the program for Acid Rain Week in the Netherlands last year, and what they are planning for this year.

In the autumn of 1984 a broad coalition was set up, comprising practically all the environmental organizations in the Netherlands. The initiative for this was taken by WISE (World Information Service on Energy). Action was

planned under the name of *Bos-alarm* (Forest Alert). The first step was to train guides, beginning with ten persons. These trained another 150, who in turn took on a further 800. One organization trained an additional 150 or so on its own account, so that finally there were well over a thousand guides available. Besides being taught how to distinguish damage on trees, they had all been instructed in the causes of acid rain, and the way in which it might be counter-acted.

continued on page 2

Acid News

A newsletter from the Swedish and Norwegian NGO secretariats on acid rain.

ACID NEWS is a newsletter produced jointly by the Swedish and Norwegian secretariats on acid rain. The secretariats' and the newsletter's main task is to provide environmental and nature conservation organisations and others with information on the subject of acid rain and acidification of the environment.

Anyone who is interested in these problems is invited to contact the secretariats at the address below. Any questions or requests for material will be dealt with to the best of our ability.

In order to make Acid News interesting, we are dependent on information on what is happening elsewhere in the world. So if you read or find out about something which might be of general interest, please write or send us a copy of it.

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Published by: The Swedish Society for the Conservation of Nature

Printed by: Tryckverksta'n, Göteborg

THE SECRETARIATS

The Norwegian secretariat, "The Stop Acid Rain Campaign/Norway", is organized by six non-governmental organisations concerned with the environment:

- Nature and Youth (Natur og Ungdom)
- The Norwegian Forestry Society (Det Norske Skogselskap)
- World Wildlife Fund/Norway (Verdens Villmarksfond)
- The Norwegian Association of Anglers and Hunters (Norges Jeger- og Fiskeforbund)
- The Norwegian Society for Conservation of Nature (Norges Naturvernforbund)
- The Norwegian Mountain Touring Association (Den Norske Turistforening)

The Stop Acid Rain Campaign/Norway
c/o Det Norske Skogselskap
Wergelandsv. 23B,
N-0167 Oslo 1, Norway

Telephone: 02-46 98 57

"The Swedish NGO Secretariat and Acid Rain" is organized by four non-governmental organisations concerned with the environment:

- The Environmental Federation (Miljöförbundet)
- The Swedish Angler's National Association (Sportfiskarna)
- The Swedish Society for the Conservation of Nature (Svenska Naturskyddsföreningen)
- The Swedish Youth Association for Environmental Studies and Conservation (Fältbiologerna)

Address and telephone: see above!



ISSN 0281-5087

International Acid Rain Week

On the first day of the Acid Rain Week some 10,000 people were taken around by the guides and shown damaged forests. During the rest of the week there were exhibitions, public lectures, and evening debates; information was handed out from market stands and at railway stations, and mock parking tickets with information on acid rain were thrust on car owners. Even the police joined in, by giving information on acid rain instead of fining motorists who had exceeded speed limits.

This year transportation and farm organizations, and societies for the protection of monuments, will be involved in the doings, besides all the Dutch environmental groups. Each day will be devoted to some special activity. Thus on Saturday the 19th the week will be opened by sending up innumerable balloons, from ordinary toy ones with Stop Acid Rain printed on them, to regular one-metre meteorological types carrying measuring instruments and big manned balloons. This action will be carried out from about thirty places, chiefly in the neighbourhood of large emitters.

On Sunday the 20th there will be guided tours for the public. These will be arranged on the same lines as last year, except that they will not be confined to forest viewings. In towns the damaged to buildings will primarily be pointed out, although trees will not be forgotten. Leaflets setting forth the facts and including a map will either be distributed free or sold in each locality.

The tourist boycott of the United Kingdom will probably be the main theme for Monday. The next day, the 22nd, will be Traffic Day, with demonstrations at railway stations to show the advantages of public transport over private cars. Conversations are now going on with the transportation authorities to see if it will be possible to lower the fares on weekdays, in order to encourage people to travel in ways favourable to the environment.

On Wednesday the turn will come to industry, with a public debate between industrialists and environmentalists as well as other events designed to draw attention to the main causes of air pollution.

The case of agriculture will next be examined, on Thursday the 24th. On account of exceptionally high emissions of nitrogen compounds to the atmosphere, farming in Holland contributes quite a lot to the problem of acid rain.

While there are as yet no firm plans for the final days, there will undoubtedly be some form of closing event. And besides these activities organized by the coalition, there will naturally be local actions taking place everywhere.

"Apart from this concentration of events during Acid Rain Week, much else is going on in the Netherlands in regard to the problem," says Thijs de la Court at WISE Amsterdam. *"Many organizations are arranging seminars, courses, and excursions, as well as doing research. More and more schools are becoming involved, too, and the Dutch government is planning a large-scale publicity campaign which will focus mainly on agriculture and transportation."*

"The main task for environmentalists will be to inform people of what they themselves can do, and what should be done by government and industry."

Since there will again be no central direction of activities, the success of the event will depend almost entirely on the efforts of the various organizations. Each one has to decide what it will do on the level at which it operates, whether local, regional, national or international.

Our hope is that as many organizations as possible will take action to draw attention to the associated problems of air pollution, acidification, and forest damage during the coming Acid Rain Week.

Christer Ågren



Wales Friends of the Earth Acid Rain demonstration at "Llyn Brianne" reservoir. Photo: Rickard Baker

AIRPLAN

The International Citizen's Working Conference on Acid Rain, ICWCAR, organized by FoE International last May, was a very inspiring event. A number of far-reaching decisions were taken, with interesting developments as a result. First, the Air Pollution Action Network (AIRPLAN) was set up. AIRPLAN, which is a joint project of FoE International and WISE (World Information Service on Energy), aims at:

- Coordinating the activities for International Acid Rain Week 1986;
- Developing and distributing material to promote long-term solutions to the acid rain problem, i.e. Soft Energy Paths;
- Preparing basic information material for groups in Eastern Europe and the Third World;
- Supporting Third World groups in their fight against "double standards" (arising from polluting industries moving to Third World countries because of lower environmental standards).

The main vehicle for achieving these ends will be a newsletter,

the first issue of which has now appeared.

An initial grant of 40,000 guilders was received from the Dutch Government.

A direct result of ICWCAR was the founding of "Greenway," a network of environmental NGOs in Eastern Europe. Greenway will be part of AIRPLAN and wants to maintain good contact with FoE International.

AIRPLAN has also approached a large number of environmental groups in Latin America, to determine how bad their air pollution problems are and how we can help them. The response has been overwhelming.

The annual meeting of FoE International approved AIRPLAN and decided to give active support to some of the activities that were proposed at ICWCAR. The Tourist Boycott of Great Britain aims to force the Thatcher government to start doing something about acid rain — as a first step to join the 30-per-cent club. A number of FoE groups have promised to join the Shell Cam-

paign, initiated by FoE Holland. During Acid Rain Week 1986 FoE International will associate with other groups in international activities, such as the massive release of balloons and the symbolic cleaning of buildings.

Specific FoE International activities for 1986 include the arranging of a public debate with the European Environmental Ministers when they are discussing the Large Plant Directive under the presidency of Mr Winsemius of Holland.

FoE LINK, Dec 1985

Note

We shall be gathering information, both at the Swedish secretariat and at Airplan in Amsterdam, as to what is being done in the various countries. We may also issue a general press release concerning Acid Rain Week. We should be glad if you will get in touch with either or both of our offices as soon as you can tell us what you are planning, so that we may take any steps that may seem called for.

Uniting to save forests

Young people from nine countries, meeting in Vienna on November 1-2 last year, agreed on a series of activities to be carried out under the name of European Youth Forest Action during the summer of 1986.

The initiative came from the Swedish umbrella organization known as Ungdomsaktionen Rädda Europas Skogar (Youth Action to Save Europe's Forests) which has gathered under itself eighteen youth groups with a variety of affiliations — political, religious, temperance, and even ethnic, which in this case means Lapps who are disturbed by the threats to their forest grazing areas.

"We wanted to spread the idea of bringing together a wide range of interests to form a larger group with a special aim, and we have met with gratifying response," says Lars Igeland, of the Swedish Environmental Federation, who also helped make the preparations for the Vienna meeting.

Twelve organizations have declared their interest in the Netherlands, and even more are likely to do so in Austria, where the number will include scouts and alpinists. In Hungary official environmental organizations will probably join in as well.

The idea of EYFA is not only to bring about cooperation between various groups within each country, but also to arrange it across national borders. Air pollution is a problem that needs international cooperation for its solution.

"At the end of 1985 there were EYFA contact men/women in seventeen countries, and actual activities are already being arranged for the summer in twelve of them. This network was created through correspondence between the Swedish member organizations and similar groups in other countries. Confirmation of the interest so aroused came at our conference in Vienna," relates Lars Igeland.



At Vienna a preliminary campaign platform was agreed upon which included the following points:

- All countries should, as a first step, join the 30-per-cent club — in other words, undertake to have reduced their emissions of sulphur dioxide by 30 per cent no later than 1993. The ultimate aim must however be a 75-per cent reduction.
- All countries should institute controls for motor vehicle exhausts equivalent to the US-83 standards.
- All countries should actively promote transportation by rail as well as other mass modes, and hasten the switch to alternative sources of energy and energy-saving technology.

Although air pollution and the concomitant damage to the forests must be the main object of attack, another point in the platform urges the need to save unique areas of virgin forest, such as those just below the tree line in northern Sweden and in various parts of the third world. Local organizations may also add special calls for action within their own country. The Swedish groups have for instance united in opposition to the so-called Scandinavian Link (Acid News 4/85).

Actions planned for this summer will centre on a tour of European forests, with large-scale meetings at stops in England, West Germany, and Yugoslavia. ►

► The Swedish leg of the tour will include a visit, starting in June, to the forests in the mountain region along the Norwegian border. The participants will then join the main body of the tour in Dalecarlia, the heart of Sweden. The next destination will be Gothenburg, to be reached on June 28 so as to coincide with the arrival of youth organizations from the other Scandinavian countries. From Gothenburg a Scandinavian delegation will proceed to Holland and Belgium, and on July 10 there will be a big meeting in the south of England.

In Sweden the tour will include a study of large-scale forestry operations, and of forests already damaged by air pollution, as well as the visit to the forests in the mountain region. From England the journey will continue through France to Freiburg in the Black Forest, which is one of the worst damaged areas in the Federal Republic. Here young people from all over Western Europe will gather, on July 18 and 19, for the tour's greatest manifestation of purpose. A few days later, at Maribor in Yugoslavia, there will be a meeting of delegates from both east and west (July 23). It is hoped that the East European organizations will have been able to make a tour of the forests in their part of the continent before coming to Maribor. The matter is already being discussed with Polish, Czechoslovakian, Rumanian, and Hungarian, as well as Yugoslavian contacts.

Besides these tours of the forests with international meetings, various national activities are being staged in connection with the EYFA, and in order to make this possible the organizations in several countries are seeking grants. Such matters are being handled internationally by the Youth and Environment Europe, YEE, which has appointed a coordinator for the purpose with office at WISE-Holland.

Another meeting in preparation for the summer's activities took place at Maribor on March 7-9.

Further information can be obtained from

Petra Kepler, EYFA Coordinator
WISE-Amsterdam
P.O. Box 5627
1007 Amsterdam
Netherlands
Phone: 20-85 38 57



Acid Rain Warden in London

Photo: Vicky Alhadef

Tourist boycott to go on

Last September the environmentalist groups in ten countries started a tourist boycott of Britain as a protest against its great emissions of acidifying pollutants, which mostly get exported to other places. See Acid News 4/85. In support of the action postcards were sent to tourist offices, hotel owners and politicians. The response from members of the organizations and even the public was so great that by December the whole stock of 50,000 cards had been used up. Environmentalist groups are therefore urged to make reprints, or new cards of their own, and mail them around as before.

There are also other means of intensifying the boycott, as for instance by

- Demonstrations at ports and air terminals, using leaflets to tell travellers to England about the boycott.
- Doing the same at British tourist offices abroad and at travel agencies that sell tickets to the United Kingdom.
- Trying to persuade business organizations and others not to arrange conferences and suchlike in the UK — using letters, advertisements, articles in the press, and so forth.
- Trying to trace individuals, families, organizations, etc.,

which had considered visiting Britain, but on account of the boycott had either gone elsewhere or stayed at home. Such examples would be very useful as means of getting the press and other media to take notice of the boycott. If you know of any such cases, please hand on the information to Adam Markham, FoE Ltd, 377 City Road, London, England EC1V 1NA.

At the end of September the municipality and business community of Norrköping, on the east coast of Sweden, had arranged a British Week to promote Britain and British products. The embassy and the British tourist office were involved, and the ambassador and Princess Margaret were present at the opening. Local environmentalists organized an "anti-week", staging demonstrations, distributing leaflets, and writing letters to the editors of local newspapers in order to publicize the boycott and make known the reasons for it.

Recently a proposal for a general boycott of British goods has also been aired in Sweden, mostly by writing to the papers. So far however there has been little response.

When the boycott was announced in September it was

widely reported in all the media in Great Britain. Unfortunately it received much less publicity in many other countries. It is most important, if the boycott is to be effective, to make it known to the public in as many countries as possible. It would therefore help if the environmentalist organizations everywhere would continue their actions in connection with it. One idea is to devote one of the days in the Acid Rain Week to the boycott. It is suggested that Monday April 21 would be suitable as coinciding with the Dutch plans.

The intention is to continue the boycott until Britain has adopted a comprehensive program for reducing emissions. The minimum requirements should include joining the 30 Per Cent Club and following the EEC draft directive, COM(83)704, which would mean reducing emissions of sulphur dioxide from large combustion plants by 60 per cent. In order to comply, Britain would have to equip twelve of its largest coal-burning power plants with scrubbers.

Note

The boycott action is being coordinated internationally by AIRPLAN (Air Pollution Action Network) which is run by Friends of the Earth International and WISE-Amsterdam. Further information can be obtained from Pieter Lammers, AIRPLAN, Postbus 17170, 1001 Amsterdam, Netherlands.

SWEDEN Oldest trees worst off

For the second year in succession, the national forest survey has included an assessment of needle loss in conifers. To judge from the preliminary results, there appear to have been no great changes since 1984.

In southern part of the country (approximately south of Stockholm) 15 per cent of the middle-aged and mature spruce trees had lost on an average 20 per cent of their needles.

The trees in the north showed greater losses than those in the south. One reason is that the stands in the north are generally very much older, another that the trees are often growing at

higher altitudes and so are exposed to greater climatic stress. If one compares stands of the same age, there is however little difference between north and south.

In the south there was less evidence of needle loss than in 1984 — probably because of the favourable weather in the last two growing seasons, whereas 1982-83 were drought years. Damaged trees would moreover in the meantime have been felled and removed.

While those responsible for the survey say that in general the state of the forest gives no cause for alarm, they also point to dis-

turbing developments in South Sweden, where there have been reports of damage to beech and other deciduous trees. There was also a warning, in statements made to the press, against making the present relatively good state of the forests an excuse for ignoring the threat from pollution.

Evidence of the injurious effects of pollutants on soil, water, and buildings, as well as living organisms, was said to be well established. It was also pointed out that the acidification of forest soils in South Sweden already constitutes a serious warning.

Protests against CEEB film

A video film on acid rain has come close to causing a diplomatic rift between the UK and the two Scandinavian countries, Norway and Sweden.

Last autumn the Central Electricity Generating Board (CEGB) issued a video film giving their view of the acid rain question. This film has been distributed to schools, trade unions, and members of Parliament, and can be loaned free of charge.

that the overwhelming majority of scientists in Europe and North America agree beyond dispute that British sulphur emissions contribute to pollution damage in other countries, inter alia in Norway. A large number of British scientists also share this view."

On December 9 the Norwegian and Swedish embassies called a press conference in London in order to state their countries' views. Present were three high-

are doing more to pollute Scandinavian lakes than those from any other country.

In the film an interview with the Swedish acid rain researcher Hans Hultberg gives the impression that liming is a simple and effective solution for "repairing" acidified waters. But in the actual interview, Hans Hultberg strongly underlined that liming does not remove the cause of the problem and may be used only in certain



A new film from the CEEB Film & Video Library Available on FREE LOAN in 16mm film & video formats

Is Acid Rain an insidious killer of trees and fish, and cause of many other environmental problems? This thought provoking film – shot in Scandinavia, West Germany and Britain – explores the scientific questions behind Acid Rain as it affects atmosphere, soils and surface waters.

The film examines the complexities and uncertainties surrounding the problems of Acid Rain. It demonstrates the need to investigate every possible route to an effective solution.

An example of CEEB advertising.

Scientists and politicians in Norway and Sweden have voiced strong criticism, and almost immediately the Norwegian Ministry of the Environment issued a "white paper", setting forth the chief objections and dealing with the CEEB's assertions point by point. In the official Norwegian protest it is said:

"The film claims to provide a balanced and objective view of the acid rain issue. However, in fact, it presents a biased selection of examples, persons and points of view. Under the cover of objectivity the film must therefore be considered as a propaganda film for the CEEB's own view, a view which holds that acid rain from the UK in all probability does not contribute significantly to the damage to German forests and to forests and fish in Scandinavia. The Norwegian authorities refute this view absolutely. What this film conceals is the fact

level officials from the Norwegian Ministry of the Environment as well as three acid rain experts from Norway.

"The views put forward in the CEEB film are... in our view, both obsolete and dangerous"; Jan Thompson, director general of Norway's Ministry of the Environment, said at the press conference. *"The cynical attitude expressed by this film has angered many people in Scandinavia."* The film "clearly and cleverly" minimized the problem of acid rain and sought to deny Britain's role as a very significant contributor to the problem, he said.

Mr Thompson's remarks reflect fresh strains in diplomatic relations between Britain and Norway over acid rain. Norway and Sweden argue that Britain should join other European nations in taking action to reduce sulphurous emissions. These emissions

areas. But this part of the interview was deleted from the film. In a letter to the CEEB Hans Hultberg strongly protested against the way his testimony has been used in the film.

The CEEB is the agency responsible for the production of electricity in England and Wales. Its coal and oil-fired power plants are responsible for about 60 per cent of the country's emissions of sulphur dioxide. Any British commitments to reducing emissions will therefore first and foremost require measures affecting these power plants. The CEEB has therefore long been the spearhead of Britain's struggle not to commit the country internationally to any reduction of sulphur emissions.

Damaged trees in the UK

More than half Britain's beech and yew trees are showing signs of acid rain dieback, say Friends of the Earth in a new 28 page report. At least ten other species including fir, oak, spruce and pine were also found to be damaged during the two-month study, first of its kind in Britain. Over 500 people, from foresters and professional ecologists to vicars, school teachers and housewives, took part in the project, which was sponsored by the World Wildlife Fund. At 372 sites in 49 counties, as well as 427 sites in 48 other counties, 1,546 beech and 1,638 yews were individually examined, in this, the first acid rain survey to include both broadleaved and coniferous native species at a detailed level.

Of beech 69 per cent showed some dieback, and 78 per cent of yew. Worst affected were North Wales and Central-South and Southwest England as regards beech, and North England as for yew. The main findings showed 31 per cent of beech and 22 per cent of yew to be healthy (Stage 1); 53 per cent and 52 per cent had partial dieback (Stage 2); 14 per cent and 22 per cent showed advanced dieback (Stage 3) and 2 and 4 per cent were in a state of complete dieback (Stage 4). In addition, both species showed the specific symp-

toms associated with acid rain damage on the continent: 42 per cent of beech had "cluster twigs", and 12 per cent of yews had severe tinselling (loss of older needles), while 15 per cent had branches with 20 or more "fear" twigs (emergency shoots).

"We are appalled at the scale of tree dieback," says Chris Rose, one of the report's two authors and former Acid Rain Campaigner for Friends of the Earth.

The report debunks the Forestry Commission explanation that the dieback is due to the 1976 drought alone. It gives examples of pollutants which interact with drought, frost, and each other to create damage (e.g. ozone, sulphur dioxide) and shows that damage thresholds are frequently exceeded in pollution episodes where air has passed over industrial regions. Ozone for example has exceeded damage thresholds every summer since 1973, sometimes as much as every other day. A London sulphur episode exceeded damage levels by over nine times in New Year 1985. An example of power station pollution 30 km from Fawley (Southampton) is also given and the report emphasizes the role of pollution combinations such as in the acid mists that occur in Cumbria and the Wye Valley.

Following the publication of the Final Report of their Tree Die-Back Survey the Director of Friends of the Earth, Jonathan Porritt, has written to William Waldegrave, Minister for the Environment, Countryside and Housing, calling for the recommendations of the report to be carried out.

These recommendations include:

- A nationwide emergency tree survey in 1986 by Government agencies other than the Forestry Commission cooperating with voluntary groups and specialists.
- A monitor network which can "reconstruct" pollution episodes hour-by-hour or day-by-day to correlate with damage to trees.
- An immediate program of controls to reduce emissions of sulphur dioxide and oxides of nitrogen from power stations (12 large stations need flue-gas desulphurisation) and cars to be fitted with converters to meet US-style emission standards to reduce hydrocarbons and NO_x.

The report can be obtained for 2.95 pounds from FoE Ltd, 377 City Road, London, England EC1V 1NA.

New official tree study

In mid-November, only a few days after Friends of the Earth had published its survey on British trees, the British minister of the environment announced that a new study of the nation's trees would be carried out within the next year.

Waldegrave told the Common's select committee on the environment that the survey would be conducted jointly by the Forestry Commission and the Institute of Terrestrial Ecology, which is funded by the Natural Environment Research Council.

Waldegrave told the committee: *"I do not think that the recent Friends of the Earth study is a particularly good piece of scientific work... But I do not wish to rubbish the report"*. The new study would need to be statistically valid and to have the proper controls that the FoE's study, which was compiled from questionnaires returned by members of the public, lacked.

This announcement means that Waldegrave is, in effect, setting aside a report by the Forestry Commission, published earlier in

1985, which said that there was "no evidence" of any new form of forest damage.

The new study should accept a central argument of environmentalists that air pollution, including acid rain and ozone, could be so weakening trees as to make them more susceptible to natural forms of damage from drought and disease. *"A multiple-stress approach is essential,"* said Waldegrave

Attitude still unchanged

The House of Commons Environment Committee, which recommended in September 1984 that Britain should join the Thirty Per Cent Club, has issued a follow-up report. The British Government, it appears, is continuing its refusal to take action over acid rain.

The Committee invited William Waldegrave, the Minister for Environment, and Mr Goodlad, Under Secretary of State at the Department of Energy, to talk about the Government's position on atmospheric pollution. The talks have made the government's stance clear: it does not intend to take any positive action to stop acid rain, even though the UK emissions of sulphur dioxide appear likely to *increase* by 1992.

The discussions were opened by Committee Chairman Sir Hugh Rossi, who expressed the Committee's regret about the government's refusal to join the Thirty Per Cent Club. The reason, he suspected, *"may well have been the possible cost of implementing that recommendation by the year 1993."* Continuing, he said they were somewhat confused by the differing figures they had been given as to the possible costs and had *"not been assisted since then by the various statements issued by or on behalf of the Central Electricity Generating Board who seem to be moving the goalpost every time the matter is aired publicly."* He asked Mr Goodlad to say how much joining the Thirty Per Cent Club would cost.

Mr Goodlad: *"The cost of joining the Thirty Per Cent Club, if borne by the CEEGB, depends on the assumptions made about the sulphur dioxide emissions trend up to 1993. The emissions in 1984 were estimated at 3.52 million tons, about 25 per cent below the 1980 level. Assuming no further*

change in emission levels the capital cost of achieving a 30 percent reduction from the 1980 level would be about 300 million pounds, equivalent to about one per cent on electricity prices."

When pressed, however, Mr Goodlad admitted that this was not the most likely scenario for Britain's SO₂ emissions over the next ten years. *"The best estimate,"* he said, *"suggests that depending on the assumptions made, the total UK SO₂ emissions will be in the range of 3.5 to 4.2 million tons in 1990 and 3.1 to 4.1 million tons in the year 2000."*

These figures would mean Britain achieving a reduction of 10 to 25 per cent on the 1980 figure of 4.67 million tons by 1990. Mr Goodlad would not commit himself to harder figures, although Mr Waldegrave seemed convinced that expenditure of 300 million pounds would guarantee Britain's achieving a 30-per-cent-reduction of SO₂ by 1993 — if it should decide to spend the money, which at the moment was not the case.

There is an ambiguity in this forecasting, which is rooted in the differing needs of international and domestic politics. The drop in SO₂ emissions since 1980 has been in large part caused by the industrial recession, and for the government to forecast a continuance would be dangerous with an election coming in the next two years. However, it is convenient to maintain in international negotiations that the low SO₂ output will continue, as this relieves the diplomatic pressure.

Acid rain observers may expect a period in which differing UK positions will be displayed at home and abroad. This is not a new phenomenon, however: it began in 1982, when the Under Secretary of State for the Environment appealed in Stockholm for more research into acid rain

before action could be taken. At the same time, the government was moving to reduce the grant for the Institute of Terrestrial Ecology, one of the foremost UK organizations doing research on the subject.

Other points of interest in the report:

□ The DoE is still basing its objections to the Thirty Per Cent Club on the choice of 1980 as the base date. *"It is based on an arbitrary figure,"* said Mr Waldegrave. *"If we had been quick off the mark and gone for a 40-per-cent-on-1970 Club we would be laughing."*

□ The DoE has set up these six Review Groups on Acid Rain, chaired by reputable scientists, which will be reporting through 1986:

Review group on Acid Rain. Published one report in December 1983, another coming out in 1986.

Acid Waters Review Group. Interim report in early 1986.

Atmospheric Effects Review Group. Interim report late 1986.

Building Effects Review Group. Interim report by September 1986.

Photochemical Oxidants Review Group. Interim report by end 1986.

Review Group on Stratospheric Ozone. In process of being set up.

□ Finally, the cost of the much-criticized CEEGB video has been uncovered by the Committee — *"just under 200,000 pounds."* This is expensive for a video of this length, and is a cause of embarrassment to the CEEGB, who twice denied this figure when inquiries were made last year. It is becoming even more apparent that any information emanating from the CEEGB press office should be treated with caution until it can be confirmed by an independent source.

Steve Elsworth

Acid eats into Britain's

Acid rain may be damaging Britain's buildings faster than ever before. Or, there again, it may not be. Research aimed at finding out is now getting under way. But the Italians already have some most disturbing answers.

Two autumns ago, Big Ben and the Palace of Westminster were covered in stone-cleaners' scaffolding. Work began on scrubbing the black soot of the industrial revolution from the mother of parliaments.

Coincidentally, we must presume, ministers woke up at that time to the growing concern that acid rain might be eating away with renewed vigour the nation's buildings. Last autumn, a committee of MPs said that it was "appalled" at the lack of government interest in the subject. By then the wheels of Whitehall were getting into motion. Committees were set up and this autumn monitoring equipment will be hung from ancient crumbling edifices such as Wells and Lincoln cathedrals. The aim is to answer two questions: how much damage is acid attack doing to the nation's stone and concrete? And are things getting worse?

The man in day-to-day charge of the program is Roy Butlin, of the Building Research Station (BRS) near Watford. *"It's the most interesting job I have ever had,"* he says. He was thrust into the endless round of international conferences and steering committees after six weeks mugging up on the subject.

The Department of the Environment, he says, has decided that it knows too little about acid attack on the nation's buildings. *"We needed to have our own view about the impact on economic materials."*

The BRS got the job largely because it had some past involvement with the matter. Its main source material, a book called *The Weathering of Natural Building Stone*, was published in 1931. The book has just been reprinted.

"It seems," said the House of Commons Environment Committee in a report on acid rain last autumn, *"to have been presumed that when the Clean Air Act removed most visible pollution, the need for research on the effects of air pollutants on buildings ended."*

This was a grave error. According to Butlin: *"There is some evidence that erosion rates are higher now than in the past. But before 1960 records were very bad, and methods of measuring pollution have changed."*

So what has been happening? The Clean Air Acts of the 1950s were brought in after a series of horrendous "killer smogs". The acts ended the burning of coal in homes and factories in most major towns and cities. In the place of coal came new cleaner oil and gas burners, and a big switch to electric power, provided from big power stations with tall chimneys sited out in the countryside.

In inner London, the average concentration of smoke in the air has fallen to 10 per cent of its level 30 years ago. As a result, buildings have stopped being blackened by soot. The reduction in sulphur dioxide, which is still produced from burning oil, has been to a more modest 30 per cent of past levels. In addition, those rural power stations have been causing an unquantified increase in the acidity of rainfall across the whole country.

The BRS identifies three main sources of damage to limestone and sandstone buildings. There is the natural slight acidity of rainfall, coupled with other natural processes. There is gaseous sulphur dioxide; and there is acid rain. Nobody is at all certain how to apportion blame.

Acid rain starts corroding stone immediately. Gaseous sulphur dioxide causes a hard surface skin to form on stone, which eventually flakes off. But, says the BRS, "the major cause of stone decay" in Britain is a result of both sulphur dioxide and acid rain. It is the formation of crystals of calcium sulphate (gypsum) in the pores of the stone.

Acid rain (dilute sulphuric acid) acts directly on calcium carbonate to produce gypsum. Sulphur dioxide does the same whenever it finds a wet surface. Laboratory tests have confirmed that the smaller the pores in the stone, the less resistant the stone is to weathering. This is because the decay is caused by the huge expansion stresses exerted inside the pores during crystallisation.

Gerald Gibbs, the specialist on acid rain at the Central Electricity Generating Board's research laboratories, said earlier this year: *"We need to find out if sulphur dioxide damage is still the principal cause of damage."* Recent work commissioned by the BRS from University College, London, suggests that it may not be.

A study at 25 sites around south-east England found that damage to samples of stone was greater when there was more sulphur dioxide in the atmosphere, but not by a lot. Concentrations of sulphur dioxide in urban areas were twice as high as in rural sites, but weathering was only a quarter greater in urban areas. There must be another important factor at work. The discovery that stone samples weathered twice as much when left out in the rain as when sheltered reinforced the notion that acid rain may be that extra element. Details of the research will be published shortly.

This finding spells trouble for the Central Electricity Generating Board (CEGB), which is responsible for most of the acid input to the air over Britain, but which insists that local air pollution, from central heating systems and the like, is the dominant cause of damage to buildings. Students under Professor Ronald Cook at University College have also studied erosion on St Paul's Cathedral.

One study looked at the chemistry of rain as it fell onto the building and how much it had changed as it left down drainpipes. An intrepid student, Alan Sharp, clambered onto the roof of the cathedral during the two thunderstorms that occurred during the study. He found extremely acid rainfall and what Cook calls "very, very high rates" of weathering of the stone on both occasions.

That unpublished finding has done much to spur Butlin at the BRS to set up his new monitoring sites to look for links between air pollution, acid rain and the rate of weathering of stone. His first three monitors will be at Bolsover castle in Derbyshire, Lincoln cathedral and Wells cathedral in Somerset.

Each site will have two small "carousels" holding 12 types of stone, whose weight and chemical condition will be monitored for two years. One carousel will be sheltered from rain; the other will be exposed to it.

Lincoln cathedral is described by Butlin as the epicentre of research into acid rain. The architects to the cathedral told the Commons' committee last year that *"the recent acceleration in the deterioration of the stonework, particularly that of the Romanesque and medieval statuary, is due to acid rain."* The cathedral stands in the pathway of plumes of

stone heritage

► pollution, being only a dozen kilometres east of three large power stations: West Burton, Cottam and High Marnham. Gibbs from the CEEB points out that levels of sulphur dioxide have fallen considerably in the town since 1960, despite the arrival since that date of two of the power stations.

One important confounding factor is what Gibbs calls the "memory effect". Once it has invaded a building, gypsum carries on doing damage. The crystals eat deep into the stone, growing all the time. This may continue for 30-50 years, says Gibbs.

It could be that current decay is an inescapable consequence of pollution several decades ago. Gibbs agrees that you cannot blame everything on the memory effect, however. *"Limestone that was never exposed to the old high levels of sulphur is weathered at a higher rate than expected at some locations. This has been reported at York Minster and St Paul's, and is a matter of much current speculation."* Gibbs suggests another explanation: *"It could be that oxides of nitrogen from car exhausts are becoming increasingly important."* Here his fellows tend to disagree.

Butlin says: *"There is never any nitrate to be found on the surface of weathered material."* Cook says: *"You don't get nitration."* Gibbs replies that if nitric acid was being formed on wet stone surfaces in the way that sulphuric acid is, it might weather the stone, generating nitrate that then "simply washes away", leaving no trace behind. Others find this long series of ifs unconvincing.

Butlin has just taken onto his staff a former student who has spent five years going up and down the scaffolding erected during repairs to the west front of Wells cathedral. Wells is Butlin's second site for detailed monitoring. Earlier this year, William

Waldegrave, a junior environment minister, spoke of the "magnificent" west front. He told parliament that it was *"the greatest collection of medieval sculpture north of the Alps. That stone has been terribly damaged."* Waldegrave blamed the continuing decay on past local pollution. But researchers believe the natural acidity of rainfall could have done the damage, and Butlin says that the question remains open.

Bolsover castle is the third arm of Butlin's study. It has been chosen because it is both severely damaged by air pollution and because it is near to a known strong source of pollution — the smokeless fuel works run by Coalite at Bolsover.

Butlin hopes that his three sites and the proliferation of monitoring points being set up by the coal board and the CEEB will soon be coordinated into a national program. The program would include proposed work on six sites, five of them modern, that Butlin will be doing for the Property Services Agency, which runs thousands of government buildings throughout the country. Another study that Butlin hopes will come under his umbrella is that being set up by the CEEB and the Cathedrals Advisory Commission for England.

A problem for Butlin is that his own work at the BRS is hamstrung by lack of cash. Take the simple monitoring for smoke and sulphur dioxide. The standard piece of equipment, developed years ago by the Warren Spring laboratory, costs 600 pounds. It is a simple and effective accumulator of pollution; but it is no good for spotting short-term episodes of more intense pollution — such as those spotted during thunderstorms above St Paul's. These may be crucial in the overall weathering picture, but the equipment required for continuous moni-

toring costs 10,000 pounds, says Butlin. He will buy one machine. But other better funded people, such as the CEEB, are likely to have one at every site.

Butlin is using money from the EEC to commission researchers to count important buildings, see what they are made of and come up with a national figure for the total exposed surface of buildings at risk from acid pollution.

Stone buildings are only part of the problem, however. Corrosion caused by air pollution has been implicated in the collapse of a steel road bridge in West Virginia in the US in 1967, which killed 46 people. Last year, the UN reported that acid rain was having a "disastrous effect" on Europe's medieval stained glass. Conservation is costing West Germany almost 10 million pounds per year.

Butlin's study, which will be reported by September 1987, focuses on damage to buildings. Surprisingly, however, the most detailed study of acid damage to structures in Britain relates to the corrosion of steel galvanized with zinc. It was carried out by the CEEB during the 1970s after its own scientists reported that *"relatively high corrosion rates were measured in apparently rural surroundings."* Zinc is corroded by rain with a pH value of less than 5.

The result was the Shaw Corrosion Maps. These show the extent of corrosion of galvanized cans strung to pylons the length of England and Wales. The maps are used as the basis for payments made by the government to farmers as compensation for the corrosion of their galvanized corrugated iron and chain-link fences.

Fred Pearce

New Scientist, 26 Sept. 1985

Trend has not been halted

Last year a nationwide survey of forest damage was again carried out in the Federal Republic, using the same procedure as in 1984. The state of more than 200,000 trees was recorded at some 7,300 sampling points.

It appeared from this last survey that the damage was not increasing at the same rapid rate as before. Whereas damage could be seen in 34 per cent of the total forest area in 1983, rising to 50 per cent in 1984, by 1985 the area effected by damage had only increased by a further 2 per cent (see Table 1). The trees on 3.8 million hectares, of a total forest area of 7.36 million, were found to be either damaged or showing reduced vitality.

It cannot be said however that the trend has been halted. The increase of just under 2 per cent refers to areas with moderate to severe damage. If one considers severe damage alone (Stages 3 and 4), the area affected increased by 50,000 hectares or 0.7 per cent, which is of particular importance. It should also be noted that there was an overall increase in damage despite favourable weather conditions during the 1984 and 1985 vegetation periods.

Although damage was found to have decreased in some areas, the general health of the following species had continued to deteriorate: Spruce (*Picea abies*), fir (*Abies alba*), beech (*Fagus sylvatica*), and oak (*Quercus robur*). See Table 2. Worst affected were oaks, of which a further 12 per cent of the total growth area was now showing damage. Pines on the other hand (*Pinus sylvestris*) showed a slight improvement, with a decline of 1.4 per cent in the area affected. It is also remarkable that in the case of pines moderate damage (Stage 2) decreased by 3.9 per cent of the total, and there was also a shift towards slight damage (Stage 1). This was particularly so in some parts of Bavaria. Silver fir on the other hand appears to be in danger of extinc-

tion, since 87 per cent of its growth area is in damage stages 1 to 4, and 67 per cent in stages 2 to 4. As regards beech and oak, the percentage of area showing damage is now approaching that for spruce and pine.

It may be said generally, as regards all species, that more mature trees are weakened to a much greater extent than the younger ones. Whereas trees 60 years old show symptoms of damage on 73 per cent of their growth area, only 35 per cent of those under 60 do so. The severity of the damage is also much greater in the case of older trees. Any regeneration that could be seen was found in younger stands.

There continues to be a marked difference between the north and south parts of the country. As

much as 61 per cent of the total damaged area is in the two southern Länder of Bavaria and Baden-Württemberg. There 61 and 66 per cent of the local forest area is damaged (Stages 1 to 4). Particularly serious is the high percentage of area with moderate to severe damage (Stages 2 to 4), which is 27 to 28 per cent.

Forest damage in the city states, although high, is of less importance nationally, since they only have small areas of forest. The only Land where a decrease in the damage could be observed was North Rhine-Westphalia.

As a result of the cool and humid weather, there was less infestation by insects and fungi than in 1984. It should also be borne in mind that the weather conditions were favourable for the growth of trees during each of the vegetation periods in the ➤

Table 1.
Area of damaged forest in 1984 and 1985

	1983	1984	1985	Changes 83-84	Changes 84-85
Damage state	In per cent of the forest area				
1					
Slightly damaged	24.7	32.9	32.7	8.2	-0.2
2					
Moderately damaged	8.7	15.8	17.0	7.1	1.2
3 + 4					
Severely damaged and dead	1.0	1.5	2.2	0.5	0.7
2 + 3 + 4	9.7	17.3	19.2	7.6	1.9
1 + 2 + 3 + 4	34.4	50.2	51.9	15.8	1.7

Table 2.
Extent to which the various tree species were found to be damaged

Tree species	Damage stages 2 + 3 + 4			Damage stages 1 + 2 + 3 + 4		
	1984	1985	Changes 84-85	1984	1985	Changes 84-85
In per cent of area covered by the individual species						
Spruce	20.5	23.9	3.4	51.2	52.2	1.0
Pine	20.9	17.0	-3.9	58.9	57.5	-1.4
Fir	58.2	66.7	8.5	87.2	87.3	0.1
Beech	11.4	14.5	3.1	50.3	54.6	4.3
Oak	8.9	16.4	7.5	43.4	55.3	11.9
Other species	7.7	7.9	0.2	31.3	30.6	-0.7
Total	17.3	19.2	1.9	50.2	51.9	1.7

How the survey is done

►last two years. Moreover the survey showed a recovery of slightly damaged trees, and sometimes even of severely damaged ones.

A continuously high level of damage leads to a structural weakening of the stands. Trees on the fringes and in other parts of the forest that are especially exposed to atmospheric influences often shed their foliage and so cease to exercise a protective power — thus exposing the other trees to the effects of air pollution and especially of storms and sunshine on the lower parts of the crown and trunk, which effects may be severe. The strong growths jutting out over the canopy also get damaged, with a consequent weakening of the stand's stability when they die and have to be felled prematurely.

Forest owners are now facing severe problems in their efforts to maintain mixed stands, which would be silviculturally and ecologically valuable. Deciduous trees, which were thought to be more resistant, are now showing the same degree of damage as the coniferous species. It is not possible to substitute other species for beech and oak, or for that matter even spruce, all of which help to stabilize the forests. Thus essential elements of the silvicultural concept are endangered.

The aim of silvicultural measures will in general have to be to mitigate as far as possible the process of damage and to improve the resistance of the stands. It will be increasingly necessary to promote natural regeneration, as well as both replanting and underplanting.

The article above is based on the report of the 1985 Forest Damage Survey published by the Federal Ministry of Food, Agriculture and Forestry, Postfach 140270, D-5300 Bonn 1, FRG.

Using the same sampling procedure as in 1984 has made it possible to compare the aggregate results as well as those for the various regions. Four of the Länder — Baden-Württemberg, Bavaria, North Rhine-Westphalia, and the Rhineland-Palatinate — had already used the procedure in 1983.

The sampling procedure used in the survey was adopted on account of mathematical and statistical reliability. The period from mid-July to early September was selected as being the most favourable time for recording the damage to all species of tree. As previously, the damage was classified according to the following criteria: a) the relative loss, and b) the degree of yellowing, of needles and leaves.

The following are the essential standards agreed upon by the Länder as the basis for the survey.

1. In principle samples are taken at the intersections of a 4 x 4 kilometre grid aligned on the Gauss-Krüger map coordinates. If necessary for making special assessments, or for representative area sampling, the mesh of the grid can be reduced, say, to 4 x 2, 2 x 2, or 1 x 1 kilometres.
2. Starting from the intersections of the map coordinates, a certain number of sample trees are selected at each sampling point.
3. The condition of each sample tree is recorded separately. Ocular assessment of leaf or needle loss is made in steps of 5 or 10 per cent, and yellowing is recorded in three stages.
4. The sample trees are first classified as follows according to needle or leaf loss.

If a tree also shows moderate or strong yellowing, it moved down into the next classification. Thus a tree that would be placed in Stage 2 on account of needle or leaf loss, but also shows 26 to 60 per cent yellowing (Stage 2 for yellowing), is accounted as having Stage 3 damage.

The area of damage for any one species is determined by taking into consideration the spread of the sample trees. Damage from known causes that can be seen during ocular assessment, for instance from bark beetles or other insects and fungi, is recorded separately, and the amount put down against the damage stage for making special diagnoses.

Experience has shown that it is not always easy to distinguish damage symptoms, especially in the case of slightly damaged trees (those in Stage 1). As is shown by statistics, it is precisely in this group that marked changes are liable to take place. The last survey has shown, for instance, that slightly damaged trees may regenerate if the stress factors cease or the weather becomes favourable. Often however Stage 1 only marks the first steps to Stages 2 and 3. It must therefore be regarded as a warning stage, serving a useful purpose as an indicator.

The aim of the survey is to reveal the general state of the forests. It is assumed that the damage found at the sampling points will be representative for the surrounding area. Actually the situation may be rather worse than it would seem from the survey, since trees that have had to be felled prematurely will of course not show up in Stage 4.

Damage stage	Needle/leaf loss
0 Without damage symptoms	Up to 10 %
1 Slightly damaged	11 to 25 %
2 Moderately damaged	26 to 60 %
3 Severely damaged	More than 60 %
4 Dead	—

Organizations urge action

In November the four largest environmentalist organizations in West Germany — the BUND, BBU, DNR and DBV — issued a protest against the official view of the seriousness of forest damage, and listed the measures they considered necessary for limiting it.

They maintain that the authorities are always trying to make out that the situation is less serious than it actually is. On the contrary, they say, it is now in general most alarming, and is even on the verge of a catastrophe in the Alpine regions.

The organizations point out that the following facts can be read even from official data:

- In mountain areas every other tree is either severely damaged or dead.
- There is a marked increase in the number of deciduous trees that are showing damage. In the case of oaks, the damage is increasing at an explosive rate.
- In spite of the best possible weather conditions during the last two growing seasons, the overall damage has increased from 36 per cent in 1983 to 50 per cent in 1984 and 52 per cent in 1985.
- Especially serious is the fact that the damage is becoming generally more severe (more trees are being classified as being highly damaged).

In view of these facts the organizations urge the government to take drastic measures in order to check the progress of the damage. They demand:

- The imposition of a speed limit of 100 km per hour on the autobahns, and 80 km per hour on other non-urban highways.
- Switching freight from the roads to the railways.
- Extending mass passenger transport and introducing low "environmental" fares.
- Lowering the limits for SO₂ and NO_x in the so-called TA air.
- Closing down the worst emitters among the older power plants.

- Imposing emission fines of 4,000 D-marks per ton of SO₂ and 3,000 DM per ton of NO_x.

They also protest against the airy assumption of the Technischer Überwachungsverein that there will be a marked reduction in the emission of pollutants even without speed limits. The four organizations refer to the latest EEC study of the effect of limiting speeds to 100/80 km per hour throughout Europe. They mention

- A reduction of nitrogen-oxide emissions by 300,000 tons a year.
- Much fewer fatal accidents and accidents resulting in severe injury.
- A general improvement in road safety.
- A fuel saving of at least 3 per cent.

The organizations also emphasize that there is a notable willingness on the part of the German people to accept effective measures for controlling forest damage, and urge the government to respect this.

In conclusion they announce their intention of keeping up the pressure on the responsible politicians.

The full names of the four organizations are

Bund für Umwelt und Naturschutz Deutschland
Bundesverband Bürgerinitiativen Umweltschutz
Deutscher Bund für Vogelschutz
Deutscher Naturschutzring Bundesverband für Umweltschutz

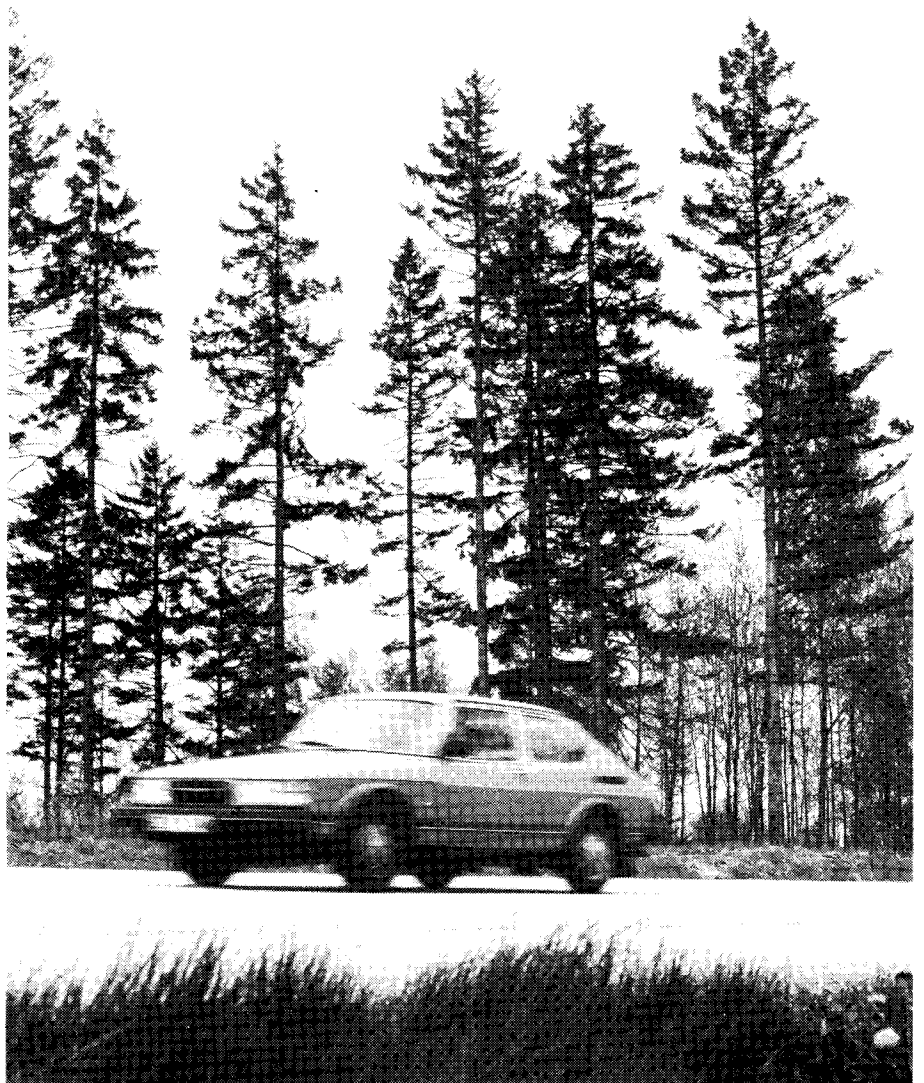
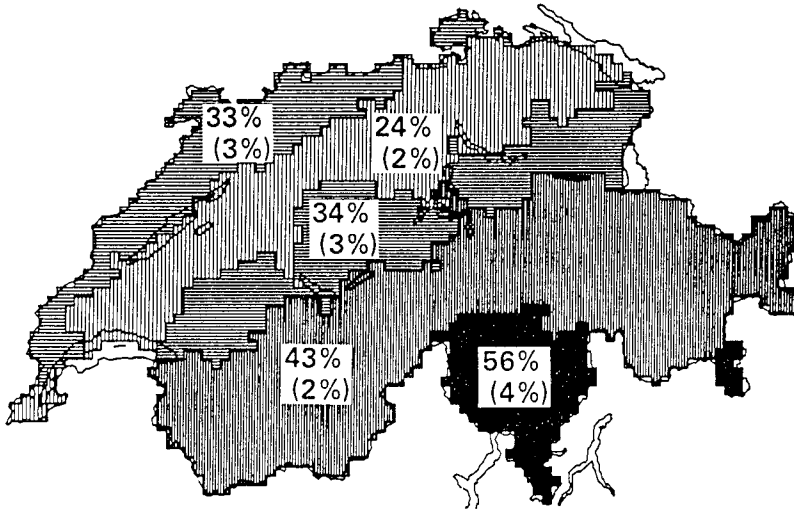


Photo: Kjell-Arne Larsson

Every third tree damaged

Sanasilva-Waldschadeninventur 1985



Percentage of damaged trees in the Jura, Mittelland, Voralpen, Alpen, and Alpensüdseite regions of Switzerland (with margin of error in parenthesis).

Last summer the Swiss forests were again assessed for damage, with the result that 36 per cent of the trees were found to be affected. This was 2 per cent more than in 1984, but as that is no more than the margin of error, it is assumed that the overall damage is about the same as it was then. There were however local variations from the previous year.

Twenty-eight per cent of the trees were slightly damaged, 6 per cent moderately, and 2 per cent severely damaged or dead. There was no change as regards conifers, of which 37 per cent were found to be damaged in both surveys. The number of deciduous trees damaged had increased to 27 per cent; but here again the difference of 2 per cent can be considered statistically negligible.

The survey is done by the same method as in West Germany, and the damage is also classified in the same way as there. In the 1985 survey of the Swiss forests the state of over

25,000 trees was noted at some 2 500 sampling points. Of the various species pine trees were worst affected (63 per cent), followed by silver fir (38 per cent), oak (37 per cent), spruce (34 per cent), larch (33 per cent), beech (29 per cent), maple (14 per cent), and ash (12 per cent).

Aerial infrared photography was used to supplement the ocular observations. This showed that

- The condition of the deciduous trees had deteriorated in many places.
- Middle aged and mature trees were relatively badly damaged.
- There could be distinct differences in damage between the individual trees in a stand.

These differences in trees growing alongside each other may be explained by the probability of some individuals having greater resistance to stress than their neighbours.

It may be expected, in the light of epidemiological experience, that trees will more easily fall victim to disease and attack by

insects and fungi if they have previously become weakened. Unusually many kinds of infectious disease made their appearance in the Swiss forests in 1984 and 1985, especially at higher altitudes. Types of disease were noted in some places where they had previously been unknown. It is however still considered too early to put the blame for the increase of infectious diseases definitely on the generally worsened condition of the forest that can be attributed to air pollution.

Forestry practices may also, according to the report, affect the survey results. In order to prevent a runaway development of secondary damage through insect and fungus attacks, forest owners must quickly fell and remove severely weakened and dead trees. With such trees out of the picture, the state of the forests may appear better than it actually is.

The report also calls attention to the fact that the mountain regions are the worst affected. There 42 per cent of the forest is damaged, as against 27 per cent in the lower-lying parts of the country. The mountain forests are vitally important in that they provide protection against avalanches, soil erosion, and flooding. Since they are inherently unstable, even the slightest damage may mean loss of this important function.

Like all others with extensive forests, the Swiss emphasize that the only real cure for forest damage will be to reduce the emission of pollutants into the atmosphere. In the meantime all possible means must be used to hold the damage in check — by taking steps to stop disease and the depredations of insects and fungi, as well as by replanting.

The report, *Ergebnisse der Sanasilva-Waldschadeninventur*, is a publication of the Bundesamt für Forstwesen und Landschaftsschutz, Postfach 1987, CH-3001 Bern, Switzerland.

Alternative to Missing Links

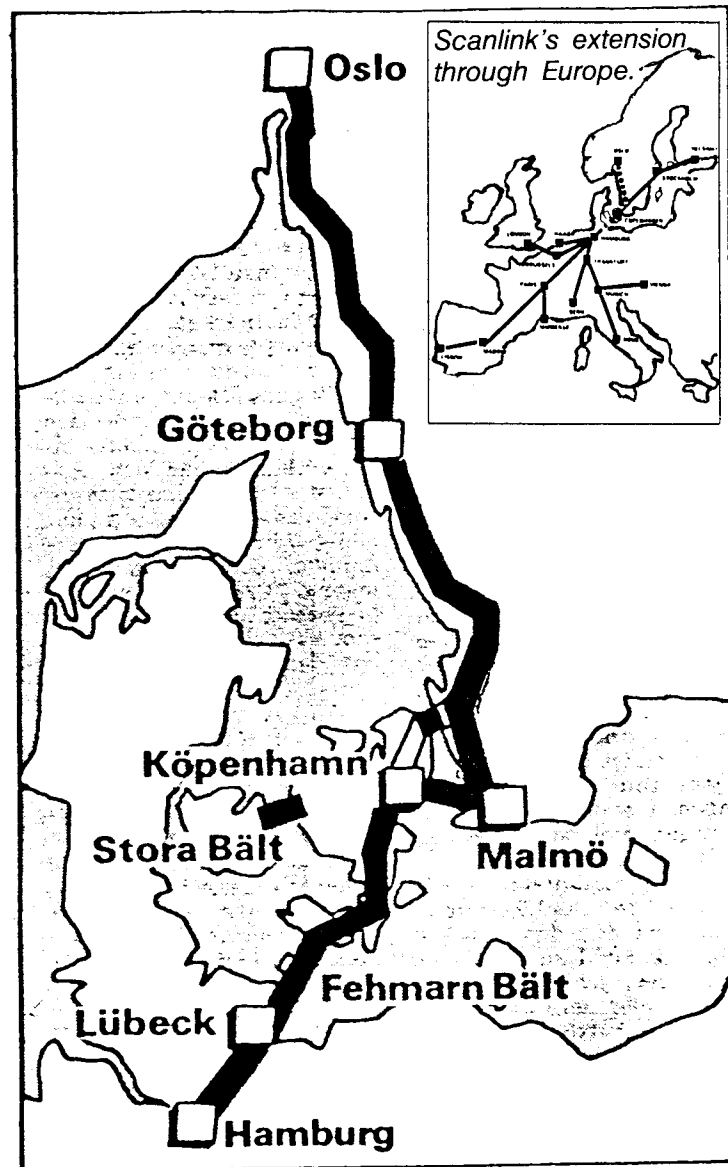
A group of leading European businessmen, styling themselves the Roundtable of European Industrialists, are evolving plans which, if carried out, would mean an enormous increase in road traffic. The general proposal, which goes under the name of Missing Links, was described in Acid News 4/85.

If the threat to the forests is to be warded off, the emissions of sulphur and nitrogen oxides — and also hydrocarbons — will, it is said, have to be reduced by at least 75 per cent. See Acid News 3/85.

Even if all new petrol-driven cars were fitted with catalytic converters, the reductions in emissions of nitrogen oxides and hydrocarbons from road traffic would not be enough. Naturally we should insist that car manufacturers use the best available technology on their vehicles, but we must also insist on lower speed limits and an overall reduction of road traffic — both passenger and freight carrying.

Just as the injurious effects of vehicle exhausts on trees and human health are becoming ever more widely recognized, plans are being put forward for increasing road traffic. The aim is to make European industry in one way more competitive by keeping stockholding down as low as possible, and relying on efficient subcontractors to supply components just when they are needed. No sooner. The real stockroom would be moving in a steady stream along the highways.

If they were to be carried out, these plans would have dire consequences not only for the atmospheric environment but also for our way of life. The businessmen seem bent on starting a new social upheaval in the style of the sixties and seventies — when a wave of urbanization brought serious problems. Draining of rural areas took place to the accompaniment of an all-too-hasty expansion of the large cities, and consequently a greatly increased need for transportation.



Having seen the result of all that, we cannot now acquiesce in a repetition on an even larger scale. We must arouse opposition to Missing Links and any other plans for increasing the volume of road traffic. Let us instead create Vital Links between all peoples in order to save our environment.

This is what was propounded in a manifesto with that title, which after preliminary adoption at a seminar of the Roundtable of European Environmentalists at Ljungskile, W. Sweden, last August was fine-tuned by correspondence during the autumn.

To quote from this Vital Links

document: "We of the Roundtable of European Environmentalists welcome contact between nations and individuals. We see no need however for ever more transporting of goods and people. Rather should we like to see an increase in cultural exchanges between popular movements in various countries — between people who want to develop their neighbourhoods, cities, and regions on natural, humanistic, and cultural lines. Such people have much useful experience to share, both within Europe and between the rich and poor of this world. Here may be found mutual support for resistance to all forms of international oppression." ➤



Drawing: Burki, ©24 Heures

operation between the Scandinavian countries.

There is a tendency to divide up the imposing Missing Link project into small segments, so as to make it difficult to see what is really going on. While it may seem praiseworthy to try to promote Scandinavian cooperation, it is evident — if one considers the whole effect of the Missing Link project — that it will be at the expense of human values and of the environment, and may even exacerbate existing tensions among people and nations.

Perhaps the danger does not come so much from the actions of industrialists as from a feeling of helplessness in the face of an impending catastrophe. This feeling needs to be dispersed, as it can be when it is shown that inherently harmful projects can be stopped through collaboration among the peoples.

Marie Arehag
Chairman of the Environmental
Federation
Member of the board of
Motlänken

Information, please

We should like to know whether the Channel Tunnel between England and France is being planned as a part of a larger transportation network. We should also like to have details of the opposition to the project which we have heard exists.

Please send any reports you can find on this subject to:

Motlänken
Box 7048
S-402 31 Göteborg
Sweden

The Vital Links document can be obtained by writing to:

Miljöförbundet
Box 7048
S-402 31 Göteborg
Sweden

► In Sweden *Motlänken* (Anti-Link) has been formed to canalize opposition to the Scandinavian part of the Missing Link project. Among the founders are organizations representing environmental, conservationist, youth, parochial, outdoor sports, and even trade union interests. These last are working up support among stevedores and ferry personell.

A start has been made by organizing opposition to two parts of the proposed Scandinavian Link projekt. One is a 40-kilometre stretch of motorway just north of Gothenburg, and the other a bridge between Sweden

and Denmark. An initial success was recorded at the end of last year when the Swedish government announced that it was prepared to reconsider the motorway project.

The Scandinavian prime ministers on the other hand took a favourable view of the general ScanLink idea when it was presented to them by P G Gyllenhammar at a meeting in Helsinki on December 18. Gyllenhammar, the head of the Volvo company, is not only chairman of the Roundtable of European Industrialists, but also of a businessmen's committee seeking to bring about greater economic co-

Socialist state in lignite trap

The German Democratic Republic is the "world record holder" as regards emissions of sulphur dioxide, whether measured on a per capita basis or per square kilometre. According to a recent investigation by the German Institute for Economic Research, in Berlin-West, 4.7 million tons of SO₂ were emitted from sources within the DDR in 1982. Since the burning of brown coal, which has an especially high sulphur content, has subsequently increased, and no substantial measures for desulphurization have been taken, the emission level must now be distinctly more than 5 million tons. Calculated per head of population, this means that DDR emits more than five times the amount of the Federal Republic.

The picture is reversed when one considers the emissions of nitrogen. From the DDR they were no more than 0.4 million tons in 1982 (according to later assessments 0.8 million), whereas those from the Federal Republic amounted to 3.1 million tons. In the case of the DDR the emissions of sulphur dioxide are thus of greater interest.

The main cause of the extremely high emissions of sulphur dioxide in the DDR is, from the point of view of the environment, the unfavourable pattern of energy production. The only fuel available to any large extent in the DDR, and so not requiring any great outlay of foreign currency, is brown coal. The sulphur content of such coal may, depending on the locality, be as much as 4 per cent, which is extremely high.

An attempt was made in the seventies to go over to "cleaner" fuels, but after the second great rise in the prices of oil in 1979-80, and even more so after the contracted supplies of ordinary coal from Poland had failed to

arrive, from the beginning of the eighties the DDR had to revert to an ever greater extent to the use of brown coal.

For years to come the DDR will have no real alternative but to continue using this fuel — for economic reasons (lack of foreign currency) and political (need for independence in regard to fuel supplies). The only way to reduce emissions will therefore be to equip old power plants with scrubbers, build new plants that will be less polluting, and close down the worst of the old ones.

In 1982 some 275,000,000 tons of brown coal were used for the production of primary energy. Today the figure is over 300,000,000 tons. Mining, which is mostly opencast (the ecological consequences of which will not be discussed here), is concentrated in the Lausitz (southeastern DDR) and Bitterfeld-Leipzig regions (in the south).

Power production is also largely concentrated in these regions, where many of the plants have a capacity exceeding 1,000 MW. The largest power plant in the DDR (and one of the largest in Europe) is that at Boxberg in the Lausitz, with a capacity of 3,520 MW. The discharges of SO₂ from this plant amount to about 500,000 tons a year, and are thus larger than all the emissions from Switzerland (120,000 tons), Norway (150,000), and Ireland (170,000) taken together (ECE figures).

Like most of the socialist states in central and eastern Europe, the DDR sticks unswervingly to a "high smokestack" policy. Since its territory is relatively small, and many of the power plants lie close to the country's borders, this policy is in a way "successful." Most affected by it are the DDR's eastern and southeastern neighbours (Poland and Czechoslovakia), although naturally the

Federal Republic, and Berlin-West in particular, are also sufferers.

But this policy also has serious consequences for the DDR itself. Large areas of damaged forest may be found in the south, adjoining similar areas in West Germany (Bavaria), Czechoslovakia, and Poland. With a high level of immissions — despite the high smokestacks — in the southern and southeastern parts of the country, the population there also suffers from polluted air.

The economic situation in the DDR, as well as in its energy policy, will hardly allow any marked reduction of emissions during the next few years. Although there is a growing opinion in favour of increased efforts to improve matters, it is unlikely that the necessary finance can be found within the DDR.

Partial solutions may eventually be found within the framework of some kind of cooperation between the DDR and the Federal Republic. An environmental agreement may even be made this year between the two states. Since the FRG would like to see pollution reduced precisely in the border regions, and especially in Berlin-West, it may be possible to find solutions of a similar type to those applied for water supplies, where in some cases the Federal Republic financed treatment plants in the DDR. This came about because the DDR will not accept the principle that "the polluter pays", as most other countries do — insisting instead that those who get the most benefit should pay.

In any case, such forms of cooperation will far from suffice to solve all the pressing problems of the environment.

Helmut Schreiber
International Institute for
Environment and Society
Berlin-West

Call for emission controls

After receiving a 120-page submission on acid rain from the Irish environmental group HOPE, an Oireachtas (Parliamentary) Joint Committee has produced a report calling for proper emission controls at Moneypoint, the Irish Electricity Supply Board's (ESB) new 900-megawatt coalburning power station in Co. Clare on the west coast. The report was adopted within a matter of days of the plant's first 300-megawatt unit starting up.

The report is a major embarrassment to the government, which has steadfastly adhered to the view that as a small country Ireland should be exempted from the proposed EEC legislation that is designed to curb acid rain. Prepared for the Joint Committee on the Secondary Legislation of the European Communities by a sub-committee chaired by Senator Mary Robinson, it has adopted most of the HOPE recommendations and is arguably the most environmentally conscious report to have come out of a Joint Committee in Ireland.

Turnabout

This represents a distinct turnabout for the Committee, which in its previous report on the subject (March 1984) described itself as being *"impressed by the steps being taken by the ESB to disperse pollutants through tall chimney stacks,"* urging that *"a cautious approach be taken to imposing stringent control procedures on industry and the ESB in particular while the effectiveness of such control is not established."*

That attitude contrasts markedly with the tone of the present report, in which the Joint Committee urges that, with reference to Moneypoint, any aggravation of the serious transboundary problem would be unacceptable; that the case for anti-pollution

measures should not be seen mainly in economic terms; and that while Ireland has one of the cleanest atmospheres in Europe, this is a situation we should seek to defend.

Compromise rejected

The committee received submissions from the ESB, An Foras Forbartha, and various government departments, all of which argued that Ireland should be exempt from EEC measures to limit emissions of the acid rain pollutants — sulphur dioxide and nitrogen oxides — from power stations, in addition to those from HOPE, An Taisce, and the Irish Clean Air Group.

The committee's report rejects as inadequate a compromise proposal put forward by An Taisce calling for 80 per cent desulphurization (an inferior but cheaper degree of pollution control) at Moneypoint alone and exemption for the other power stations, and recommends that the case of Tarbert power station also be examined closely in the near future.

HOPE has argued that in order to comply with the spirit of the EEC proposals, emission controls should at least be installed at Moneypoint, Tarbert and Poolbeg power stations. The feasibility of converting the latter two stations to run on cheap coal is currently being assessed by the ESB, and while coal does not necessarily produce more sulphur dioxide per generated kilowatt than heavy fuel oil, the resulting greater use of these stations (because of the price differential) could entail a much heavier pollution burden.

Growing public concern

It remains to be seen how the government will react to the Oireachtas report: governments

have ignored Joint Committees before now, and this government has been under tremendous pressure on the issue from the ESB and industrial interests. Speculation aside, the report represents a major step in the right direction, and has given a new impetus to HOPE's campaign against acid rain. Coming from a prestigious committee, it has lent authority to a growing tide of public concern at Moneypoint's pollution, a tide which eventually no government will be able to resist.

Presenting the case

On October 10th, HOPE representatives were invited to attend a meeting of a sub-committee of the Oireachtas Joint Committee on the Secondary Legislation of the European Communities to answer questions and present additional evidence on HOPE's report "Acid Rain: Ireland" which was prepared for that committee.

HOPE's position came under critical attack from an An Foras Forbartha scientist, who argued that there was no cause for concern and that acid deposition in Ireland was within safe levels. HOPE responded by pointing out the importance of prevention of damage before it occurs, the uncertainties inherent in attempting to establish "safe" levels, and the dangers of a gradual, accumulative deterioration of the environment.

Copies of the report are available at 7.50 Irish pounds plus postage (1.00 pound inland, 2.50 overseas), from HOPE, Harbour View, Co. Cork, Ireland.

Scientific Case for Controls

The National Clean Air Coalition in the US has issued the following memorandum to members of Congress, summarizing recent scientific evidence which favours the implementation of acid rain controls.

Several studies issued in recent months add urgency to the call for controls on the pollution that causes acid rain. The reports provide compelling new evidence of the nature of the acid rain problem and the extent and severity of the dangers it is causing to natural and manmade resources.

1. Materials Damage Assessment: A draft study prepared by EPA, Brookhaven National Laboratory and the Army Corps of Engineers suggests that an acid rain control program might pay for itself in reduced damage to building materials alone. It also shows that the damage is substantial in the Midwest. The study gave a preliminary mid-point estimate of 3.5 billion dollars for damage caused by acid rain to buildings and estimated that these damages could run as high as 6 billion dollars per year.

According to the study, damages from regional pollution represent a large fraction of the total damages. The study authors caution that the estimates are probably biased on the low side because they do not take into account the cost of substituting more pollutant-resistant materials, aesthetic losses, and damages to materials such as automobile paints, roofing composites, and concrete. The study also shows that damages to statues, historical monuments, and buildings are substantial, though these costs are not included in the city-by-city totals.

2. Experimental Lake Acidification Study: In June, *Science* magazine published a paper by Dr David Schindler et al. reporting on the results of an experimental lakes acidification study. Schind-

ler was the Chairman of the National Academy of Sciences committee that produced the 1981 landmark study of acid rain. In this article, Schindler and his colleagues reported on the different stages of biological damage that occur with the destruction of an ecosystem by acidification. At pH 5.93, a higher pH level associated with a much lower level of acidity than was earlier believed to cause damage, key organisms in the food chain of the lake trout such as minnows and shrimp failed to reproduce. At pH 5.64, thick mats of filamentous algae overgrew the trout's spawning grounds. By pH 5.59, the minnows had disappeared completely, crayfish egg masses became infested with a fungal parasite, and lake trout failed to rear any young to maturity. The ecosystem was collapsing. The authors concluded:

"Some of the changes occurred much earlier in the acidification process (that is, at higher pH) than is commonly believed to cause ecosystem degradation. This suggests that early ecological damage from lake acidification may be more extensive than was previously believed, a result that should be of vital interest to agencies regulating the emission of acid precursors."

3. Eastern Lakes Study: In August, EPA (US Environmental Protection Agency) released the preliminary results of its eastern lakes survey. While the EPA press office attempted to downplay the significance of the survey, the results showed some startling new signs of damage. In New England, the upper Midwest, Appalachia and Florida, 60 per cent, 41 per cent, 36 per cent and 54 per cent of the lakes respectively are highly sensitive to acid rain damage. More than 4,000 lakes are at the crisis stage — they have practically no buffering capacity left to withstand the onslaught of acids from the

sky. EPA estimated that close to a thousand lakes in the East have already succumbed to acid rain. A surprisingly high number of acidified lakes were found in Florida. The majority of these Florida lakes are "clear water" lakes that have no sources of natural organic acids.

EPA's estimates are low for two reasons. First, the survey did not include lakes smaller than four acres in size. These small water bodies are known to be particularly vulnerable to acid rain damage and they number in the thousands. Second, the EPA survey used pH 5.0 as the cutoff to indicate biological damage, while the Schindler study cited above clearly found serious effects at much higher pH levels.

4. Acid Deposition, Smelter Emissions and the Linearity Issue in the Western United States: A study by the Environmental Defense Fund published in *Science* magazine in August provides direct evidence of the proportionate relationship between emissions of acid rain-causing pollution and deposition of acids downwind. The researchers tracked changes in western smelter emissions of sulphur dioxide (due to fluctuations in copper production) and correlated them with changes in the sulphate concentration of rainfall at remote sites. The study confirmed a linear, or 1:1 relationship between emissions and deposition, and demonstrated the long distance transport of sulphur compounds over distances exceeding 1,000 kilometres (600 miles). The study validates the adage that "what goes up must come down" and demonstrates that pollution reductions will result in directly proportionate reductions in acid rain.

Richard E. Ayeres
National Clean Air Coalition

Acid Rain News, Dec 1985

Virus theory discounted

The theory that a virus is responsible for the decline of forests has been firmly discounted by German forest experts. The "virus theory" has had wide coverage in the press, creating the impression that pollution is not responsible for the devastation of huge areas of woodland.

But for their "Note on the causes of forest decline", Friends of the Earth Ltd polled numerous authoritative German researchers in government agencies, independent laboratories, and universities, and found that none believe that there is any evidence to support the virus theory.

Professor Peter Schütt of Munich University, author of "So stirbt der Wald" and many scientific papers on forest decline mechanisms, writes: *"Waldsterben (forest decline) cannot be explained without the influence of air pollution, the role of virus as a primary cause is neither proven nor probable."*

So far as can be established, the story of the virus theory is as

follows. In 1983 Professor Otto Kandler, a botanist at Munich Technical University, suggested that a virus might be involved in forest dieback. In 1985, another botanist, Professor Burkhard Frenzel, reiterated the virus claim. Press agencies and newspapers picked up his suggestion that a virus was responsible, reporting that a *"tiny killer stalks West German forests,"* and saying *"we may have heard the last of the acid rain scare. The culprit is not power station emissions but a virus."*

In fact, neither Kandler nor Frenzel's studies were reported in scientific journals. What was also unclear initially was that both Kandler and Frenzel failed to identify or isolate a virus. They referred instead to the appearance of cells in trees affected by Waldsterben symptoms in Germany and likened them to an appearance of cells in a diseased pine from which a virus was isolated in 1961.

The following facts argue against the virus theory:

- No virus has been identified or isolated.
- Lack of vector to spread the virus.
- The simultaneous decline of trees in North America and much of Europe.
- The number of species affected. Tree viruses are highly species-specific and no one virus is known to affect such a broad range of species.
- Experimental infection has failed to produce Waldsterben with known isolates of viruses.

The involvement of one or more viruses in forest decline may be established in the future, but at present there is no justification in the claim that *"a virus and not pollution is responsible."*

WISE News Communiqué, No 240, 1985

For more information, contact Adam Markham, FoE Ltd, 377 City Road, London, England EC1V 1NA.

CANADA

Waiting may be dangerous

The economic branch of the Canadian Forestry Service has released a survey by 39 American and Canadian scientists which concludes that controls on long-range transport of air pollutants will have to be imposed in order to prevent damage to Canadian forests.

The survey notes that while scientific evidence linking transported pollution to forest decline is scant and uncertain, waiting for the extensive research that is needed to provide definite proof of causal affect may be "dangerous".

The survey's major conclusions are:

- Significant forest productivity declines may already be underway in both the Atlantic and Quebec/Ontario regions.
- In the absence of public policy measures to reduce future increases in pollution levels, forest productivity declines are expected to intensify in eastern Canada and to spread to western Canada.
- If public pollution control policies maintain pollution at present levels into the future, substantial productivity declines may still occur.

- If public policies were to reduce pollution levels by 50 per cent over the next decade no future decline in productivity is to be expected in any region of Canada.

The survey, entitled "The Potential Impact of the Long Range Transport of Air Pollutants on Canadian Forests", is available from:

Economics Branch
Canadian Forestry Service
Place Vincent Massey, 19th Fl.
Ottawa, Ontario
K1A 1G5

Acid Rain News, Dec 1985

Literature

Macroeconomic Consequences of a Policy to Save Energy and to Abate Acid Rain Emissions in the Netherlands (1985)

19 pages. By A Nentjes, G Klaassen. Published by Landelijk Milieu Overlag, Donkerstraat 17, 3511 KB Utrecht, Netherlands.

The damage to agriculture, forests and other vegetation, the cultural heritage and the drinking water supply, caused by acid rain, is now estimated to be between 150 and 500 million guilders per year. The damage to health caused by SO₂ has a considerable margin of uncertainty, estimates varying between 100 and 2500 million guilders per year. A "guestimate" now puts the total cost of damage at 1500 million guilders per year in the Netherlands. This is about 0.5 per cent of the net national income of 1984. To this must be added the damage to welfare which cannot be expressed in terms of money.

The report evaluates the macroeconomic effects of an investment program to abate emissions, taking into consideration economic variables such as employment, income, balance of government budget etc. The investment program is based on a maximum of economically worthwhile energy-saving investments, such as insulation of buildings, cogeneration of power and heat, energy saving equipment, etc. The aim is a reduction of the emissions of SO₂ and NO_x by 50 per cent between 1986 and 1990.

Acid Rain (1985)

48 pages. By Philip Neal. An educational book, covering all the aspects of the acid rain problem. Published by Dryad Press, 4 Fitzhardinge Street, London, England W1H OAH. Price: 6.50 pounds.

Wenn Gewässer sauer werden (1985)

127 pages. C. Steinberg and B. Lenhart, BLV Verlagsgesellschaft, München, FRG. Describes the problem of acid rain and acidification of soil, ground water and surface water.

Draft — Materials Effects in the 1985 Assessment of Acid Deposition (1985)

The report finds among other things that a) the deposition of acidic pollutants accelerates material loss; b) deposition patterns of SO₂ and precipitation acidity in the northeast are such that local pollution sources no longer generally dominate; c) total damage in the northeast amounts to roughly 5 billion dollars, of which no more than two thirds is attributed to nonlocal sources (further than 50 kilometres away); d) damage to paint accounted for 78 per cent of the total. Available from D A Benett, ADAS, U S EPA (RD-676), Washington, D C 20460, USA.

Tut etwas Mutiges! (1985)

30 pages. Published by INFRAS, Dreikönigstrasse 51, CH-8002 Zürich, Switzerland. A joint report by four environmental organizations, setting forth the measures they consider necessary for reducing emissions of air pollutants in Switzerland.

Aktionsprogramm Rettet den Wald (1985)

40 pages. Free of charge from the publisher: Der Bundesminister des Innern, Graurheindorfer Strasse 198, D-5300 Bonn, FRG.

Veranderingen in de paddestoelenflora (1985)

102 pages. Ed. Eef Arnolds. Published by Koninklijke Nederlandse Natuurhistorische Vereniging. Price 17.50 guilders. Discusses changes in the mycoflora of the Netherlands, and the possible links with air pollution and acid deposition. Summary in English. Order from: KNNV, B Hoogenboomlaan 24, 1718 BJ Hoogwoud, Netherlands.

Acid Deposition — Environmental, Economic and Policy Issues (1985)

Edited by Donald D. Adams with Walter P. Page, Plenum Publishing Corporation, 223 Spring Street, New York, N.Y. 10013, USA.

Vad händer med skogen — skogsdöd på väg? (1985)

204 pages. Edited by Hans Persson. Fifteen Swedish experts on air pollution, acidification and forest damage give an account of current research and knowledge in these fields. Price 160 kronor. Obtainable from the publishers, Liber Förlag, S-162 89 Stockholm, Sweden.

Luftföroreningar och skogstillstånd (1985)

81 pages. Skogsfakta nr 8, 1985. Report from a conference on air pollution and the state of the Swedish forest, held in Uppsala, May 22, 1985. Published by Sveriges Lantbruksuniversitet, Konsulentavdelningen/skog, Box 7077, S-750 07 Uppsala, Sweden.

Dör skogen? (1985)

52 pages. Källa no 21. A debate between a scientist, a forester, two conservationists and a representative of the government environmental agency, on the theme "Is the forest dying?". The booklet is published by Forskningsrådsnämnden, and can be ordered from Svenska Naturskyddsföreningen, Box 6400, S-113 82 Stockholm, Sweden. Price 10 kronor.

Ammonia Emissions in Europe (1985)

28 pages (summary report). By E Buijsman, J F M Maas and W A H Asman. IMO report R-85-2. Available from the publisher: Institute for Meteorology and Oceanography, State University Utrecht, P O Box 80005, 3508 TA Utrecht, Netherlands.

Animated Film

A 30-second film, suitable for use as a film trailer by movie theatres or television stations, has been produced by the Association Québécoise de Lutte Contre les Pluies Acides, 307 est Henri-Bourassa, Montréal, Québec H31 1C2, Canada. The film presents the problem of acid rain. Inquiries in regard to prices, which are being set close to the cost of production, should be directed to A Beslie, at the above address.

Switzerland: US standards by 1987

Audiovisual program — Död eller levande (1985)

A pack of 50 slides, a 20-minute sound cassette and a 20-page booklet with illustrated notes. Produced by Bokskogens förlag and Svenska Naturskyddsföreningen. Illustrates forest damage, its causes, and the measures that can be taken. Price: 360 kronor. Obtainable from Svenska Naturskyddsföreningen, Box 6400, S-113 82 Stockholm, Sweden.

Film — Threatened Forests

19-minute educational film about air pollution, acidification and forest death. 16mm colour or video cassettes. Available with English, Swedish, French, German or Finnish narration.

Film — Threatened Waters

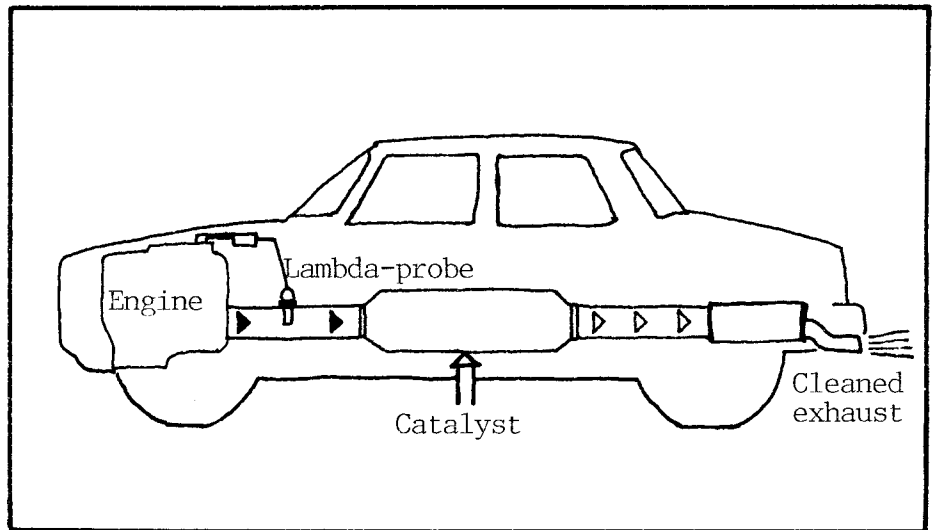
19-minute educational film, telling about the acidification of lakes, streams and ground water. 16 mm colour or video cassettes, with English, Swedish, French, Finnish or Norwegian narration.

Both films are produced by Bo Landin and Hans Östborn at Scandinature Films. For more information, contact: Bo Landin, Scandinature Films, Box 558, S-651 09 Karlstad, Sweden. Phone: 054-10 02 15.

Meetings/Conferences

Fourth Seminar of the ECE on Controlling Emissions of Sulphur and Nitrogen Oxides, April 1986, Graz Austria. Contact: Economic Commission for Europe, United Nations, Hall of Nations, CH-1211 Geneva 10, Switzerland.

Acidification and Its Political Implications, May 5-9, Amsterdam, Netherlands. Sponsored by the Dutch Ministry of Environment and the Economic Commission for Europe. Contact: J van Ham (SCMO-TNO), P.O. Box 186, 2600 AD Delft, Netherlands.



The Federal government has decided to tighten the controls on vehicle emissions. As from October 1987 the same rules will apply in the Confederation as in the United States.

The minister of Justice, Elisabeth Kopp, called the new standards an effective contribution to the protection of the environment. The government says it is prepared for some technical problems, and also for objections from the European Community. The EEC does not consider the Swiss requirements acceptable, since they may obstruct sales of small cars.

"The Swiss government has considered it more important to bring about a real reduction of the poisonous content of exhausts," said the Minister of Justice when the decision was announced. *"Two years should suffice for the car manufacturers to make the adaptation."*

Swiss speed limits will on the other hand not be lowered, which means the highest permissible speed will still be 120 km per hour. A heated discussion has been going on in Switzerland about this during the last year or so. With lower speeds the contribution of road traffic to air pollution could be still further reduced.

Sweden waits till 1989

As from 1989, all new petrol-driven cars will have to comply with the US standards for exhaust emissions, according to a decision made by the Swedish government last December. In other words, they will have to be fitted with three-way catalytic converters.

In order to hasten the process of adaptation, however, people buying 1987 or 1988 models that fulfill the requirements will be allowed a tax reduction of 6,000 kronor.

Unleaded petrol, which is necessary for the functioning of the converters, has been on sale in Sweden since January this year, and to encourage people to use it, the tax has been reduced by 14 öre (0.14 kronor) and that on leaded petrol raised by 2 öre per litre.





Jesper Dybvad

Barrog Brook

The sun is slowly sinking as I sit here by the brook
 But I still remain here thinking — seldom glancing at my book.
 The water keeps on flowing on its way towards the sea
 As if each drop is knowing what its destiny will be.

Still I sit here pondering on the water which has flown,
 Purposefully wandering over every patient stone
 Since the brook began to fountain in the mysteries of time
 From its source up in the mountain to its destiny sublime.

How much change it must be seeing as it broadens out its track,
 Developing its being to eternity and back.
 Did it see the glacier dally in its ponderous descent?
 Carving out the valley to fulfil divine intent?

Did it see the Brontosaurus, in prehistoric days,
 All the things that came before us, and went upon their ways?
 Could it feel the Mammoth's presence as it stopped awhile and drank,
 Partaking of its essence with its feet on either bank?

Did it separate the running of the wolf packs either side,
 And did the brown bear's cunning find a cave in which to hide?
 Were there deep enough depressions to give the Otter sport,
 And supplement provisions with the brown trout that he caught?

To the stream it's but a moment since man came on the scene,
 But already there is torment such as there has never been.
 The scheme of things is changing, and can't change back again.
 There's no more life-exchanging in a stream of acid rain.

Bill Shorto

From Rural Wales, No 54, 1985