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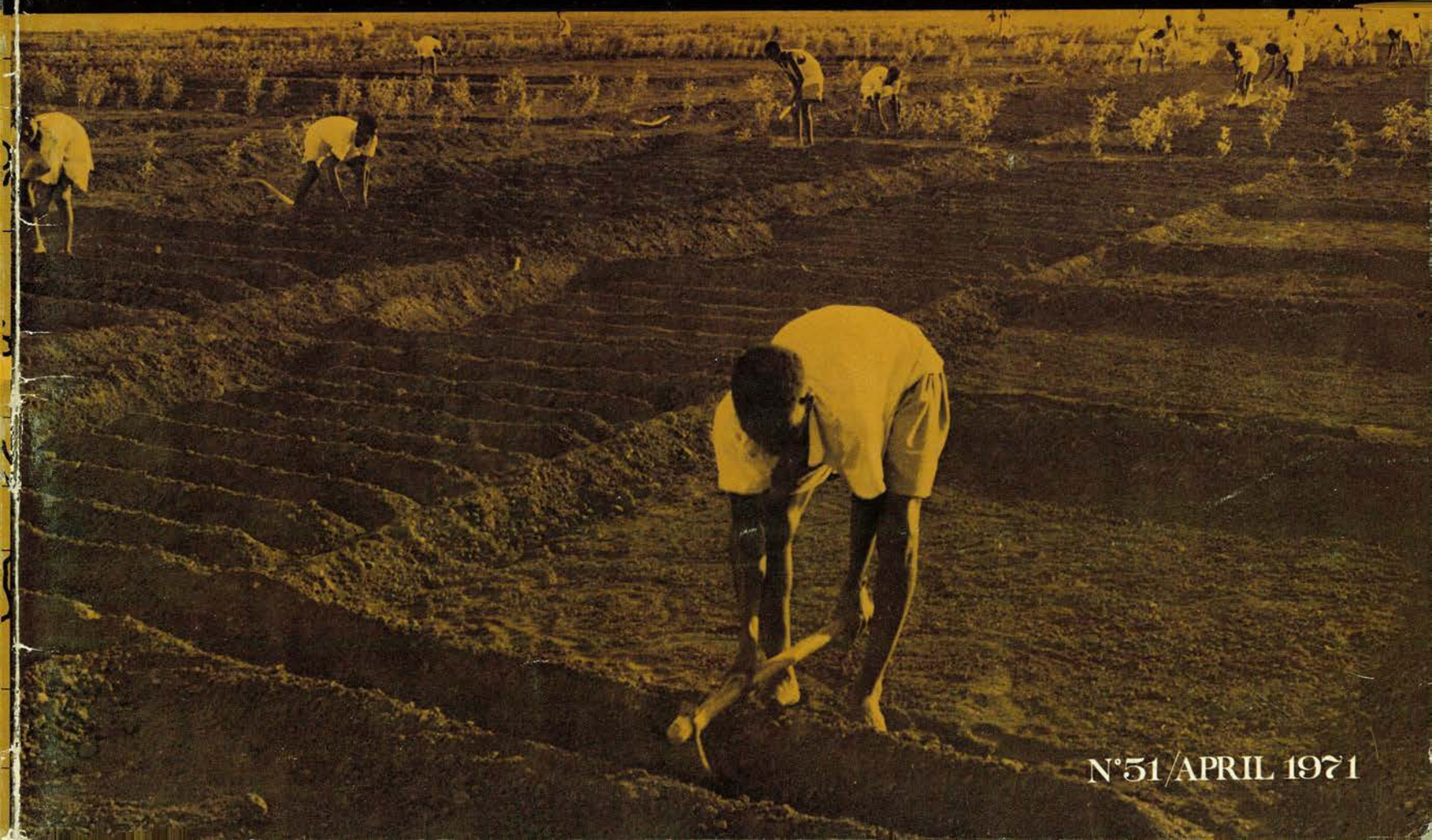
NORWEGIAN EXPERIENCE WITH INCOMES POLICIES RECOMMENDATIONS TO REDUCE TRAFFIC NOISE IN CITIES ∿ A STRATEGY FOR DEVELOPMENT IN THE 'SEVENTIES FRENCH EDUCATIONAL REFORM TOWARDS A FREER CHOICE OF RETIREMENT AGE ∿



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EDITOR : Anker Randsholt
ASSISTANT EDITORS : Peter Tewson and Jane Bussière
PRODUCTION AND LAYOUT : Marc Delemme

All correspondence should be addressed to the Editor.

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Corrigendum, page 40 : line below "Antwerp 1969", transpose "223" in seventh column with "105.3" in eighth.

STRATEGY FOR THE SECOND DEVELOPMENT DECADE: DEVELOPMENT ASSISTANCE ASPECTS

by André Vincent

OECD Director of Development Assistance

The Second United Nations Development Decade which started in January this year is based on a Strategy worked out by the developed and developing countries together during many months of negotiation. This Strategy has the great merit of presenting the diverse facets of the problem of development and of outlining solutions for each of them.

One of the most important lessons learned from the First Development Decade is that a simple growth rate is not an adequate measure of progress. The economic growth target which was set for the First Development Decade — five per cent of GNP a year — was exceeded by the developing countries as a whole. This result was, however, largely due to the high growth rates obtained by a number of countries (Korea, Libya, Taiwan, Israel, Mexico, Iran). Many others fell below this average, and progress was much less when measured on a per capita basis as the growth in population of more than 2.5 per cent a year reduced or nullified the gains which individuals might have realised from the overall increases in production.

Thus the Strategy for the Seventies, although it gives an overall quantitative target for annual growth of GNP (at least 6 per cent a year) supplements this with a target for per capita growth (at least 3.5 per cent a year) and includes in its statement of aims a more equitable distribution of income and wealth, higher employment, greater income security and improved facilities for education, health, nutrition, housing and social welfare and the safeguarding of the environment.

The objectives set are comprehensive and the policy measures — some applying to the developing countries, others to the developed, and some to both — cover not only financial assistance but a broad spectrum of other matters, including international trade, agriculture and industry, science and technology and demographic factors.

OECD is determined to co-operate fully in this new, co-ordinated approach to the problem of development, and this will involve contributions from most of its Committees. This article, however, confines itself to the problems of financial assistance that come within the realm of its Development Assistance Committee (1). Indeed, while there is much to be done in other fields, the importance of the DAC's principal aim of providing an increasing volume of assistance on appropriate terms to developing countries has not diminished.

New initiatives in the general spirit of the Strategy which were taken by DAC members in 1970 are described in the box on pages 6 and 7.

(1) The work of OECD Committees and the Development Centre on other aspects of the Strategy will be described in subsequent issues of the OECD Observer.

Targets for Financial Flows and Assistance

During the Sixties the flow of financial resources from DAC members to the developing countries did not keep pace with their own economic growth : the totals for DAC countries taken as a whole declined in relation to GNP, both in terms of overall net flows — which dropped from 0.95 per cent in 1961 to 0.74 per cent in 1969 — and in terms of official development assistance — which fell from 0.54 per cent in 1961 to 0.36 per cent of GNP in 1969.

It must be noted however that substantial increases were made in the programmes of certain countries — notably Germany, Italy and Japan and in those of some of the smaller countries — more or less offsetting (in real terms) the decline in the United States flows. There has been a shift among DAC members in their relative efforts in favour of the developing countries : the European countries together with Canada, Australia and Japan now provide two thirds of the total flows of financial resources against one half in 1961 at the beginning of the First Development Decade.

One of the crucial measures for industrialised countries in the Strategy for the Second Development Decade is the one which calls on them to achieve by 1972, or at least by 1975, the target of one per cent of their GNP as regards net financial flows to developing countries. DAC members had already agreed in 1965 to reach one per cent of their national income and in 1968 they accepted an additional effort in adopting the UNCTAD recommendation of reaching one per cent of their GNP. The new Strategy reiterates this target but goes further, to the extent that it sets dates for its achievement.

Leaving aside the United States, whose aid programme is in a transitional period, the rest of the DAC members taken as a whole had reached the one per cent target for the first time in 1969. However, the performance of these countries was very uneven and for those which are still at a low level, the target would impose a very substantial effort. This explains the fact that while nine DAC member countries have accepted this commitment without reservation, others have pledged their best efforts to reach the goal as soon as possible. Given its present percentage and its expected rapid growth in GNP, it is Japan's acceptance of the target by 1975 which implies the largest individual increase in the volume of total flows.

At least as important as the one per cent target for total flows is the endorsement in the Strategy of a specific target for official development assistance, as recommended previously by the Pearson Commission. It is stated that " each economically advanced country will progressively increase its official development assistance to the developing countries and will exert its best efforts to reach a minimum net amount of 0.7 per cent of its gross national product at market prices by the middle of the Decade ".

As official development assistance is subject to direct government control, it is largely sheltered from the fluctuations which affect the volume of export credits, private investments and other private transfers. Thus it ensures the continuity and the steadiness in the inflow of external resources which is necessary for a smooth implementation of the development programmes of less advanced countries. In addition, official development assistance is essential for certain developmental needs of a non-profit character, especially the improvement of human resources, institution building and material infrastructure. Increased official flows at concessional terms may also, in certain cases at least, provide a solution to the problem of the limited debt servicing capacities of a number of developing countries.

In 1969 only two DAC countries had reached, or approached, this level of 0.7 per cent for official development assistance recommended in the Strategy; the average for all DAC members did not exceed 0.36 per cent. Four DAC members — Belgium, the Netherlands, Norway and Sweden — have accepted without reservation this new target; others have not committed themselves to the specific figure or set a date for achievement of the target, though most DAC members have accepted the idea in principle. The United States, the largest donor, although not prepared to accept a specific target, agreed that donor countries should endeavour to provide a substantial part of their aid in the form of official development assistance, and that every effort should be made to increase this type of aid.

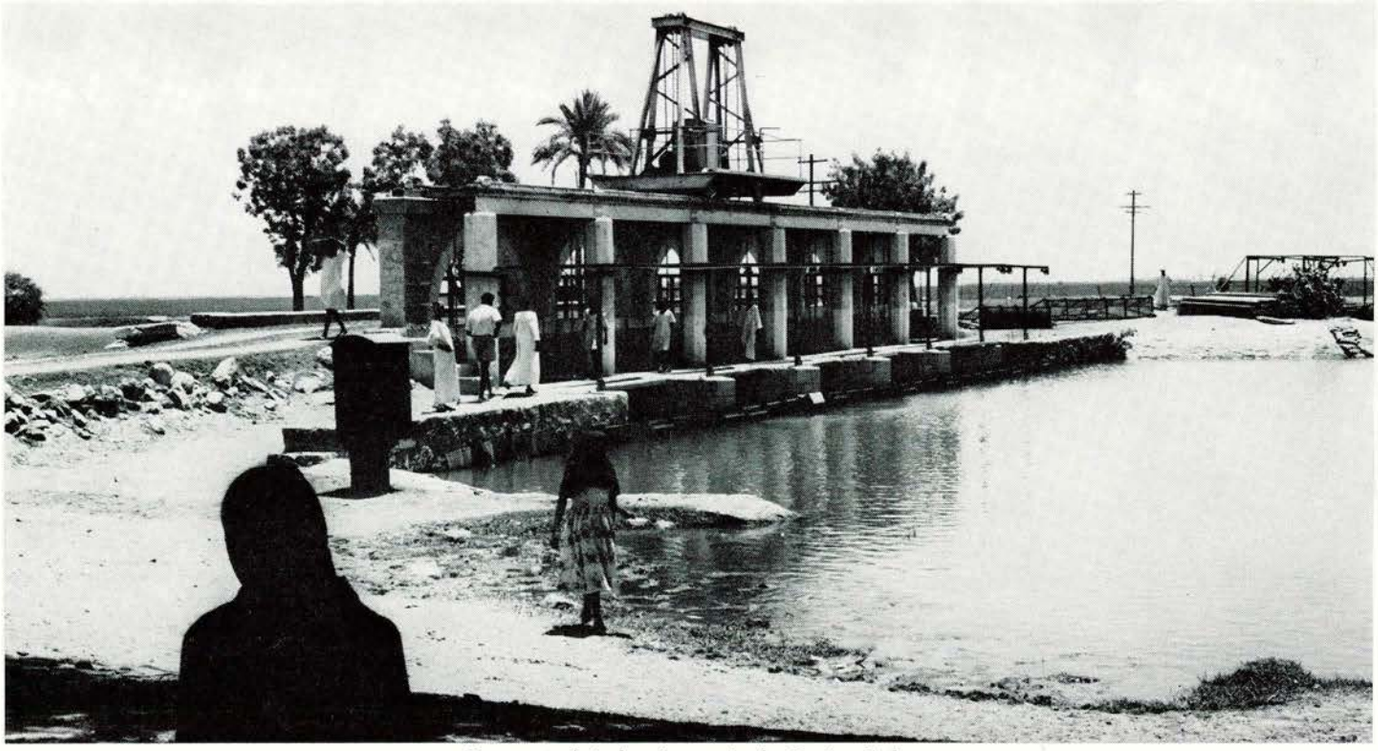
As can be seen from the list of new initiatives, several DAC members have, in addition to the specific commitments, taken positive decisions to incorporate one or both directives into their forward planning with foreseeable dates for achievement. All members agreed at the DAC High Level Meeting in Tokyo last September to continue their consultations on volume targets with a view to helping those countries lagging behind to overcome the obstacles in their way.

Progress towards Untying of Aid

In adopting the Strategy for the Second Development Decade, all DAC members agreed to the policy injunction that " financial assistance will, in principle, be untied ". A decision had already been taken at the DAC High Level Meeting in Tokyo in September by a large majority of members to make a deliberate effort to evolve a common agreement on the untying of their bilateral loans. Members also agreed in principle that contributions to multilateral institutions should not be tied and that such untied contributions should be increased. Unilateral steps towards untying have been taken by certain countries — notably Canada, Japan and the United States — and intensive work has been underway for several months in the DAC to determine if it is possible to arrive at an agreement which would incorporrate the principle of reciprocity and at the same time achieve as wide a participation as possible.

The untying of aid, even if not universal, would of course be a substantial step forward in improving the conditions under which development assistance is provided. But beyond this, developed countries are committed under the Strategy to consider ways of further softening the terms of their aid and of forestalling debt crises. New objectives for the financial terms of official development assistance were approved by the DAC in 1969 in the form of a Supplement to the 1965 DAC Recommendation on Terms and Conditions. The record of performance in 1969 indicates that in the case of several DAC members additional efforts are still necessary to comply with these terms.

Increased attention is being given by the DAC to problems relating to the indebtedness of developing countries, with a view to examining the possibilities of establishing criteria for appropriate terms within the context of any given developing country's particular situation — taking into account its external debt servicing capacity and internal economic structure.



German technical assistance in the Gezira, Sudan

More Efficient Aid Implementation

The Strategy for the Second Development Decade specifies that aid should be provided as much as possible on a long-term and continuing basis and that the procedures for granting aid should be simplified.

No DAC member lodged any reservations on this point, and multi-year commitments have long been regarded in the DAC as a desirable objective, but so far only a few countries have entered into such commitments. One recent example is that of the Australian Government which last year decided to provide a grant of $ 60 million in economic aid to Indonesia for the period 1970/71-1972/73 (see box). The Pearson Commission also recommended that appropriation periods be extended to at least three years and that appropriated funds be carried forward several years.

Analysis of long-term aid needs of the developing countries in the context of prospective overall resource allocation and availability is part of the continuing work programme of the DAC Secretariat, as is also the question of aid management which has become of increasing interest to donors in recent years. Work has recently been initiated in the DAC to improve the effectiveness of aid through better co-ordination at the country level, sharpened methods and criteria for *ex ante* and *ex post* evaluation of aid projects and programmes, and for the streamlining of aid procedures and administrative requirements.

The Strategy for the Seventies also calls for an increase in assistance through multilateral channels. This recommendation is, in fact, an expression of current trends in development assistance. In 1969, DAC member countries increased their contributions to multilateral institutions — largely consisting of grants — by 50 per cent to over $1 billion, and the allocations of funds by these institutions to developing countries also rose by 35 per cent to $ 1.2 billion, with new commitments reaching a total of $ billion. In addition, while figures are not precise, it is estimated that about $ 600 million per year was disbursed in the developing countries by a variety of voluntary organisations.

Several new initiatives were undertaken by donors last year in the multilateral sphere, and by the multilateral lending institutions themselves (see box).

The Role of Private Capital

The importance of private flows has not been overlooked. The developed countries have pledged themselves, in the adoption of the Strategy, to " consider adopting further measures to encourage the flow of private capital to developing countries". " Foreign private investors in developing countries should endeavour to provide for an increase in the local share in management and administration, employment and training of local labour, including personnel at the managerial and technical levels, participation of local capital and reinvestment of profits. Efforts will be made to foster better understanding of the rights and obligations of both host and capital exporting countries as well as of individual investors ".

Private capital flows constitute an important source of development finance and technical assistance, running at an average annual rate of $5-$6 billion, or some 45 per cent of the total flows to developing countries. Of this, total export credits account for $1.5 to $2 billion and direct private investment for $2 to $2.8 billion ($1.5 to $2 billions if investment in the oil industry is excluded), the rest consisting mostly of portfolio investments. It is hoped that as a growing number of these countries attain levels of development commensurate with the acceptance of a higher degree of responsibility, they will increasingly rely on such normal private resources for their external financial and technical needs, thus leaving the relatively scarce concessional financing for countries in greater need.

But a large and growing volume of private foreign investment will take place only if both the investor and the host country find mutual benefit in their operations. The DAC has given impetus to the establishment of incentives for private foreign direct investment and works continuously with the Business and Industry Advisory Committee to OECD in this direction. Research work is underway in the OECD Development Centre on the costs and benefits of private foreign investment.

Most DAC countries offer a range of facilities and incentives for investors in developing countries, including investment guarantee schemes (2). And specific new incentives

(2) For a description of the facilities offered by member countries for the promotion of foreign private investment in developing countries see " Investing in Developing Countries ", OECD, 1970.

were initiated in 1970 by Canada, France, and Japan for encouraging private investment in less developed countries.

Review of Progress during the Decade

The Strategy is not something which is crystallised for the whole of the Decade. Reflecting the fact that development itself is an evolutionary process, it contains the elements necessary for its own evolution, an essential aspect of which will be to check from time tho time the progress being made by the developed and developing countries in relation to the goals of the Decade. The Strategy sets out the general guide-

NEW INITIATIVES IN THE FIELD OF

The following list presents a number of new decisions taken during the past year by aid donors with a view to improving their aid programmes. Its purpose is to highlight changes and not necessarily to give a balanced picture of the donors' aid efforts. No mention is made in particular of the implementation of decisions taken previously or of plans under consideration.

DEVELOPMENT POLICY

- *The United Nations General Assembly on 24th October, 1970, proclaimed the Second Development Decade to start on 1st January, 1971, and adopted an international strategy for the Decade.*
- *Following the report of the Commission set up in 1969 to review Danish aid legislation, the Danish Government presented to Parliament in December 1970 a new law on international development co-operation.*
- *The French Government has formed a group of experts to examine, on the occasion of the preparation of the Sixth Plan (1971-75), the problems related to the evolution of aid policy.*
- *A German Forum for Development Policy was appointed in 1970 by the German Federal President. As an independent body of experts from various social groups, its task is to express views on important questions of development policy, both to the public and the Federal Government.*
- *In the Netherlands a National Committee on Development Strategy 1970-80 has been established to stimulate public support and understanding for the Strategy of the Second Development Decade.*
- *Following the establishment of the Ministerial Meeting on Overseas Economic Co-operation, which determines fundamental policies on aid to developing countries, the Japanese Government also set up an Advisory Council on Overseas Co-operation and Development — which includes a Special Committee for Technical Assistance — to study aid problems and to submit proposals to the Prime Minister.*

NEW DECISIONS ON VOLUME TARGETS

- *Belgium has decided to increase its official development assistance to 0.7 per cent of Gross National Product (GNP) by 1975. A working party has been established to carry out the scheduling of its assistance with a view to reaching this target.*
- *The Government of the United Kingdom announced in October 1970 that it would do its best to reach the 1 per cent of GNP target as regards total flows by 1975.*
- *The Canadian Government has subscribed to a 0.7 per cent GNP target for official development assistance, without, however, setting a date for the attainment of this objective.*
- *The Japanese Government has decided to endeavour to attain the target of 1 per cent of GNP by 1975.*
- *The Norwegian Government presented to Parliament in May 1970 a new indicative medium-term assistance plan according to which aid appropriations are to be increased to 0.75 per cent of GNP in 1974.*
- *Sweden has, in the context of the International Development Strategy for the Second Development Decade, accepted without reservations the proposed target for official development assistance of 0.7 per cent of the GNP in terms of disbursements to be reached in 1975. This acceptance is in line with the long-term plan for Swedish development assistance adopted in 1968, which was, however, related to budgetary appropriations.*

MULTILATERAL ASSISTANCE

- *Australia and the United Kingdom have agreed to contribute to the Special Funds of the Asian Development Bank which extend assistance on concessional terms. Belgium has also decided to contribute to these Funds.*
- *The Canadian Government has decided to increase the share of multilateral assistance to 25 per cent of budgetary assistance appropriations.*
- *France has become a member of the Asian Development Bank.*
- *Food aid provided by the European Economic Community in the form of grain shipments under the International Food Aid Convention has been supplemented by a programme of aid in the form of dairy products (grants of butter, butter oil and skimmed milk powder) administered by the Community and channelled partly through the World Food Programme.*
- *The World Bank for the first time extended assistance to population planning programmes, in the form of a $2 million loan to Jamaica.*
- *A $3 billion increase in the capital of the World Bank was authorised at a meeting of the Bank's governors in September 1970.*
- *Negotiations for the third replenishment of the resources of the World Bank's International Development Association over the period 1971-73 — at a level of $2.4 billion, double the amount of the second replenishment — were successfully completed.*
- *The Caribbean Development Bank was established in January 1970 with an authorised capital of $50 million.*

AID UNTYING

- *At the High-Level Meeting of OECD's Development Assistance Committee on 14th-15th September, 1970, Members agreed on the principle that contributions to multilateral institutions should not be tied and that such*

lines for a system of " Review and Appraisal " at national, regional and global levels. As far as donor countries are concerned, policy confrontations which take place in the DAC will provide a forum for setting priorities and stimulating a mutual effort to translate the Strategy into action. More particularly, the aid reviews of member countries' programmes which are held annually will be adapted to contribute to the appraisals of progress called for. Final decisions on the details of the arrangements have not yet been taken in the United Nations. When the procedures have been agreed upon, the DAC members are both willing and prepared to co-operate in this process.

DEVELOPMENT ASSISTANCE IN 1970

contributions should be increased. For the first time a large majority of Members declared themselves prepared in principle to adhere to an agreement to untie their bilateral financial development loans.

- *The Canadian Government, following its overall review of foreign policy, has decided :*

— to make available for procurement in the recipient country or in other less-developed countries 20 per cent of its bilateral assistance.

— to cover on an untied basis the shipping costs of all goods provided under the development assistance programme.

- *The Japanese contribution to the Consolidated Fund of the Asian Development Bank has been opened for procurement in all developing member countries of the Bank as well as in countries contributing to the Special Funds of the Bank.*

The United Kingdom contribution to this Fund is open for procurement in developing member countries and in contributor member countries whose procurement conditions are not less liberal as a whole than those governing the UK contribution.

- *As of September 1970, the United States authorised procurement in less developed countries under its previously tied bilateral lending programme. (Procurement in Latin American countries of aid of this type to Latin America has been authorised since 1969).*
- *In order to eliminate the effects of tying restrictions on its programme to encourage United States private investment in less developed countries, the United States has decided to provide coverage under its extended risk guarantee programme for funds used in purchasing goods and equipment abroad.*

TECHNICAL ASSISTANCE

- *A Canadian International Development Research Centre has been established and will concern itself primarily with research related to specific development problems. The Canadian Government will allocate $ Cdn. 30 million to cover the cost of the first five years of the Centre's operations.*
- *The Canadian Government has decided in future to provide assistance in the field of population control and family planning.*
- *The Danish Parliament has passed an Act which allows young men to choose service in developing countries as an alternative to compulsory military service.*
- *The Italian Government adopted in February 1970 a law which will make it possible to finance a civilian volunteer service.*
- *In the Netherlands a central pool of experts was set up in the form of a special corps within the government service.*
- *Norway is to expand its assistance to family planning and has earmarked about 10 per cent of 1971 development assistance appropriations for this purpose.*
- *A Centre for Educational Development Overseas was established in the United Kingdom in April 1970. It will concentrate on work in the areas of curriculum renewal and education techniques.*

PRIVATE INVESTMENT

- *Canada has initiated a pre-investment incentives programme to help Canadian companies carry out preliminary investigations and feasibility studies.*
- *The French Economic and Finance Minister has decided to set up a government scheme for guaranteeing private investments in the African countries of the Franc area south of the Sahara (countries with a " compte d'operation ").*
- *In order to encourage Japanese private investment in less developed countries, the two investment insurance schemes operating in 1969 (insurance of invested capital and profit insurance) have been combined by the Japanese authorites into a single scheme covering a wider range of investments and risks.*

OTHER STEPS

- *The Australian Government has decided to provide a grant of $60 million in economic aid to Indonesia for a period of three years (1970/71-1972/73). This is the first multi-year bilateral aid commitment entered into by Australia.*
- *The terms of bilateral loans extended by Belgium have been softened. They now stand at 2 per cent interest, 30 years duration and a 10 year grace period.*
- *In order to ensure that aid provided by the Federal Republic of Germany is planned and provided more according to regional and country-oriented considerations than in the past, the Federal Ministry for Economic Co-operation has been basically reorganised.*
- *A Centre for the Promotion of Imports from Developing Countries was created in the Netherlands in 1970.*
- *A reorganisation of the Swedish aid administration took place on 1st July 1970. Policy responsibility for development assistance is now concentrated in the Foreign Ministry whose Development Co-operation Department has been reorganised as an Office with enlarged responsibilities. The executive aid agency continues to be the Swedish International Development Authority (SIDA) operating under the authority of the Foreign Ministry.*
- *In its budget for 1971, the Norwegian Government proposed to increase the special foreign aid tax from 0.5 to 1 per cent of taxable income.*
- *Norway has joined the Consortia for India and Pakistan.*
- *In the place of the previous system of interest waivers, the United Kingdom has introduced a graduated scale of concessionary interest rates to apply to that part of its development which carries interest charges.*
- *The United States established in 1970 the Inter-American Social Development Institute which will provide grant support for innovative social development programmes in Latin America primarily through private non-profit organisations.*

TRAFFIC NOISE IN URBAN AREAS : Recommendations for its Abatement

Noise levels can be reduced — at a price. Another, and different, price is being paid each day for the noise which has been allowed to mount as a result of past inaction; and while this price cannot be convincingly expressed in monetary terms, continued exposure to noise may lower the working efficiency of urban residents and disturb their well-being and enjoyment of life.

As part of its investigations into the main factors causing harm to the human environment, the OECD Council has endorsed for publication a report of the Organisation's Consultative Group on Transportation Research on the nature, effects and control of traffic noise in urban areas, and has urged Member governments to take prompt action to implement the report's recommendations on vehicle noise, traffic noise and the urban environment, the economics of noise abatement research, development and training, and international co-operation (1).

Noise, as the report points out in the preface, is a classic example of an " externality " — the side effect of a private action, imposing an unwanted cost upon third parties who are not partners to the action and who receive no benefit from it. Because market forces alone do not provide the producers of externalities with sufficient incentive to avoid their undesirable effects, control over such activities becomes a matter of public policy.

The operation of motor vehicles is the predominant source of urban noise and constitutes its most pervasive element; in terms of man-hours of exposure to this source of noise the environment has, year by year, been subjected to steady deterioration. It is an example of one type of noise-generating activity which calls for the formulation of policy on a national scale.

The gradual nature of the increase of traffic noise, coupled with the essential need for transportation in modern urban life, has resulted in relatively little effective action being taken so far. But traffic noise levels can be reduced without impairing the desirable features of the transportation system. As a minimum, the present trend must be arrested; in the longer run, efforts should be made within the limits of available resources to reduce the present levels of traffic noise until a range of improved noise environments can be provided that will satisfy the reasonable expectations of those who live and work in cities.

The recommendations of the Consultative Group (see page 10) are grouped to deal with vehicle noise, traffic noise and the urban environment, economics of noise abatement, research, development and training, and international co-operation.

Efforts to abate *traffic noise* fall into two main categories: reduction of noise at the source and reduction of the area in which noise can be regarded as intrusive. Measures to make motor-vehicles intrinsically quieter bring benefit to the whole community and should therefore be accorded high priority.

But neither the car owner — who does not have to pay for the discomfort he causes to others — nor the car manufacturers have much incentive to introduce improvements in this field; and it is clear that public legislation must be the necessary starting point for any national policy for controlling traffic noise at the source.

A number of countries already have enacted, or intend to enact, standards concerning possible noise emissions (2). In order to be realistic these standards should reflect a compromise between social considerations, what the public is willing to pay, and what industry can produce in the light of current technology: acoustical absorbers, improved silencers, air intakes and cooler fans for example. Some countries already have noise type-testing requirements, applying in some cases to silencers, the closing of doors and trunk lids, and the permissible use of horns. Annual tests for safety reasons are compulsory in a number of countries, and could be extended to cover noise : for example, Denmark has compulsory noise inspection whenever cars over five years old are sold, and for this purpose maintains a chain of testing stations.

Roadside spot checks, to be effective, raise questions of instrumentation, of manpower and of the means through which the penalty is to be brought home to the offender. In many Swiss cities there are regular noise patrols which have the power of temporary confiscation of vehicles that are clearly defective. The main problem is, in fact, one of public policy rather than of technical difficulty.

Control over the considerable number of *vehicles procured directly or indirectly through the use of public funds*

(1) Urban Traffic Noise : Strategy for an Improved Environment. *To be published in 1971.*

(2) An Annex to the Report contains the result of enquiries conducted by the OECD Secretariat on current administrative and legislative practices in certain OECD countries: Canada, Denmark, France, the Netherlands, Norway, Sweden and Switzerland.

NOISES THAT ANNOY PEOPLE

Type of Noise	*Number of people annoyed per 100 questioned*	
	Urban areas	*Rural areas*
Noise from motor vehicles	20	11
Noise from aircraft	4	1
Noise from railroads	5	1
Noise from neighbours	6	3

Results of an investigation by the Norwegian Gallup Institute; 1,600 people questioned. (Adapted from Aftenposten, *Oslo, 22nd July, 1968.)*

could also be usefully employed, in the Group's opinion, as a stimulus for progress. The city of Stockholm, for example, requires its buses to pass a noise-emission test, and rejects those not measuring up to requirements.

Experience with automobile safety features in the United States has shown that the purchasing power and practices of the Government can have an important effect. The imposition of noise performance specifications on publicly owned vehicles could play a similar part in stimulating the development of quiet automobiles. Similarly, governments can use the incentive of research and development contracts as a means of promoting noise consciousness among industrial developers.

Noise reductions can also be obtained by minimising the adverse effects of vehicles collectively, through improved planning and highway engineering, appropriate traffic restraints, and other measures aimed at *lessening the impact of automobile noise emissions* on the community; this will require an awareness of what measures can be realistically taken on the part of municipal authorities, urban planners and traffic engineers.

The desirability of noise reductions is unquestionable; but full consideration must be given to the *cost penalties* of more stringent noise emission standards. To aid policy-makers in their decisions, an economic appraisal of alternative noise abatement measures is required. This means identifying the various technical, procedural and regulatory means of abating noise, evaluating these options in terms of their cost and effectiveness, and analysing how these costs would fall on the general public, the affected community, industry and the car owners.

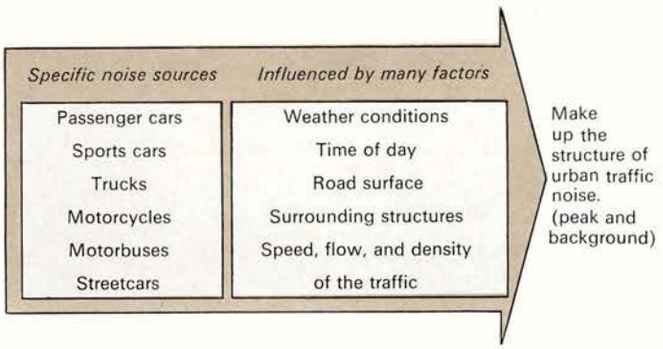
Such analysis would not only assist in setting realistic goals for traffic noise control, but should also indicate which strategy offers the best return on investment. Useful policy guidance could be obtained from comparing the relative costs of alternative noise reduction measures and the levels of effectiveness which these alternatives provide.

Increased *research, development and training* will be necessary to achieve a significant lowering of the current levels of traffic noise. The likelihood is that there will be insufficient economic incentives for manufacturers to spend more than the necessary minimum on reducing the noise output of their vehicles until there are internationally agreed and stringent noise emission regulations, with a programmed lowering of noise emission limits. This calls for government stimulation through the support of research and development and of the testing, demonstration and evaluation of new approaches to noise reduction.

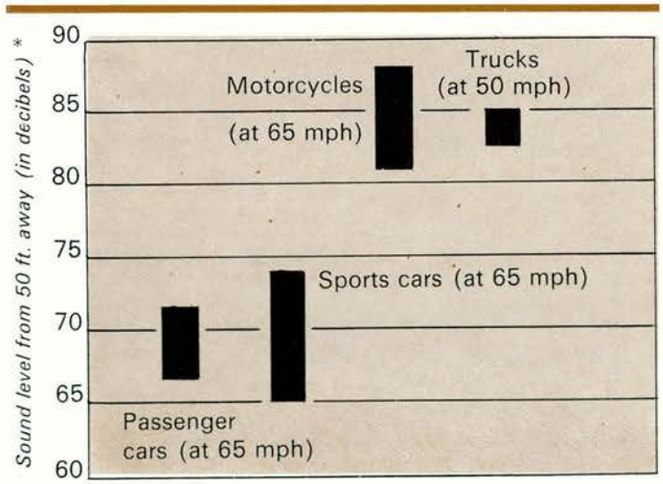
There is also a need for developing a sounder scientific foundation on which noise emission standards can be set if these standards are to fulfil their essential purpose of protecting the public. The eventual aim should be to provide rough measures of social cost which could be built into the planning process in much the same way as the cost of time can now be introduced as a factor in transportation decisions. Also, effective enforcement of traffic noise regulations requires the availability of simple, reliable noise-monitoring instruments and trained manpower for their use.

To avoid the complications which would arise, notably within the automobile industry, were different national noise emission standards to come into existence, *international agreement* on initial common noise emission standards and acceptance criteria is essential; agreement on a programmed reduction in noise emission limits would be a highly desirable aim. Such standards should

THE COMPOSITION OF URBAN TRAFFIC NOISE



NOISE LEVELS OF DIFFERENT VEHICLES AT CRUISING SPEED



** The 'A' weighted decibel which gives little weight to low frequency sounds and is closely correlated with subjective reactions to noise.*

Source: Adapted from "Objective Limits for Motor Vehicle Noise", Bolt Beranek and Newman Inc. Report No. 824.

provide the motor vehicle industry with a real stimulus and incentive to take a step forward.

Practical policy and long-range strategy could be facilitated at the international level through a concerted programme of exchange of information on national programmes of research, development and demonstration, and through comparison of experience relating to practical noise abatement measures and their costs.

Summing up its findings, to which is attached a separate section dealing with the technical aspects of the urban traffic noise environment, the effects and control of such noise, the Consultative Group points out that the implementation of several of these recommendations could begin at once.

Many of them require action at the national level. The central government can provide standards of criteria and approaches to noise control and so avoid conflicting noise emission regulations. Only the central governments can provide the needed resources, the comprehensive national view and the ability to negotiate with other governments. Assigning responsibility for environmental noise control to a single agency could, the Group believes, be the most effective manner of achieving a positive record of accomplishment.

RECOMMENDATIONS TO GOVERNMENTS

1. Vehicle Noise

Governments should enact standards for maximum permissible noise emissions and should adopt effective procedures to enforce such standards. Standards for new vehicles should be expressed in terms of maximum permissible noise levels as measured by test procedures recommended by the International Standards Organisation. Standards and enforcement procedures for vehicles in use may additionally specify requirements for the efficient maintenance and operation of parts of the vehicle such as the exhaust silencer and the horn.

Standards should be initially set and enforced at levels consistent with the technology available at the time, but should be made progressively more stringent to reflect advances in noise reduction technology. The most rapid rate of reduction in permissible noise emission levels should be applied to the classes of vehicles which are at present the noisiest.

Enforcement of standards should be carried out through type-testing of new vehicles and of replacement silencers coupled with periodic inspections (which may be concurrent with safety inspections or as a requirement for resale) and roadside monitoring and spot checks. Reliable standardised instruments, as simple and inexpensive as each type of test permits, should be used.

2. Government Procurement Policies

Governments should consider incorporating stringent noise emission standards within specifications for all government vehicle procurements, vehicle-related research and development efforts, and transportation subsidies. Such noise emission standards should be set in consonance with the standards advocated in Recommendation 1. Progressively more stringent standards, however, can provide the stimulus for the development of quieter motor vehicles and alternative transportation modes which offer the long-term solution to traffic noise.

3. Traffic Noise and the Urban Environment

Governments should encourage:

- *restrictions on noisy traffic, and its re-routing away from residential and " quiet " zones (e.g. the closure of certain streets, as in some Swiss and Danish towns, to motor cycles or heavy lorries at night);*
- *development and application of improved methods of traffic flow control to avoid the disturbance that comes from noisy acceleration;*
- *noise abatement-oriented zoning and land use planning (as, for example, the deliberate creation of industrial buffer zones);*
- *location of major urban roads in such a manner that noise effects on surrounding neighbourhoods are kept to a minimum (e.g. aligning roads to take advantage of existing natural acoustical barriers);*
- *more extensive use of tunnels and open cuts;*
- *use of noise screens and other artificial noise attenuating barriers (bearing in mind their visual impact upon the environment);*
- *noise abatement-oriented layout and sound insulation of individual houses or groups of houses adjacent to major traffic arteries and major intersections;*
- *development of alternative modes of transportation which produce less noise impact on the urban environment.*

4. Economics of Noise Abatement

In order to provide a sounder basis for policy decisions, governments should support detailed studies of the cost of noise abatement. In particular, studies should be undertaken in co-operation with the automotive industry of the economic impacts of alternative noise emission standards. Such studies should attempt to:

- *define present technological capability to meet initial standards;*
- *identify technological improvements in engine and vehicle design required to meet a range of more stringent standards, and develop realistic estimates of the research, development and production costs of such improvements ;*
- *explore how the costs associated with the development of vehicles with reduced noise emission characteristics might be equitably allocated between the taxpayers and the driving public.*

5. Automobile Design and Engineering

Governments should support research and development, and provide adequate incentives for the testing and demonstration of new approaches to reducing the noise output of motor vehicle systems. Research ought to be encouraged particularly on the following sub-systems: (a) intake and exhaust, (b) engine and transmission, and (c) interaction between tyres and road surface. More effort might usefully be devoted to the development of weather resistant, sound absorbing external building finishes; efficient sound barriers with reduced sound reflection characteristics; and relatively silent, though skid-proof, road surfaces.

6. Effects of Noise on Man

In order to provide a scientific basis for determining traffic noise levels beyond which health may be adversely affected increased support should be given to research on the effects of noise exposure during sleep, and on the cumulative effects of long-term exposure to moderate levels of noise. In order to provide a sounder basis for evaluating the social costs of noise, increased support should be given to research on the subjective response of individuals, groups and the community to traffic noise.

7. Instrumentation and Training

Governments should support research and development of appropriate instruments for monitoring noise emissions in actual traffic conditions, and provide training programmes on the use of these instruments. Professional training related to noise abatement should be stimulated through the funding of academic research and educational development.

8. International Co-operation

An international conference should be convened at an appropriate date in the near future:

- *to exchange views and share experience concerning progress made in traffic noise control and abatement, and to examine the difficulties and obstacles which may have been encountered when implementing specific measures;*
- *to discuss the possibility of taking further action at international level particularly with a view to facilitating the adoption of initial common motor vehicle noise emission standards coupled with a programmed reduction of noise emission limits.*

Decisions relative to the proposed conference should bear in mind national commitments made in regard to the 1971 Prague Conference of the Economic Commission for Europe and the 1972 United Nations Conference on the Environment in Stockholm.

PROGRESS AND REFORM IN FRENCH EDUCATION

Should the ideal of " culture générale " inherent in the French educational system be modified ? Does the principle of equality of educational opportunity in fact favour some classes of children as compared with others ? Is the rate of "drop-out" at the various levels of education too high ? Are the problems of costs and financing handled in the most efficacious way ?

These were some of the questions considered by a team of experts (1) in their study of French education carried out as part of the Reviews of National Policies for Education undertaken by OECD (2).

(1) *Charles Frankel (US):* Chairman. Former Under-Secretary of State for Cultural Affairs; Professor of Philosophy of Columbia University.
Richard Hoggart (UK): Then Director for Contemporary Cultural Studies, Department of English, Birmingham University.
Torsten Husen (Sweden): Professor in Educational Sciences, Department of Education and Psychological Research, Stockholm University.
Henri Janne (Belgium): Former Minister for Education and Culture; President of the Scientific College of the Institute of Sociology, Free University of Brussels.

(2) Now published under the title: *Reviews of National Policies for Education: FRANCE*, OECD 1971. A background study: *Educational Policy and Planning: France*, will be published later this year.

An OECD expert panel of examiners (see notes 1 and 2 above), in their study of French education and the reforms in progress, has drawn attention to the background to the French educational system as it existed before the reforms of recent years. They suggest that it was one in which many excellent features had become distorted or outdated. Pedagogic inflexibility, lack of attention to the need for individualisation in pedagogy, and a resistance to innovation and experimentation were among the causes of the economic wastefulness of the system as demonstrated by the high dropout rate, the cost of operating schools one of whose functions was negative selectivity, and the economic cost to the larger society in terms of the loss of potential talent, not to mention the sense of frustration and failure to the individual himself.

What was clearly required in these circumstances was not the eradication of high standards of achievement or the dilution of respect for what is difficult or exceptional but the development of standards and of practical arrangements that recognise talent and achievement in a greater variety of forms. A fundamental need for France was for a reconstructed conception, moral and philosophical, of the purposes of education to respond to the needs of modern French society.

THE CHANGED CONTEXT OF FRENCH EDUCATION

The number of students enrolled in French schools at all levels has grown since 1950 by a factor of about two. Facilities, theories and methods of education applicable to smaller numbers have thus been rendered anachronistic.

The demographic change has, moreover, a qualitative aspect, in that France has become a predominantly young country for the first time in this century. The school can no longer be an instrument for initiating the young into the ways of an old and settled society dominated by people educated a half-century earlier : it must provide them with facts and experience that will enable them to deal with what is real and urgent in life today.

The movement from agriculture and rural areas to middle-sized towns and suburbs calls, as in other countries, for the redistribution of educational resources and the development of richer and more diversified educational opportunities.

The expansion of industry and of the service occupations has produced a demand for a more technically oriented secondary and post-secondary education. The belief that women can, and by right should, take part more actively in economic and social affairs carries with it profound implications for received ideals of feminine education, and affects traditional habits regarding the segregation of the sexes in schools.

And the democratic expectation of equality has had an effect on education probably greater than on any other sector of society. The school is no longer an institution planted in the community by an external authority; it has become a place where contesting social demands must be negotiated and resolved.

The " modernisation " of the French educational

system means, in the opinion of the examiners, a number of different though related changes :

- the renovation and augmentation of physical facilities;
- experiments with new pedagogical methods relying on scientific enquiries in psychology, sociology and related fields;
- the alteration of curricula to produce the adequately trained professional and semi-professional talent needed by the economy;
- the development of an educational system that gives its principal emphasis to a spirit of innovation rather than to the protection and transmission of received ideas.

Education to fill the manpower needs for a modernised society cannot be narrowly designed on a basis of traditional manpower projections. It must provide the general aptitudes that will allow individuals to learn more specific skills on the job, and to re-educate themselves as new conditions and opportunities may demand. What is required above all is an altered scheme of values, which gives adequate recognition and prestige to technical studies throughout the educational system and which gives all students the choice at a relatively early age to learn essential facts about their technological environment and to discover their interests and abilities in this field.

Further, a scientific and technical society imposes a requirement for a greater internationalisation of the educational system; thanks to modern travel, communications, the film, radio and television, the moral, philosophical, artistic and material culture of modern societies also have an increasingly international dimension. Not only must curricula respond to this new imperative, but also to the organisation of students' and teachers' careers. The task of adjusting to the forces of modernisation is a selective one, involving the development of ideas and of forms of social organisation designed to adjust these forces to the society of the present day. In this task educational institutions should play an active and crucial role, at a moment when their former authority has been challenged by a new force — " youth culture ".

Educational planning can no longer proceed on the assumption that social needs will be relatively constant. Adaptation to rapid change probably

1. GROWTH INDEXES IN ENROLMENT NUMBERS AT PRE-SCHOOL, PRIMARY AND SECONDARY LEVEL, FOR VARIOUS YEARS BETWEEN 1950 AND 1968

Level and type of education	*1950*	*1955*	*1960*	*1965*	*1968*
Pre-primary	100	114	122	158	181
(State + private)		100	107	138	158
			100	129	149
				100	115
Primary + special education	100	128	146	139	132
(State + private)		100	114	109	103
			100	96	91
				100	95
Shorter secondary (1)	100	135	256	351	—
(State + private)		100	191	261 (2)	—
			100	137 (2)	—
Classical, modern and technical lycées	100	130	198	247	249
		100	152	190	191
(State + private)			100	125	126
				100	101
Technical colleges	100	126	157	270	311
(State + private)		100	125	215	248
			100	172	197
				100	115
First secondary cycle			100	135	174
(State)				100	129
Second secondary cycle			100	177	194
(State)				100	110
Pro. mem. : Higher university education	100	113	150	292	394

(1) Continuation courses (cours complémentaires) up to 1959, " Colleges of general education " (CEG's) thereafter.
(2) 1963; thereafter the CEG's were finally amalgamated with the " Colleges of secondary education " (CES's).

2. GROWTH INDEXES, FOR VARIOUS PERIODS, IN ENROLMENTS IN HIGHER EDUCATION (1) DURING THE LAST TWENTY YEARS

	1945	*1948*	*1950*	*1955*	*1960*	*1965*	*1967*	*1968*
University Faculties (enrolments)	*100*		139	157	209	406		560
		100		117	156	303	356	
				100	134	259	305	
					100	194	228	
Non-University higher training and technical establishments *(enrolments)* (2)		*100*		109	141	197	253	
				100	130	181	232	
					100	140	180	
Preparatory classes for the Grandes Ecoles *(enrolments)*	*100*		127	145	200	245		264
		100		133	183	225	225	
				100	138	169	169	
					100	123	123	
Total *(net of dual Faculty / Grandes Ecoles enrolments)*		*100*		117	156	272	312	
				100	133	232	267	
					100	174	200	

(1) Excluding those attending various preparatory classes, " higher technician " sections of the technical lycées, and University Institutes of Technology.

(2) Including enrolments for the Grandes Ecoles.

renders the traditional French centralisation of authority in the school system anachronistic. Provision must be made for organised research and development; in particular, organised research and development with respect to the educational system itself, at a level of or beyond that which has been characteristic of France, has become a necessity.

Finally, education is plainly committed, if it is to be effective, to the concept of permanent education : the school can no longer be an institution geared only to the needs of the young, and the educated man in a modern society must be eager and able to continue his education throughout his life.

REPONSE FROM THE FRENCH EDUCATIONAL SYSTEM

The policy followed between July 1968 and the end of 1969 for the reform of the educational system was not solely due to the " events " of May 1968 : it was chiefly directed to the improvement and systematic pursuit of earlier reforms, the application of earlier measures which had largely remained a dead letter, and the incorporation of ideas and experiments, evolved independently of the responsible authorities, in reforms that were genuine innovations. Virtually all the major changes made were agreed upon between 1959/60 and the present time.

The growth of enrolments since 1950 at all levels, in State and private education, is one of the swiftest recorded among the developed countries of the world, reflecting not only population changes and the higher social demand for education, but the actual consequences of the steps taken by the responsible authorities in response to this demand.

During the eighteen years from 1950 to 1967 enrolments at all levels rose from about 6,234,000 to 11,660,000 (see Tables 1 and 2).

For lack of full statistics, the figures do not show the trend in the number of enrolments for the training of higher technicians. There has been a rapid extension in such types of training in State establishments, first in the " higher technician " classes of the technical lycées, then in the new network of University Institutes of Technology — a first step forward in the diversification of higher education.

The structural changes put into practice by the French authorities have affected the educational system at all levels and resulted in a marked increase in flexibility. This was necessitated by the decision to raise the school leaving age, as from 1967, from 14 to 16.

There has been a rapid rise in numbers attending nursery school; and pre-school education is becoming virtually universal for children aged from four to five. Primary education is no longer an aim in itself, its objective now being the preparation of all children for entry to the first cycle of secondary education.

It was decided in 1963 to set up a comprehensive (or " polyvalent ") school for this cycle, in order to redesign as quickly as possible the teaching dispensed at this level. The new schools group the pupils in four sections, in accordance with ability as evinced in the primary classes : two of lycée type (classical and modern, with fully qualified staff); one CEG (college of general education) type section to replace the former shorter modern secondary course, taught by teachers with three years' post-baccalaureat train-

3. TREND OF " HIGHER TECHNICIAN " STUDENT NUMBERS (STATE EDUCATION)

	Sections of Technical Lycées	*University Institutes of Technology*
1961	6,946	—
1963	10,718	—
1965	17,356	175
1966	19,853	1,678
1967	20,281	5,412
1968	20,342	11,927

ing; a " transitional " section and a practical terminal section, taught by primary school teachers who have passed special proficiency certificates.

A " second cycle of secondary education " offers three year courses preparing for the baccalaureat and various technical certificates at the same level (giving reasonably easy access to higher education), and a shorter, two-year course to train skilled workers or employees. The longer course is given in lycées providing classical, modern or technical courses, the shorter in technical training colleges.

Finally, in the field of higher education the traditional bifurcation between the universities and the " Grandes Ecoles " is tending to disappear, owing to the growing diversity of the courses provided. University Institutes of Technology were set up in 1966 to provide two-year vocational courses training higher technicians for the manufacturing and services sectors. In 1968 a new law for higher education provided for the establishment of autonomous, corporate, multi-disciplinary universities. The former compartmentalised faculties and institutes, which wielded the real power of decision, gave place to about 664 research and training groups in 63 universities. differentiated by their predominant field or fields of interest. A few university centres, mainly offering first-cycle courses, were set up as off-shoots of a neighbouring university in medium-sized towns. Engineering courses are tending to gain ground in the new universities; and many engineering schools have been grouped in autonomous National Polytechnic Institutes which may form the nucleus of future Universities of Technology.

• *Structural Flexibility*

There has recently been some easing of the possibilities of switching from one level or type of education to another. For example, arrangements have been made to enable children who have completed their primary education to continue their studies, after intensive coaching, in other sections of the first secondary cycle. The technical colleges are also beginning to arrange introductory courses to facilitate the pupils' entry into the shorter technical course or to move on to the longer course organised in the technical lycées.

The most rapid progress has been made in the modification of the formerly rigid structure of higher education. A 1969 decree makes the Deans of the various faculties (and not the Ministry of Education) responsible for determining and matching up the equivalent standards of many examinations — in other faculties or schools, in France or abroad — for the pursuit of specific studies. Transfers are also possible between Faculties and University Institutes of Technology. The streamed training system available, with appropriate curricula, is a clear sign of the closer attention being paid to the pupils' capabilities and to the variety of types of training dictated by the needs of the economy.

• *Changes in Curricula*

Measures have been taken (most of them quite recently) intended to restore the balance between the different disciplines and to diminish the influence of " encyclopaedism " within them. In primary education, where the working week has been reduced from 30 to 27 hours, the syllabus falls into three parts : the basic subjects — French 10 hours, and mathematics 5 hours; general knowledge and creative activities; science, history, geography, the arts and physical education.

The three part syllabus will gradually be adopted for the first cycle secondary education. A second main series of measures directly or indirectly enabling the same set of subjects to be prolonged, and a new type of education suited to the needs of the individual and the community to be worked out, are concerned with the development of science and technical subjects.

On the specific question of mathematics teaching, the primary curricula have been streamlined and simplified as a prelude to a wider reform introducing modern mathematics at this stage. Optional arts courses (a second modern language and Latin) are provided for the science sections in the second cycle; and the Science Faculties are beginning to run refresher courses in mathematics for arts students. The provision of technological courses is compulsory in the third and fourth years of secondary education. The streamlining of curricula for the longer technical courses, thus making access to higher education easier than before, should also make technical education more attractive.

At the higher educational level, the chief reforms have lain in drawing up curricula which strike a proper balance between general and vocational training in the University Institutes of Technology, or between research and experimental application in completely new University centres, or in the new universities; and in the introduction of new multi-disciplinary streams of vocational or general training.

• *Modification of the Educational Approach*

New ideas, followed by their practical application, are gradually infiltrating into the French educational system :

• *Observation and guidance* machinery has been introduced for the whole of the secondary cycle, in order to allow pupils to switch from one section to another. This procedure is repeated at the beginning of the university course to avoid " negative selection " in

Professors and students at the University of Nanterre discuss their common problems.

the form of a very high proportion of failures in the early stage of higher education. A National Information Office on Education and Occupations, and a Centre for Study and Research on Qualifications will play a vital part, not merely in guiding pupils and their families more efficaciously, but in inducing secondary and higher schools and colleges to introduce new training facilities, or to remodel the existing facilities.

• *Teaching Methods*

As a consequence of the initial measures to support the various reforms described, there has been a trend towards the development of activities in smaller groups than the traditional secondary class or the large audience attending the conventional university lecture. Following the 1968 reforms, certain new institutions replaced the conventional lectures wholly or partly with individual or collective work in small groups.

The observation of the pupils' progress involves much more attention being paid to each one's standard and pace of work than before. Teachers are invited to introduce innovations more freely in this field, and in secondary education the staff are allowed some choice in the subjects included in the curriculum. This, combined with more active teaching methods, has produced a modification in the spirit and context of the examination system. The candidates' school record now assumes more importance as compensation for any momentary lapses, especially in the baccalaureat examination. Other significant developments are the less exacting requirements for a State doctorate thesis, the possibility of presenting a series of scientific works instead, and the introduction of the collective thesis system.

The development of participation procedures should also hasten the demise of the anonymous student-teacher relationship hitherto prevailing.

• *Participation, and opening up the school to the outside world*, are given importance by the inclusion of pupils and students on the one hand, and parents and well-known local figures on the other, in the various Boards of Management, including the new University Boards. More generally, if they are to perform their function effectively, schools and universities must retain human dimensions : the new universities planned are of a reasonable size — 10,000 to 15,000 students.

As another aspect of the school's greater awareness of its environment, and the development of training in responsibility, socio-educational centres are being

evolved in the lycées, run by the pupils to deal with cultural activities and the supply of information on contemporary problems.

Longer contracts mean that French and foreign staff can more easily be taken on to teach their special subjects without passing through the normal hierarchy prescribed for " Faculty " professors.

• The closer association of the educational system with its environment, and the increasingly urgent need for additional training, will, in the opinion of the examiners, compel the typical French school to provide both initial and *continuing education*, and this will call for different teaching methods and techniques.

Recent progress has been confined chiefly to the higher educational level : the Faculties of Arts, Science and Law have adapted the length of courses and the arrangements for practical studies to suit working students; arrangements have been simplified and eased for the admission of students not possessing the baccalaureat; advanced training courses will be organised for people already at work; and the area covered, methods and marking will be adjusted to the candidate's background knowledge, making extensive use of a system of " credits ".

A vital role is to be assigned to the reformed higher educational system in the various continuing educational projects, and it is proposed to set up " Regional University Associations for Adult Education and Training " to ascertain the demand for continuing education and to arrange to satisfy it. The Managing Boards will consult with leading figures in industry, local administrations and representatives of the teaching profession.

Other further training activities include the National Televisual Educational Centre and a Vocational Training and Further Training Fund, financed by special budget appropriations, to enable training centres to be attached to individual schools, private bodies, firms or groups of firms.

4. INCREASE IN TEACHER NUMBERS BETWEEN 1958 AND 1968

Teaching staff only	*1958*	*1968*
Pre-school education	25,600	36,716
Special education	3,100	10,780
Elementary education	162,400	177,777
CEG's (General colleges)	16,080	30,825
CES's (Higher colleges)	—	23,333
CET's (Technical colleges)	12,600	24,620
Lycées (Classical, modern and technical)	37,705	67,215
Teacher training colleges	1,280	2,297
Universities	6,220	23,585
TOTAL	264,985	397,148

Source : *L'éducation nationale en chiffres, Institut pédagogique national.*

• *Planned Development of the Educational System*

The school and university enrolments, grown as they have, could only be catered for through the large-scale mobilisation of human and material resources (Table 4) and there is much evidence of the effort made for teachers' initial training and continuing training.

The general increase in enrolments in schools and colleges, and the corresponding rise in the number of teachers, are reflected in a considerable growth in national expenditure on education. The 1970 Education Budget of a little over 26 thousand million francs represents 17 per cent of the General National Budget, as against 4.5 thousand million francs in 1958, or 9.4 per cent. The average annual rate of increase in expenditure on education rose to 11 per cent between 1952 and 1967, while public expenditure on education as a percentage of the GNP rose from 2.83 per cent in 1955 to 4.55 per cent in 1965.

To facilitate the implementation of the various projects with financial implications, the Ministry of Education has set up a programming division, which will be able to enlist the technical assistance of a highly competent planning office for the calculation of the future direct or indirect costs of certain operations.

Exclusive numerical planning of the educational system should now give place to planning of the educational function, in the widest sense of the term, to combine its qualitative and quantitative aspects.

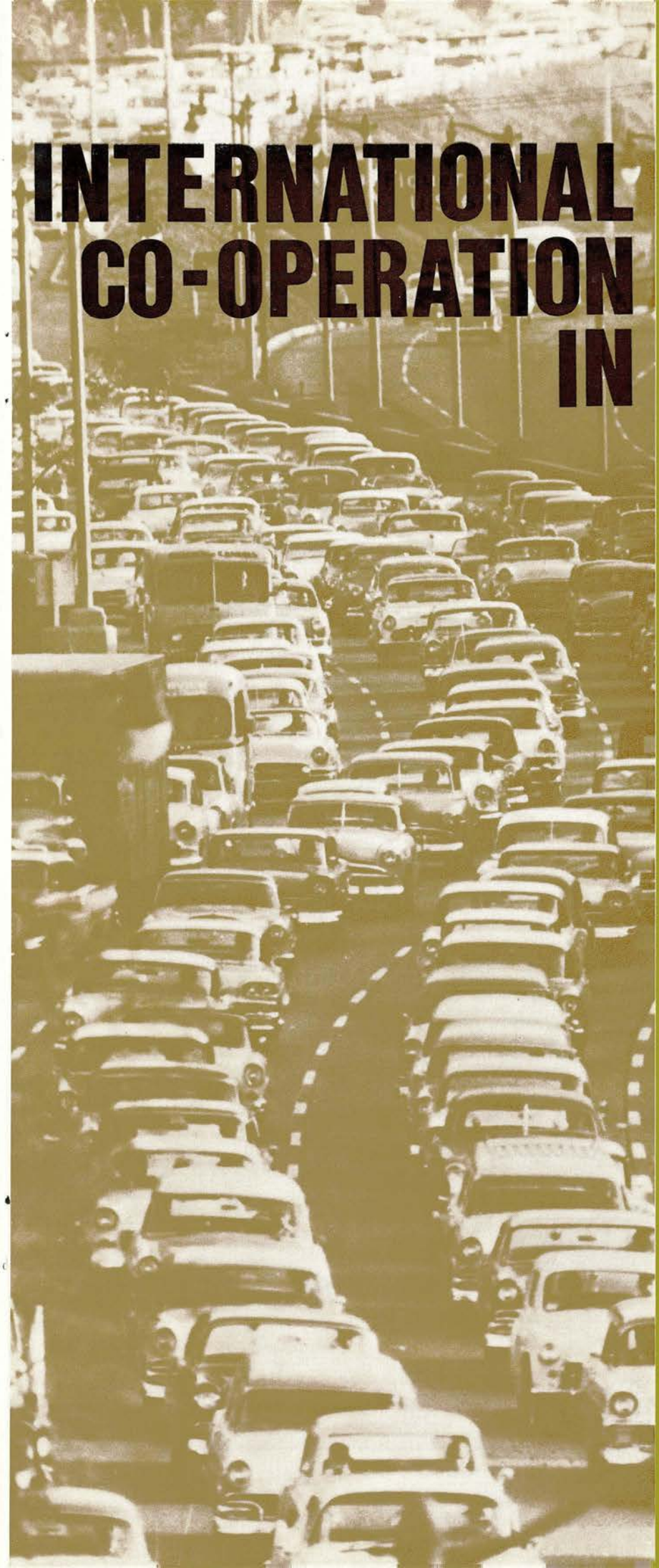
• *The Unfinished Business*

" The great debate on education is thoroughly launched in France ", state the OECD experts. " The atmosphere is heady, the divisions of opinion acute and if the prospects of accomplishment are considerable so are the dangers of disappointment ".

The latter part of the report is devoted to an assessment of the impact of and the results obtained by the reforms described in the earlier chapters on which this article is based. These have not always matched in practice the theoretical objectives for which the various measures were planned and, under the general heading of " The Unfinished Business ", the experts draw attention to certain dangers which persist despite the improvements achieved by these reforms. The dangers include :

- the high rate of failure, particularly in the baccalaureat and other examinations; and of grade-repeating;
- the slow elimination of the influence of social origins and economic and cultural factors;
- the limited options available to the pupil at the stage of secondary education;
- quantitative and qualitative problems in trying to secure an adequate supply of teachers;
- lack of fundamental educational research of all types;
- problems of financing and of the wastefulness of resources.

In a further article in the OECD OBSERVER, the experts' examination of these problems will be outlined, together with their proposals for an even more far-reaching reform of the present educational system in France.



INTERNATIONAL CO-OPERATION IN ROAD RESEARCH

The OECD Steering Committee for Road Research is starting a new programme this year. The work done by the Committee in recent years has already made it possible to collect some of the scientific data needed by governments to help them arrive at rational decisions in matters of road construction, safety and traffic. The new programme for the years 1971, 1972 and 1973 continues and supplements the previous one. This article outlines its main features.

EXPENDITURE on road construction and maintenance accounts for between 1 and 3 per cent of the Gross National Product of OECD countries.

So far as road safety is concerned, the figures for road accidents in the United States alone are approximately 60,000 fatalities, 2,000,000 injuries and financial losses amounting to 12 thousand million dollars annually. The corresponding figures for 16 European countries in 1966 were approximately 66,000 deaths and 1,900,000 injuries.

Recent years have seen a remarkable increase in the volume of road transport: in the 17 (1) Member countries of the European Conference of Ministers of Transport (ECMT), the annual increase in the number of vehicles is between 8 and 10 per cent. In the United States it is expected that by 1980 — on the basis of present trends — the number of vehicles registered will be in the neighbourhood of 120 million.

As a result of this universal expansion of road transport, some countries' road systems are no longer adequate for the number and weight of vehicles now in circulation. The economic, social and human effects of road transport, the accidents, and the consequences for the environment of using motor vehicles in urban areas, for example, are all problems facing the governments of the OECD countries. A global approach, embracing the economic, technical and social aspects, is becoming increasingly necessary (diagram 1).

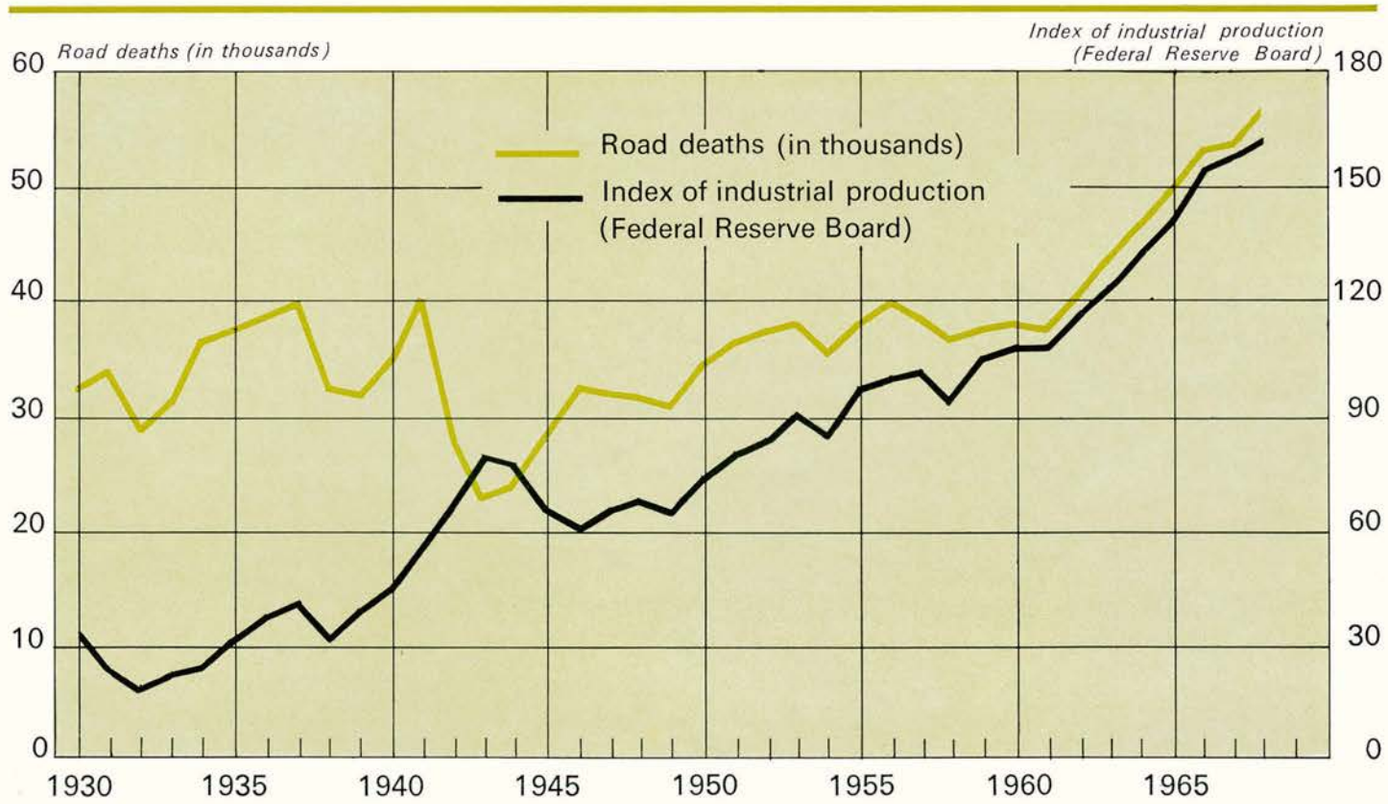
These problems are already acute at the national level, but the growth in traffic between countries such as long-distance freight and tourist traffic, means that roads, and road transport have an international dimension.

The greater the political and economic importance of the decisions to be taken on road construction, safety and traffic, the more essential it is that political and economic action, at both national and international levels, should be based on scientific preparation of the decisions. To enable governments to obtain the maximum return on road investment and to frame traffic regulations which meet present and future requirements, scientific studies are needed; using all the resources of the international scientific community to provide greater effectiveness and to avoid duplication of work.

Even such practical subjects as the use of studded tyres, the launching of safety campaigns, and the efficient operation of bus services, can no longer be treated without a detailed scientific analysis, assessing the social and economic implications of the decisions to be taken. Moreover, many decisions have to be preceded by demonstration projects; the maximum benefit can only be

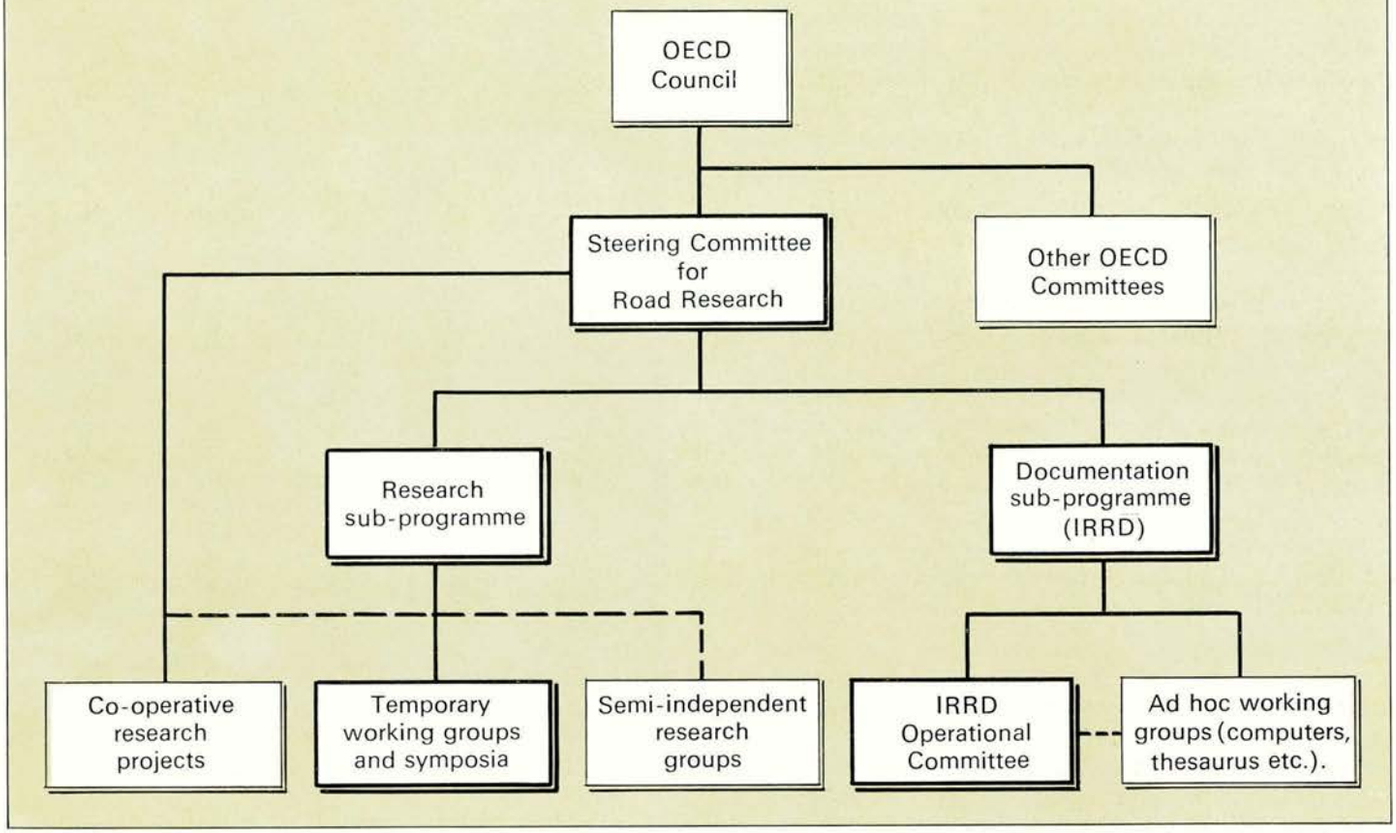
(1) All the European OECD Members with the exception of Iceland.

A. COMPARISON OF ROAD DEATHS WITH THE INDEX OF INDUSTRIAL PRODUCTION IN THE UNITED STATES



Source: Symposium on the use of statistical methods in the analysis of road accidents.

B. ORGANISATION DIAGRAM OF THE ROAD RESEARCH PROGRAMME



1. ROAD RESEARCH GROUPS AND SYMPOSIA 1968-1971

Year	*Construction*	*Safety*	*Traffic*
1968-69	Group on accelerated methods of lifetesting road pavements. Group on motor vehicle corrosion and influence of de-icing chemicals.	Group on biomechanics of automobile accidents. Group on lighting, visibility and accidents. Group on driver behaviour. Symposium on the use of statistical methods in the analysis of road accidents.	Group on area traffic control systems. Group on electronic aids for freeway operation.
1970-71	Group on the protection of bridge decks in reinforced and prestressed concrete. Group on winter damage to road pavements. Symposium on quality control of road works.	Group on the scientific evaluation of the effectiveness of safety campaigns. Group on road safety at junctions in urban areas.	Group on the optimisation of bus operation in urban areas. Group on road design and traffic flow on single carriageways outside built-up reaas.
1971-72	Group on the optimisation of road alignment. Group on road maintenance.	Group on the effects of enforcement of legislation on driver behaviour and traffic accidents. Group on the effects of speed limits outside built-up areas.	Group on construction works on trafficked roads. Group on the scientific evaluation of the effects of roads and traffic on environment in urban areas. Symposium on techniques for improvement of urban conditions by restraint of road traffic.

obtained from a large number of experiments if their results are interpreted internationally and used as the basis for common political decisions.

The objectives of OECD's road research programme are to provide a forum for exchanges of information, for the use and scientific interpretation of research data and the practices of various countries, and for co-ordinating and sharing out research work; it is destined to increase the effectiveness of national and international policies.

Administered by the OECD Steering Committee for Road Research, of which all the OECD countries except Iceland are members, the programme was instituted in 1968 for an initial period of 3 years; a second programme of work (1971-1974) is now starting. Like the first, it covers two fields of activity :

- promotion of international co-operation in road construction, safety and traffic, through the co-ordination of the member countries' research facilities and scientific interpretation of the results of joint experiments;
- the International Road Research Documentation Service, a co-operative documentation system providing for systematic exchanges of information on the scientific literature and research programmes going on in member countries.

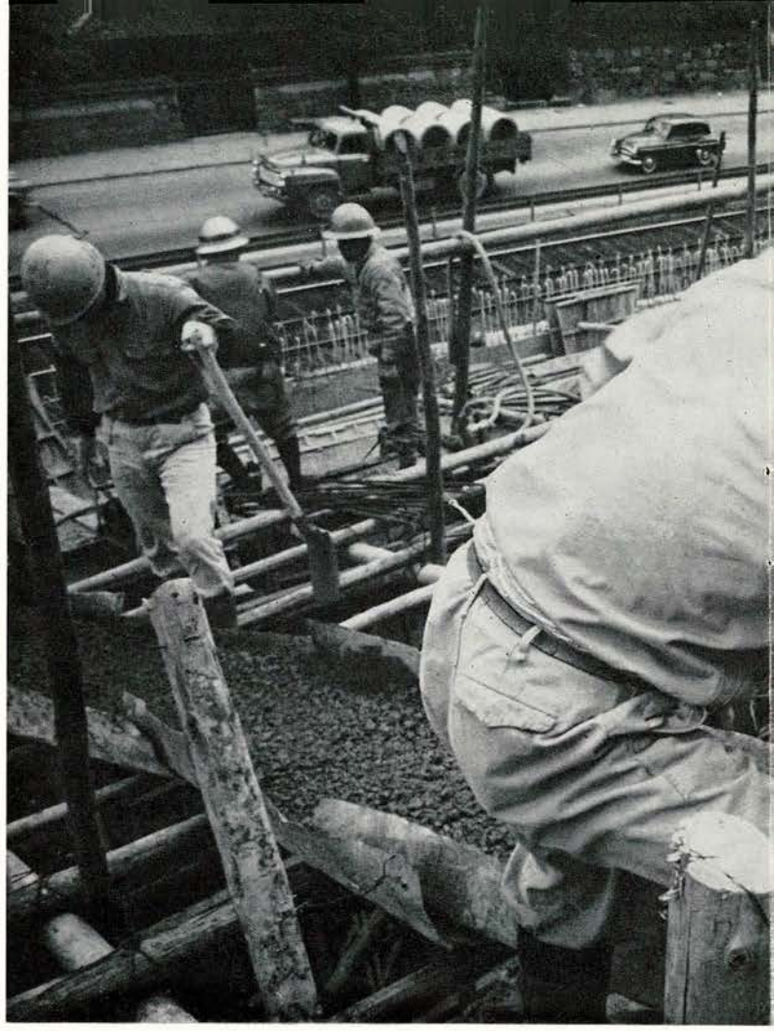
The purpose of the present programme is to define the necessary scientific and technological basis for governments to take their decisions on the most urgent road questions :

- the planning, design and maintenance of the total road infrastructure in the light of economic, social and technical developments and requirements;
- the formulation, planning and implementation of common strategies for road safety;
- the improvement of present systems of traffic control (both on motorways and in cities), and the integration of existing and new transport systems and facilities.

In the face of complex and growing road problems, the Steering Committee for Road Research is trying to devise realistic solutions which will enable those responsible to assess the various possible strategies. It has instructed working groups (Table 1) to report on a number of priority questions connected with road construction, safety and traffic.

As a general rule the conclusions of the working groups are of interest to :

- the international organisations dealing with road questions in their political, legislative or economic aspects;
- those responsible for decisions (in public administration, industry, research laboratories);
- researchers and scientists (specialists actively engaged in research on the subjects with which the working groups are concerned);
- the practitioners (engineers, technical experts, and all those working " in the field "). The Committee has thus been in a position to make recommendations as to what research should be undertaken by the member countries. It has been able to collect information putting governments in a position to take policy decisions based on scientific data. The example of OECD's report on the effects of alcohol and drugs on the behaviour of drivers, which was transmitted to the ECMT, clearly shows how the road research programme can influence government policy; the information in that report has helped the governments of many countries to decide to make it an offence to drive when the blood alcohol content is higher than 0.08 %.



Construction of the expressway be

Moreover, whenever a working group points to a need for international co-operation in scientific and technical research, the Steering Committee arranges for an international research programme to be drawn up, the coordination and cost of which are the responsibility of the participating laboratories.

TRENDS

A traffic accident may be considered as a failure of a complex system involving people, vehicles and environment, including infrastructure. Traffic improvements must deal with these three elements and take account of the possibilities and limitations of each of them.

Three types of approach may be mentioned : educational methods (driving schools, safety campaigns) designed to improve road users' behaviour; regulations and legislation (driving licences, vehicle inspection) designed to supervise road users and their vehicles; and technical elements which mainly concern the design and performance of vehicles and the road system.

The basic aim of road research is to arrive at a better understanding of the factors involved and the relationship between them; to devise means of improving the construction, design and efficiency of urban and rural road systems, road safety and traffic flow; and to make the various road transport systems as efficient as possible.

tween Nagoya and Kobe in Japan.

Various modern scientific techniques and methods, and new technologies and materials, are available for dealing with the various short-term road problems and facilitating basic research, such as : the use of electronics in road surveillance and control; computer techniques in road design; simulators in research into drivers' behaviour; new construction methods and new materials; and new statistical methods and control techniques.

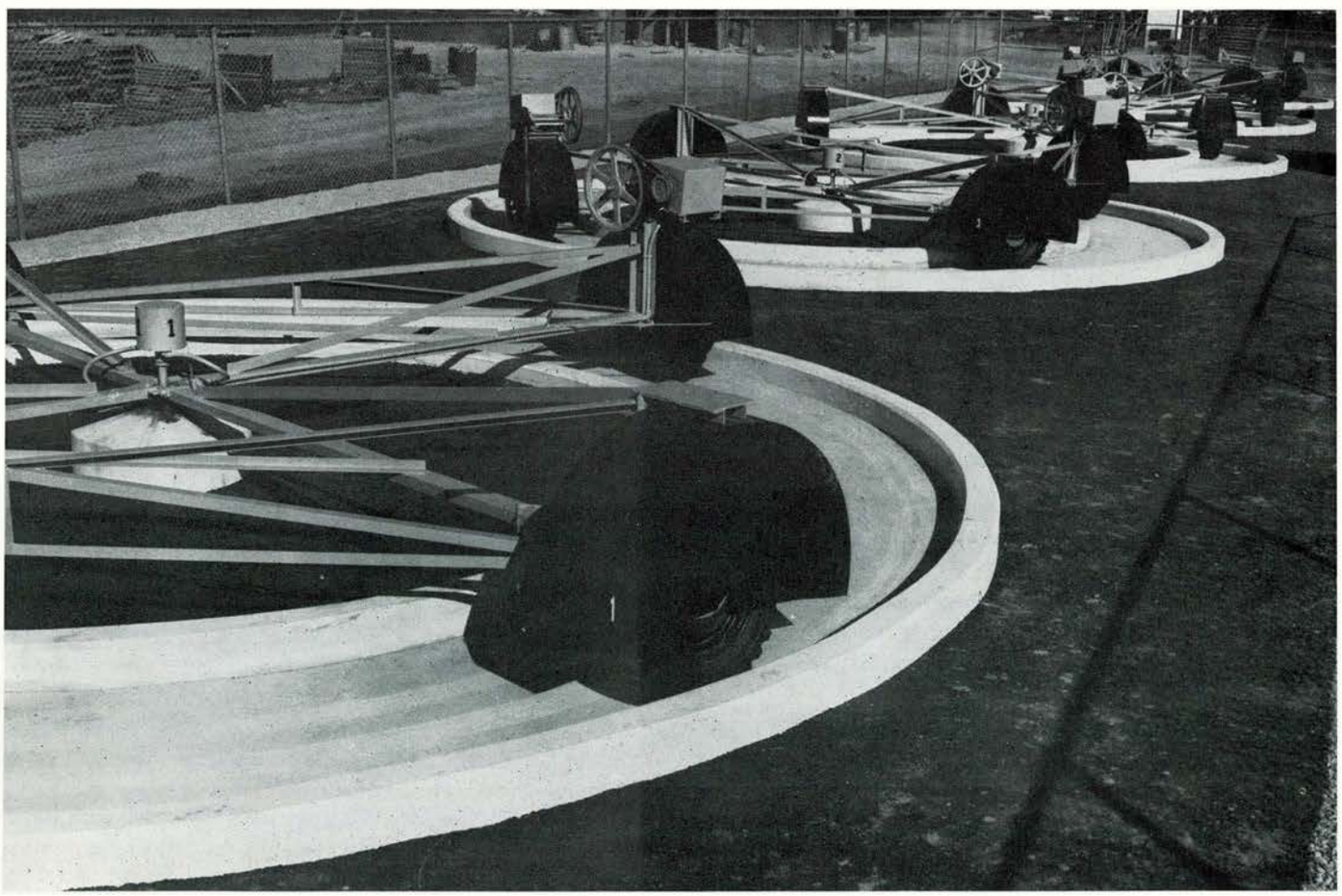
The need for operational research is especially clear in the case of complex road safety problems for which an overall approach is essential. The use of systems engineering methods, and multidisciplinary teams (road and motor vehicle engineers, physicists, mathematicians, psychologists, etc.) will ensure a comprehensive analysis of all the aspects encountered and give guidance on the effectiveness of methods and techniques applied and measures taken. The ultimate aim is to find a compromise between safety, congestion, amenity and costs. Consideration of the economic implications, and cost/benefit studies, are integral parts of such an approach.

CONSTRUCTION

Expenditure on road construction has been increasing in the ECMT member countries during the last ten years. Taking 1960 as 100, national expenditure on new construction and improvements ranged from 112 to 458 in 1967.

Heavy expenditure is also planned during the next ten

Testing an anti-rust paint on circular test tracks of a Canadian laboratory.



to fifteen years; in the United Kingdom, for example, it is intended to allocate some £2,250 million for new construction and improvement of major roads over a ten to fifteen-year period starting in 1972. Over the next decade, a shift of priority can be expected from rural to suburban and urban roads.

The planning, location and construction of new motorways, and the improvement of existing secondary road systems, taking account of the economic, social and technical problems involved, will be one of the major concerns of governments during the coming year. They will be called upon to intensify their work on planning, programming, and budgeting of national road systems. Greater importance will be attached to the resources devoted to road research, to enable those responsible to achieve their aims of designing, constructing and maintaining roads, motorways and bridges more quickly and economically.

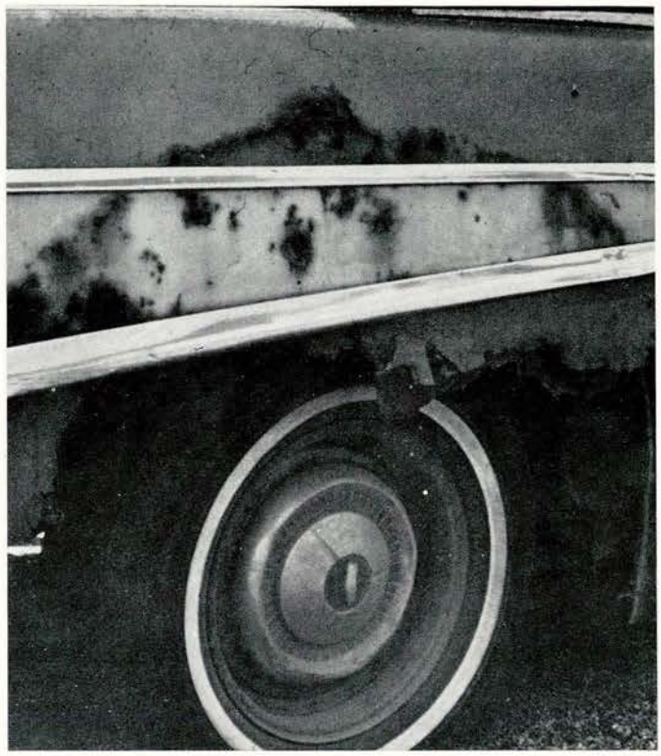
The planning and programming of national road infrastructure largely depends on knowledge of the probable life of road surfaces. Studies on pavement life enable national road maintenance and improvement programmes to be spread over time, plans to be drawn up for subsequent extensions of the road system, and estimates made of the resources needed.

A working group on accelerated methods of life testing road pavements has completed the first comprehensive international study of the techniques employed. This will enable authorities and road engineers to design roads taking into account the economic factors involved. It reviews the methods of testing the life of pavements and the difficulties involved, and also describes the research done on road pavements, with full-scale road tests, and accelerated systems with simulated loadings.

Another group has been asked, in the framework of this programme of work, to study corrosion of vehicles and the influence of de-icing chemicals. These chemicals are indispensable to ensure satisfactory traffic conditions in winter, but they increase the rate at which vehicles corrode. This involves financial losses and may compromise the safety features of vehicles. One of the group's conclusions is that car manufacturers should produce vehicles with greater resistance to corrosion.

National programmes of road development, design and construction should concentrate on improvements to existing methods and systems, with the help of improved operational techniques and more intensive use of the facilities and equipment that are available. A few main areas for future research may be mentioned :

- Economic evaluation of road improvements in relation to the entire road system; analysis of amenity and the environmental and social effects of road construction and improvement.
- New road construction methods; these call for a thorough study of the performance of road pavements and dimensional standards, with the help of sophisticated mathematical models, and basic and systematic research on, and use of, new materials (such as industrial waste products and plastics) and quality control techniques.



Although they are essential to preserving normal traffic patterns in winter, de-icing chemicals help to increase the hazards caused by corrosion of motor vehicles.

This should ultimately make it possible to obtain more adequate and durable road structures.

- Development of improved methods of road maintenance, including strengthening of roads now subjected to much heavier traffic, reduction of delays caused by road works, non-skid surfaces, winter maintenance measures, and the introduction of modern methods and machinery.

There will also be an increased need to study evaluation, construction and maintenance techniques in urban areas, where the problems are different. More attention will have to be paid to such problems as the effects of urban road construction on traffic flows and accidents, maintenance techniques for roads with heavy traffic, construction techniques in limited spaces, etc.

SAFETY

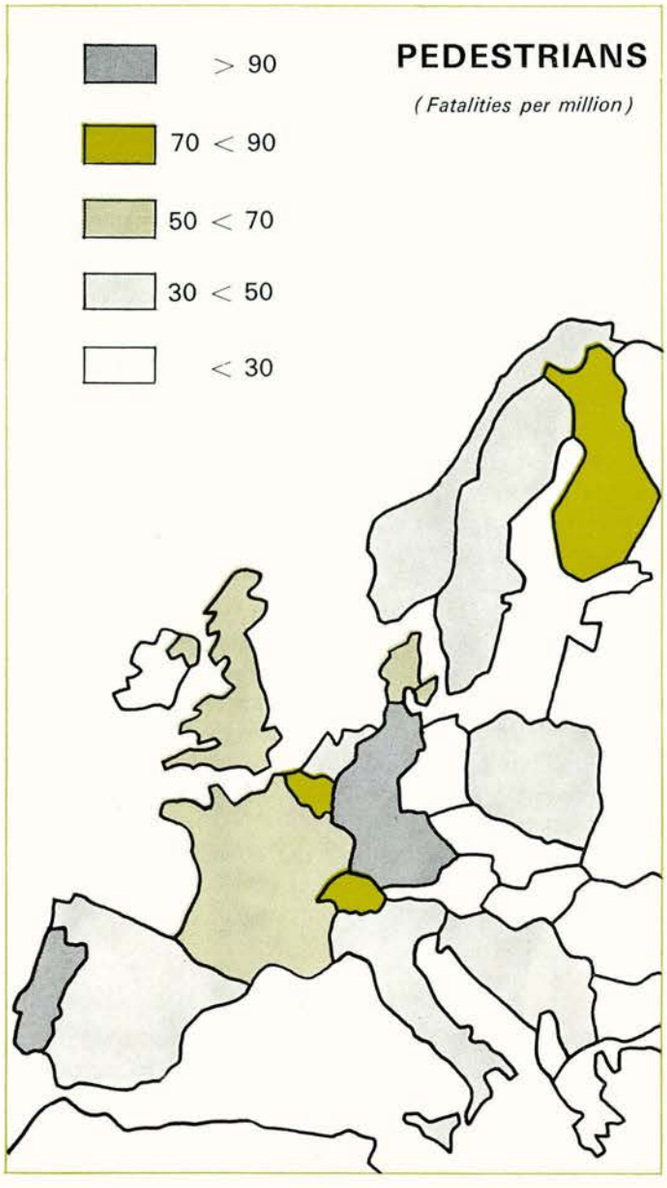
Concerning road safety, the indices for road deaths increased between 1961 and 1966 from 100 to an average of 122 in 16 European countries. Although accident costs are not easy to quantify, their direct and indirect effects on society and on economic development are certainly considerable. For moral, social and economic reasons, governments are obliged to carry out far-reaching safety programmes and to seek new approaches to road traffic control.

The Steering Committee for Road Research considers that the problem of road safety must be approached in a much more fundamental way than merely from the standpoint of equipment, acceptance standards and regulations, which are at present being dealt with by a number of national and international organisations. A need for

an overall systematic approach and a new integrated strategy is clearly emerging. Various countries have already established national safety centres or agencies responsible for all aspects of safety and traffic, but an enormous research effort is still needed to formulate, plan and implement an overall road strategy, which demands considerable economic resources.

A group on the biomechanics of road accidents has reported on the research done and measures taken in regard to vehicles and their accessories, taking into account the tolerance of the human body. It has made a cost/benefit assessment of some of the features of vehicle design and has shown which of them should be given priority for the protection of passengers and other road users. The group recommends a major effort of international co-operation in order to evolve an integrated concept of internal and external vehicle structure to provide maximum protection in case of accident; this study, which will be based on detailed on-the-spot accident investigations by multidisciplinary research teams, and on basic research into crashes (accident kinetics, human tolerance, etc.) should eventually lead to a considerable reduction in the number of serious injuries. The achievement of this aim will call for considerable investment and operational research into all the factors involved.

Several other groups have been studying road safety questions. The group on lighting, visibility and accidents (table 2) has reviewed the state of knowledge on artificial lighting on roads and vehicles, and in particular has initiated a large development programme for polarized headlights which is now at the public demonstration stage. The group on driver behaviour has studied the techniques for observing drivers' behaviour and selecting safe and unsafe drivers; it has examined the effects of new training and retraining methods on the behaviour of drivers, and has assessed present knowledge about the psychology of drivers. *(Continued on page 24)*



2. PERCENTAGE OF FATAL ACCIDENTS DURING HOURS OF DARKNESS AND TWILIGHT

		Hours of darkness %	*Hours of twilight* %	*Data*
Belgium	(1967)	50.2	3.1	Deaths
Denmark	(1966)	36.1	2.2	Deaths
France	(1960)	37.7	6.1	Deaths
Germany (Baden-Württemberg)	(1962)	43.0	• •	Deaths on the site of accident
Italy	(1963)	37.2	5.1	Deaths
Netherlands	(1963)	33.4	2.9	Fatal accidents
Sweden	(1967)	41.3	• •	Fatal accidents
Switzerland	(1967)	37.3	4.4	Deaths
UK	(1966)	52.3	• •	Deaths
	(1967)	47.0	• •	Deaths
US	(1967)	50.5	4.3	Fatal accidents

Source: Road Research Group on Lighting, Visibility and Accidents.

The Group on pedestrian safety has brought to light the various aspects of this problem, on which there had not hitherto been any co-ordinated action by those responsible, though in many countries pedestrians account for approximately 30 per cent of all those killed by accidents in urban areas (see map). The group's conclusions on the effects of alcohol and drugs on drivers' behaviour, already mentioned, have been acted on by many governments. Lastly, a symposium on the use of statistical methods in the analysis of road accidents has indicated the principal techniques to be applied in this field.

It is becoming increasingly clear that a major part of research must in future be devoted to the question of how to influence human behaviour on the roads, and how to help drivers and pedestrians. There is also a need for research into the effectiveness of publicity campaigns (a research group on safety campaigns was formed in 1970) and educational techniques, as well as on training and retraining, perception and decision-taking. Little, again, is known about the effectiveness of law enforcement.

One of the features of modern road design and construction techniques is the inclusion of road safety measures in the planning and design stage of new roads and in the plans for improving existing roads. Special emphasis will be attached to studies of intersections (group on safety at junctions), safety standards for road surfaces and road materials, road hazards, winter maintenance, etc.

Whatever the success obtained by other methods of accident prevention, the rising performance of vehicles and the need to protect their occupants in case of accident implies radically new long-term research on vehicles and their equipment.

TRAFFIC

New approaches must be sought to road traffic problems because of the constantly increasing number of vehicle registrations, the index for which in the seventeen member countries of the ECMT averaged 146 in 1966 (1961 = 100).

Urban and suburban areas are and will continue to be increasingly dependent on motor vehicles for transporting passengers and freight. In the United States, for example, one-half of all road journeys currently take place on urban roads that account for only 14 per cent of total road mileage.

There are many possible ways of improving traffic conditions, either by restricting demand or by reducing the constraints of present traffic systems. But the decisions to be taken, and particularly those of an administrative or legislative nature, will only be valid if the integration of existing and new transport systems and facilities is considered. Work to investigate the proper balance between these various systems must be regarded as the most urgent task; while in the short-term, immediate benefits are likely to be derived from improvements to existing road systems taking advantage of a modern systems approach and new technology.

A group on electronic aids for freeway operation has made the first international survey of this question and has reached the conclusion, among others, that the main purpose of electronic aids (Table 3) should be to avoid congestion rather than to warn users. For obvious economic and practical reasons, and in order to achieve uniformity in international transport and road traffic, it is necessary, in this first stage of research and development, to apply uniform world-wide standards for systems of communicating with drivers, and for the equipment on vehicles produced in one country to be compatible with road installations and vehicle equipment in other countries.

The group on area traffic control systems has evaluated the different systems of traffic control in use in various countries, the control equipment, and the policies adopted; it has reported on the development of traffic simulation, and the merits and limitations of simulation models. It concludes that area traffic control systems are needed, as this is a solution involving less investment than any other measure (such as the re-structuring of the central business districts of cities or modernisation of their planning concepts).

Pedestrians account for up due to traffic accid

The major traffic problems arise in urban and suburban areas. In many cases, traffic engineers have exhausted the possibilities of making improvements with present techniques. New, more adaptable techniques must be developed to reduce congestion and enable the existing road system to be used more efficiently. The use of computers to exercise real time control would appear to be especially suitable, as the final aim is to develop and design an automatically controlled system and to achieve maximum safety for traffic, easy flow, and optimum service capacity.

Recent research has shown that traffic control on motorways has to take account of the road system of which the motorway forms part. None of the sub-systems can function effectively and balance demand with available capacity unless research is done to provide an integrated approach to traffic control on both the motorway and the adjacent secondary network.

to 30 per cent of fatalities
ents in urban areas.

3. ELECTRONIC AIDS FOR FREEWAY OPERATION

DIRECT IMPROVEMENT OF SAFETY BY:

- control of minimum headway;
- warning systems;
- obstacles, stranded vehicles, congestion;
- climatic conditions.

IMPROVEMENT OF FLOW CONDITIONS (journey time) **AND INDIRECT IMPROVEMENT OF SAFETY BY:**

- control of main flow;
- ramp metering;
- diversion of traffic from freeways;
- directional help;
- route guidance;
- passing aids.

IMPROVEMENT OF LOCAL CAPACITY AND INDIRECT IMPROVEMENT OF SAFETY BY:

- filling gaps;
- control of flow to local and tidal capacity;
- diversion of flow from an affected lane;
- information to drivers.

IMPROVED COMFORT AND INDIRECT IMPROVEMENT OF SAFETY BY:

- information to drivers on network situations;
- information for drivers stopped in traffic congestion;
- parking information.

***Source** : Road Research group on electronic aids for freeway operation.*

There are also problems affecting traffic in rural areas which require attention. These include the design of rural road networks, traffic capacity standards, and the development of road layout standards, particularly at intersections.

DOCUMENTATION AND INFORMATION

The second main aspect of the work of the Steering Committee for Road Research is designed to meet a need which began to become apparent in the early Sixties : to pool each country's resources for collecting information on road research. The same problem incidentally arises in all the sciences : the number of scientific reviews has increased from 10,000 at the beginning of the century to more than 100,000 at the present time. More than 10 million scientific and technical documents are produced in the world each year and their number doubles every 15 years. Engineers and researchers are no longer able to absorb this flood of information. The problem is even too great for any single country, however large, to solve. It is therefore necessary to resolve it by international cooperation in the various scientific fields.

(Continued on page 26)

A modern system of international co-operation in documentation matters was therefore started in January 1965 : the International Road Research Documentation (IRRD) scheme. Originally confined to the road construction field, the system was extended in 1967 to all road research, to serve the whole scientific community concerned in road construction, safety and traffic.

The IRRD is now a well-established documentary scheme undoubtedly the only one of its kind, functioning within the OECD Road Research Programme and, constantly evolving to meet the needs of road researchers and engineers who are anxious to :

- maintain their general standard of scientific and technical knowledge ;
- acquire new knowledge in their own branch of activity ;
- quickly ascertain the state of knowledge on any given subject ;
- be systematically informed of the research programmes going on in the laboratories and universities dealing with various aspects of road research.

PRINCIPLES OF OPERATION

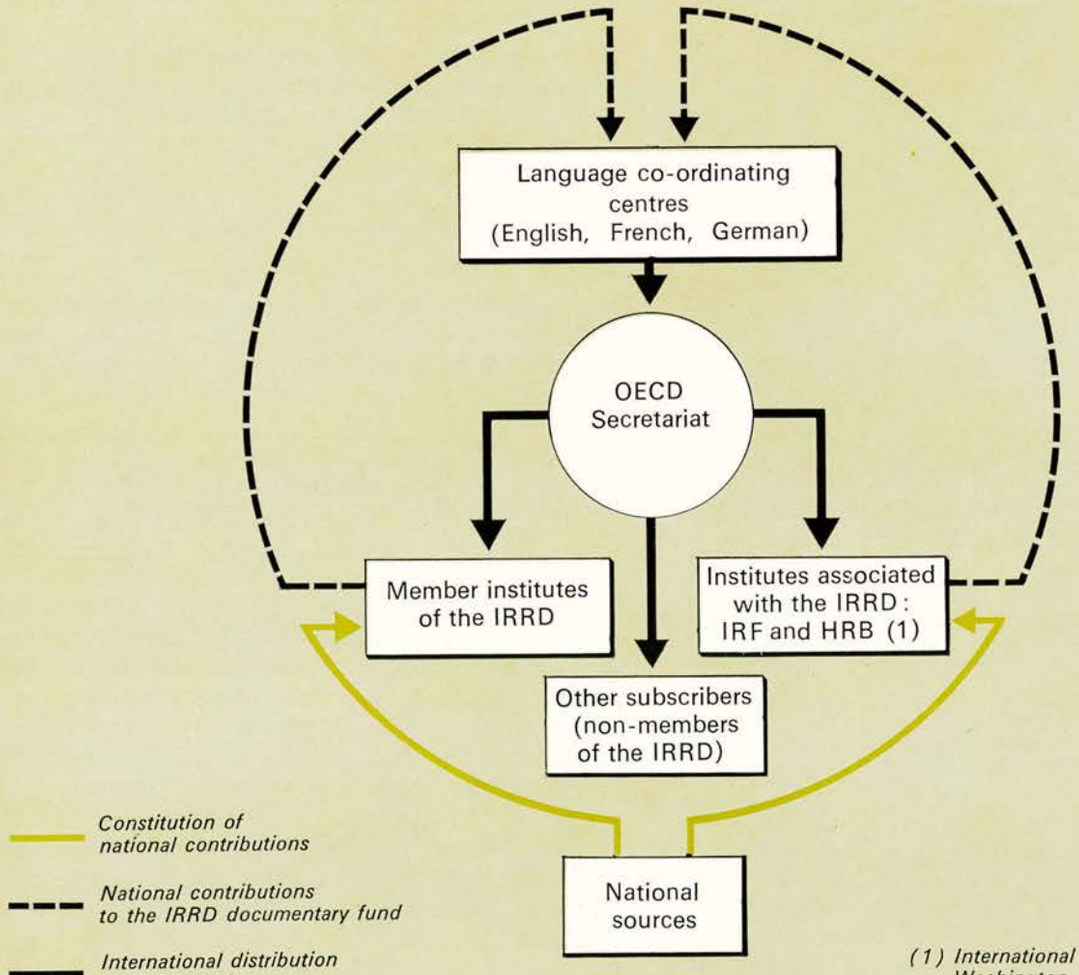
The task of the IRRD scheme is to collect and distribute information in the form of analytical summaries identified by key words. Two types of information are covered :

- published documents, serial and non-serial ; articles, books, reports on research or conferences, theses, standards, etc. ;
- current research : a continuous survey enables a record to be kept of research going on in the member countries, and a working agreement with the International Road Federation permits similar information to be obtained on other countries.

The general principle is that the IRRD (1) members are

(1) At present fifteen countries are members of the IRRD scheme : Austria, Belgium, Canada, Denmark, France, the Federal Republic of Germany, Ireland, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom. The United States is associated with the work of the IRRD through the Highway Research Board.

C. IRRD - FLOW CHART : COLLECTION OF DOCUMENTATION AND DISTRIBUTION OF INFORMATION



(1) International Road Federation, Washington, and Highway Research Board, Washington.

responsible for processing on a uniform pattern the information available in their countries, the processing of information coming from member countries being shared among the members with facilities for dealing with them. The sheets are then sent to a language co-ordinating centre. There are three of these, one for each language used : English (Road Research Laboratory, Crowthorne), French (Laboratoire Central des Ponts et Chaussées, Paris), and German (Bundesanstalt für Strassenwesen, Cologne). These centres co-ordinate and inspect the sheets before transmitting them to OECD for general distribution. In this way each member of the IRRD has a complete collection of sheets. The task of the IRRD scheme is to prepare the documentation but not make use of it.

The advantages of this method lie not only in the division of labour but also in the certainty that the information is processed in each country by specialists. Another advantage is that the national experts are able to find unpublished information in their own country. Lastly, national autonomy is preserved since each country is free to use the documentation in the way best suited to its needs : question-and-answer service, selective dissemination, bulletin, etc.

An Operational Committee consisting of the heads of the documentation services of the three co-ordinating centres is responsible for supervising the working of the system, co-ordinating and harmonising the work of the various participating bodies, dealing with any technical question related to the functioning of the IRRD, and making any study needed for its development. The United States Highway Research Board (HRB) and the International Road Federation (IRF) are associated with the work of the Operational Committee.

PROCESSING OF PUBLISHED DOCUMENTS

Some 800 periodicals from 40 countries have been shared among the 17 participating institutes. The first stage in processing the periodicals is to select what information is to be included in the system. The range of subjects which may occasionally interest engineers and researchers in the road transport field is wide ; most of the sciences (mathematics, chemistry, physics, medicine, sociology, etc.) could be included in it. Taking into account the existence of other documentation systems (such as the work of the ECMT on transport economics), it was decided to concentrate in the IRRD on subjects which are of definite and continuing interest to road researchers and engineers. The main subjects in the field of work of the IRRD are given opposite.

The work of selection must be done in depth in order not to overlook any information that is of value. Information coming under one of the headings must, in order to be included in the IRRD, have a definite scientific or technical value, and should also provide new information, summarise information already known, or be of bibliographic value. The application of these principles leaves very wide discretion to those making the selection, who are specialised engineers or scientists, to use their personal judgment.

An analytical summary is made of each document selected. Since the system is trilingual, the summaries must be prepared in one of the three official languages. Rules have been adopted for ensuring that the summary (approximately 200 words) is sufficiently precise and detailed to enable the researcher or engineer reading it to obtain the best possible idea of the contents, scope and interest of the original document.

The information selected and summarised is then identified by key words taken from the common trilingual thesaurus enabling the document to be described in codified form and retrieved. The thesaurus contains approximately 1,600 official codified key words supplemented by some three times that number of related terms having the same code as the official key word on which they depend. The key words have been grouped into 51 subject fields represented graphically by arrowed diagrams.

The summary and key words are recorded on an "information sheet" which also includes a number of indications for locating the document exactly : title, name of author, review from which taken, any translations, etc.

SURVEYS OF CURRENT RESEARCH

Information on current research is of growing importance both to those responsible for preparing national research

HIGHWAY FINANCING AND ADMINISTRATION
DESIGN OF ROADS AND RELATED STRUCTURES

Highway Planning. Pavement Design.
Properties of Road Surfaces. Bridges and Retaining Walls.
Tunnels. Water Run-off.

MATERIALS

Bituminous Binders and Materials. Concrete.
Other Materials used in Pavement Layers.
Steels and Metals. Miscellaneous Materials.
Aggregates.

SOILS AND ROCKS

General Soil Surveys.
Soil mechanics applied to roads and road structures.
Rock mechanics applied to roads and road structures.

CONSTRUCTION AND SUPERVISION OF CONSTRUCTION WORK MAINTENANCE

TRAFFIC

Traffic theory. Traffic planning. Traffic control.

ACCIDENT STUDY

Accident statistics. Accidents and the road.
Accidents and the human factor.
Personal injuries resulting from traffic accidents.
Safety road equipment.

VEHICLES

Vehicle design and safety. Comfort of vehicles.
Vehicle nuisance. Vehicle corrosion. Vehicle testing.
Vehicle operating costs.

programmes and to the researchers themselves. It is also important, when considering starting a research project, to know which bodies are working on the same subject and what documents have already been published. There is a long time lag (at least one year, often several years) between the end of a work of research and the publication of its main results.

A system for collecting and up-dating information on current road research work has accordingly been started in the IRRD, working in close co-operation with the International Road Federation (IRF). Each member of the IRRD collects information concerning current research projects in the course of an enquiry made every three years which includes visits to all bodies working on road questions. These are then recorded on a " research sheet ", which gives the title, address and a brief description of the research, identifiable by suitable key words, and transmits this in the same way as the information sheets to the co-ordinating laboratory for inclusion in the IRRD documentary pool. With the help of an annual updating by correspondence it is possible to record the new research projects.

The " Information sheets " are also transmitted to the IRF which incorporates their titles in its annual publication " World Survey of Current Research and Development on Roads and Road Transport ".

In return, the IRRD receives from the United States Highway Research Board (HRB) the sheets for research projects of which it has been notified. These come from several sources :

- research recorded by the IRF in the course of its world-wide surveys; the IRF is continuously surveying non-IRRD member countries in exactly the same way (an agreement on the procedure for this survey has been reached between the IRF and the IRRD) ;
- the HRB receives sheets relating to research financed by United States Government funds from the Bureau of Public Roads;
- it receives details of other research in fields of interest to the Highway Research Board from the Science Information Exchange.

The system is thus extremely comprehensive and it may be considered that details of the greater part of the research being done in the Western World at any time are available in the IRRD scheme.

PROCESSING OF INFORMATION BY COMPUTER

Since the use made of the information is left to the initiative of the participating countries, the IRRD scheme has been devised to meet the requirements of all types of storage equipment : manual or mechanical processes (punched-card, Selecto, Peek-a-Boo), and computers.

In the early years, most members used documentary memories of the Selecto or Peek-a-Boo type. The size of the present store of documents (approximately 60,000 records), the number of new items to be recorded (15,000 annually), the careful treatment required, and recent improvements in data processing techniques are leading to increased use of computers for processing IRRD information.

As a result of a recent study a communication format tape (CFT) for the transfer of information has been prepared. This system, developed in accordance with ISO norms, meets the requirements of most of the types of computer in use; it was intended for transfers of information from one centre to another, but member countries wishing to do so can also use it for drawing on information within the country.

The CFT, which will gradually replace paper as a medium for exchange of information, will be employed for this purpose from 1971 onwards among the countries using computers, the system of transfer of information recorded on cards in the IRRD continuing for the other members.

OECD PUBLICATIONS ON ROAD RESEARCH

INTERNATIONAL ROAD SAFETY RESEARCH DIRECTORY, 2nd edition (December 1966).
ALCOHOL AND DRUGS (January 1968).
RESEARCH ON CRASH BARRIERS (February 1969).

MOTOR VEHICLE CORROSION AND INFLUENCE OF DE-ICING CHEMICALS (October 1969).

PEDESTRIAN SAFETY by B.M. Biehl, S.J. Older and D.J. Griep (May 1970).

REPORT OF THE SYMPOSIUM ON THE USE OF STATISTICAL METHODS IN THE ANALYSIS OF ROAD ACCIDENTS held at the Road Research Laboratory, Crowthorne, United Kingdom, on 14th, 15th and 16th April, 1969 (September 1970).

DRIVER BEHAVIOUR (June 1970).

LIGHTING, VISIBILITY AND ROAD SAFETY (to be published in April 1971).

ELECTRONIC AIDS TO FREEWAY OPERATION (to be published in May 1971).

RULES OF OPERATION OF THE IRRD, first edition (March 1971).

IRRD THESAURUS (April 1971).

LIST OF PUBLICATIONS SCANNED BY THE IRRD (January 1971).

REPORT ON THE USE OF COMPUTERS FOR THE IRRD (April 1971).

AN INCOMES POLICY IN OPERATION : THE EXPERIENCE OF NORWAY

After several years of widespread disenchantment with incomes policies, intense inflationary pressures have given rise to new interest in this tool of economic policy (1). Certain smaller nations have long experience with such policies and have continued to consider them an important part of their policy mix. The 1971 OECD Economic Survey of Norway, just published, describes that country's incomes policy in some detail and provides the basis of the following article.

(1) " Inflation - the Present Problem ", OECD, 1970, contains an annex which briefly describes the incomes policies of eight countries as well as making more general observations.

Although some of the arrangements are of recent origin, incomes policy in Norway is deeply engrained in the institutional life of the country. In particular it is linked to the Norwegian system of industrial relations with its highly centralised character and legal framework and to the considerable degree of organisation which characterises other sectors — agriculture and fisheries.

Wage, Salary and Price Determination

In the first post-war years the Government intervened directly in wage determination, using its powers to impose a general wage freeze, but there is now a general political consensus that wage matters should be settled by labour and management directly. As to prices, the Government also has the power to effect a freeze and did so last December as an anti-inflationary measure.

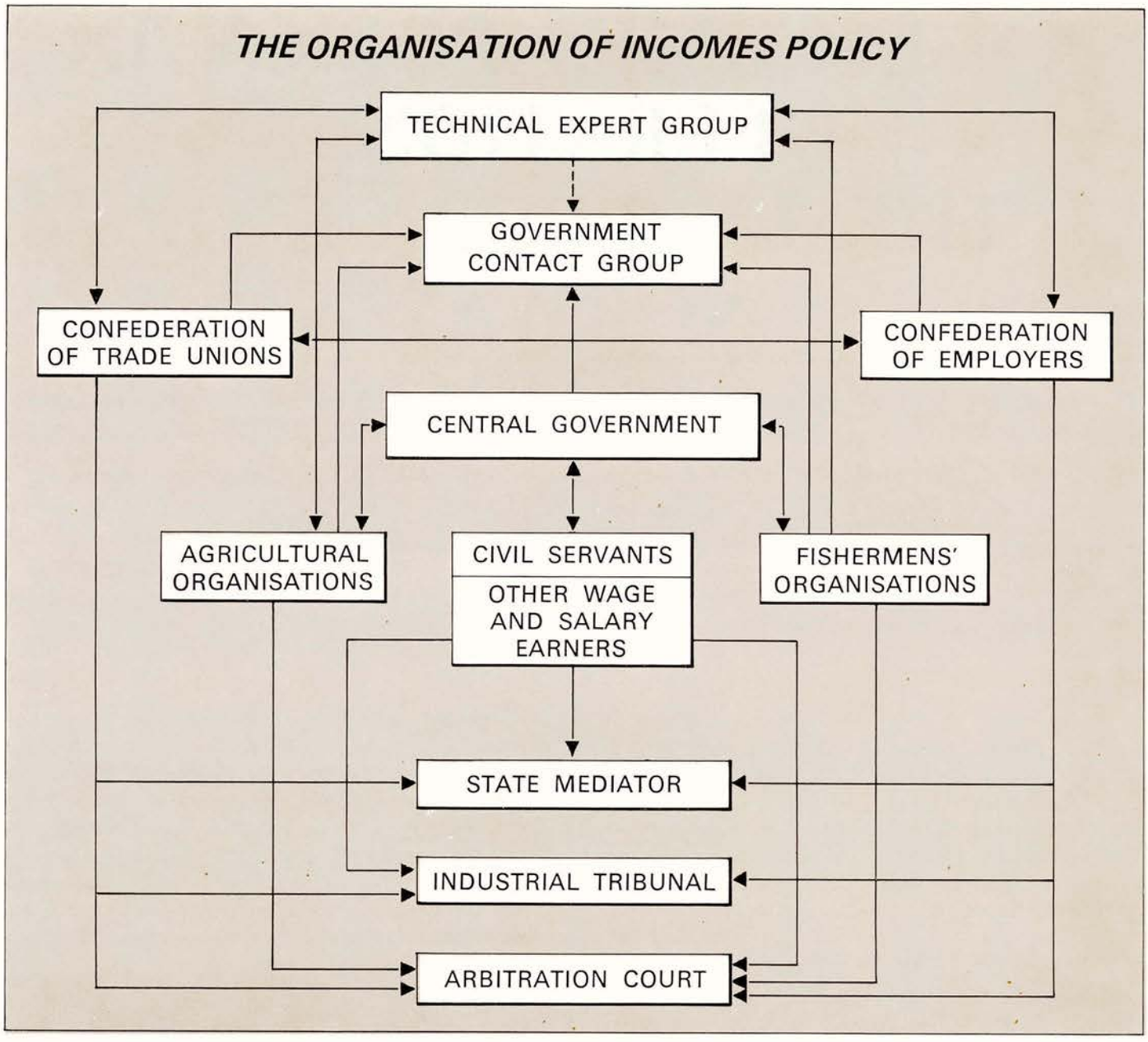
Wage negotiations in the private sector are dominated by one strong central organisation for the trade unions (the Confederation of Trade Unions which groups about forty national unions whose members account for half the country's wage-earning work force) and one central organisation for the employers which includes the great majority of privately owned firms in industry, transport and construction. Wage claims are coordinated within the union federation so as to arrive at a common strategy on those issues which are to be negotiated centrally. Other matters are left to local settlements negotiated within the framework of the central contract. A common strategy is also worked out by the employers.

When agreement is reached between the two central parties and approved by referendum of the members, the subsequent agreement is legally binding; and during the contract period (usually two years) the parties have neither the right to strike nor to impose a lockout over points covered by the agreement. An Industrial Tribunal rules on the interpretation of the contract, and, in the event that breach of contract is established, the injured party may have a right to compensation.

If agreement is not reached, there is a cooling-off period before any strike, and the matter is referred to a government mediator who attempts to find a basis for settlement. This institution is already much used and is of growing importance. If mediation fails, the Government has the right to propose to Parliament the setting up of an Arbitration Court whose verdict is binding upon the parties (2), and this power has been invoked on various occasions but has been judged likely to impede progress in free negotiations with the result that the Government has declared its intention not to make use of the compulsory arbitration court.

Salaries are determined in similar fashion and negotiations and agreements also fall within the legal framework, but the organisational structure of the unions is less centralised with the result that there are a greater number of independent negotiations. There

(2) In the early post-war years the Government could decide on arbitration without consulting Parliament.



is, however, a trend towards greater coordination of agreements between employers and salaried workers.

Farmers and fishermen also settle their incomes through centralised negotiations with the Government, the results of which apply to everyone in the sector and are binding on the parties, the aim being to keep total incomes of these groups in " reasonable " parity with wage and salary earnings.

The Contact Committee and the Technical Expert Group

Since 1962, the Government's incomes policy has revolved around a Contact Committee composed of the Prime Minister, the Minister of Finance, the Minister of Wages and Prices as well as representatives of the trade unions, employers, farmers and fishermen. This group is supposed to influence income developments in a coordinated manner and within the broad context of developments in the economy as a whole. It is essentially a forum for the exchange of information and views on the scope for income improvements and their likely effect on the economy. The consultations enable each of the groups to become aware of what is likely to happen in the other sectors and to weigh the likely impact of these changes on their own position.

The Government for its part can give the other parties a glimpse into, or even a commitment on, how it will use the various economic policy instruments — price subsidies, family allowances, taxation, social and labour market policy — so that these actions can also be taken into account by the negotiating parties in formulating their claims.

This work of coordination is reinforced by a group of seven experts (the Technical Expert Group) headed by the Director of the Research Institute of the Central Bureau of Statistics and including specialists from each of the various parties involved in income settlements as well as the Ministries of Finance and of Wages and Prices; its task is to provide an objective basis for the discussions and to eliminate insofar as possible disagreement on factual matters. (For this purpose they have prepared and use an econometric model of the Norwegian economy as a basic tool of analysis.)

How the Incomes Policy Works

The way incomes policies are formulated and applied can be illustrated by the 1970 income negotiations. The Contact Committee's discussions on the contract which expired in April of that year began in late 1969 — about the same time as the Trade Union Confederation began its preliminary consultations with member unions and the internal deliberations of the other major groups — salaried workers, public employees (who comprise roughly 20 per cent of the total work force) farmers and fishermen — got underway. By February when the confederations of trade unions and employers started their formal negotiations, the Expert Group had already made its appraisal of the economic situation and of the effects on the economy of alternative income settlements so that the parties could take these considerations into account in fixing their claims. And the Contact Committee had discussed the likely content and form of the agricultural income settlement and the Government's intentions as to its implementation and in particular how food prices would be affected.

Negotiations broke down, and the Government mediator stepped in in mid-March. By early April a compromise framework agreement was reached which formed the basis for negotiations to implement this agreement at local level. After the local agreements had been negotiated and approved, the complex of agreements was approved in early May in a general vote of all unions and employers. It served as the basis for other settlements and at the end of May final agreement was reached between the Government and representatives of agriculture and the fisheries.

Next the Expert Group reassessed the economic effects of settlements actually concluded in light of then current information about trends in the economy as a whole, made a forecast of likely price rises in 1970-71 and pinpointed the main causes of the expected increases: the income settlements themselves, higher import prices and higher indirect taxation which had been imposed at the beginning of the year in order to restrict the growth of domestic demand.

The Technical Expert Group is considered by OECD's Economic and Development Review Committee to be one of three key factors which explain why incomes policy has become an integral part of the Norwegian economic and political system. " Information is provided to the public ", the group notes, " in an objective and understandable way on the effects of income settlements on the economy as a whole. "

The other two features especially noted by OECD's Committee are :

- the strong coordination in time and content of income claims and negotiating strategy within the groups directly involved — enterprises, labour, civil servants, other salary earners, farmers and fishermen.
- the formal contacts between the Government and these major groups and the existence of economic instruments which enable it to influence income settlements on a nation-wide basis within the framework of policies for overall economic balance.

How Successful is the Incomes Policy?

As to the impact of incomes policies on prices and money incomes, OECD's Economic and Development Review Committee notes that performance has been about the same as in other industrialised European OECD countries both as to the rate of price rises (3 ½ — 4 % a year during the 1960's) and the trend of unit labour costs.

However, it notes that because of her dependence on foreign trade (exports amount to 22.6 per cent of GNP), it would have been difficult for Norway to perform better than her trading partners in this respect; for such a course would have led to comparatively large increases in income levels in the high productivity export sectors and this would have been unacceptable from the point of view of income distribution. Since exchange rate changes have not been considered a workable instrument for influencing relative cost positions, the course deliberately chosen has been to allow wages in " exposed " industries to increase in such a way as to be compatible with maintaining international competitiveness while increased costs in " sheltered " sectors are passed on into prices so as to keep profits and incomes in those sectors at a reasonable level.

The Committee's report notes that, while increases in prices and costs have been about the same as the average in European countries, unemployment has been lower and growth has been rapid and steady. If wages and incomes had not been coordinated, wage and price inflation might have been greater, given the persistently strong pressures on resources. Thus " the merit of Norwegian incomes policy, besides being an instrument of income distribution lies in the fact that it has enabled the Government to keep the use of productive resources on a very high level throughout the post-war years ", the Committee notes.

RATIONALISATION OF EUROPEAN RAILWAYS

agreement on an automatic coupling device

The Governments of member countries of the European Conference of Ministers of Transport (ECMT) (1) recently agreed that all railway wagons used in international traffic should be simultaneously equipped with an automatic coupling device. In their view, this would help to speed the flow of international traffic and improve the operating efficiency of the European railway system, which plays an important role in their long-term plans. The project also embraces the East European countries, since it is being carried out in consultation with the "Organisation for Railway Collaboration (OSJD)" (2) which represents the railway authorities of those countries. It now remains to decide the date for making the change-over, with due regard to the financial implications and to the benefits expected from this first step towards automation of the European railways.

(1) Austria, Belgium, Denmark, France, Federal Republic of Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom and Yugoslavia.
(2) Comprising, in Europe Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania and the USSR.

Of every 100,000 wagon shunters, four are killed and 150 injured each year. Dangerous work of this kind is increasingly a thing of the past. The International Labour Organisation has been concerned with this since 1923 and recommends the adoption of automatic coupling. Shunting is a hard and poorly paid job, and people prepared to do it are becoming increasingly scarce as the years go by, especially in the highly industrialised countries.

The social implications of introducing automatic coupling thus have a bearing on the economics of the project. In this connection, it should also be borne in mind that automatically-coupled stock has a faster turn-round. The time saving is even greater if the automatic coupling includes connections for air brake hoses and electrical circuits. This is one of the advantages of the system being adopted by the ECMT countries compared with the systems applied in the United States and the Soviet Union. Automatic coupling in the United States dates from the beginning of the century; in the USSR it was introduced in the early Thirties.

Automatic coupling also paves the way for bigger train loads and increased line capacity. The strength of the traditional coupling is limited by the weight of its components that have to be lifted by hand. With automatic coupling there is no such limitation, and very heavy freight trains can be made up to match the power of modern locomotives, several of which can moreover be coupled together to haul a train under the control of a single driver.

The layout of the European railway network, and the location of the areas in which primary products are produced, imported and consumed, are such that freight train loads in Western Europe cannot be expected to attain the very high levels currently encountered in the United States and the USSR. Loads of this size also imply trains of such length that difficulties would arise in making them up and accommodating them in stations, factories and sidings. With the present infrastructure, these problems could not be overcome. On the other hand, a general increase in train loads—which might reach 6,000 tons compared with 2,500 to 3,000 today—will make possible a further rise in the saturation level of lines that are already technically equipped (in signalling, train control, and so on) for maximum output.

Expert opinion judges that the economic role of the railways will become more firmly established in the next few decades, though the frame of reference in which they operate may be different and though they may have to change their operating methods by applying new techniques. The larger countries have been shaping their railway policies accordingly. The USSR is a case in point and the United States is another. Having allowed its railway system to decline, that country has now found it necessary to retrieve and modernise it. In Europe, closer economic integration in the same direction is apparent.

As it is so vitally important to obtain the maximum performance from infrastructure and rolling stock, the railways are induced to automate their operations to an ever-increasing degree. This process is much easier for the railways than for any other means of transport. The full possibilities of automation cannot be exploited, however, without automatic coupling. Automation is

altogether incompatible with manual intervention (in this case also involving both risks and hardship) and modernisation of the railways inevitably calls for automatic coupling.

The introduction of automatic coupling must be seen in the context of transport economics in the broad sense. Profitability criteria based on quantifiable costs and benefits cannot be the only yardsticks taken into account. Some of its expected advantages are indirect and though non-quantifiable, none the less real (better working conditions, quicker service, possibility of dispensing with investment in other fields because of the increased potential of the railways, etc.).

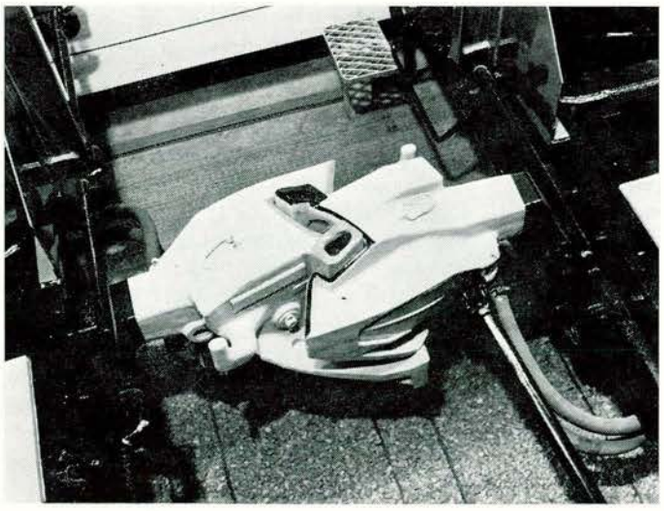
Cost and Profitability

Initially, the economic implications of the project were studied for the International Union of Railways (UIC) by four national railway systems, the German (DB), Swiss (CFF), Italian (FS) and French (SNCF). These four systems together account for 70 per cent of the total rolling stock of the ECMT countries intending to introduce automatic coupling generally. (British railways will only equip wagons intended for continental traffic, that is, up to a maximum of 10,000 when the Channel Tunnel is in use; the Spanish and Portuguese railways will only equip stock with interchangeable axles, or otherwise equipped for different gauges, to a maximum of 4,000, and the Irish railways do not intend to take part in the exercise.)

The study began by a cost estimate of the coupler as such. The figure arrived at was roughly 2,500 French francs per unit, or 5,000 francs per wagon. The size of production runs has a bearing on this point. If international agreement were reached on the grouping of orders and the adoption of purely economic rather than national criteria, the cost of the coupler could be minimised.

The number of vehicles to be equipped was estimated by each of the four railways mentioned above according to its own requirement forecasts. To judge the order of magnitude of the expenditure required, two alternative assumptions were taken into account; these differ on some aspects of the timing of the project and on some technical points, but both provide for the simultaneous equipment of a first batch of existing rolling stock—approximately one-half—at Easter 1976.

The UIC automatic coupling device



Once this initial exploratory stage was completed, the rate of return on the investment was calculated by a similar method for all the ECMT countries concerned, but in this case the approach was different in that the purpose of the study was to evaluate the rate of return on the project for each of the alternative dates envisaged for the introduction of automatic coupling.

These studies were intended to ascertain the most suitable date for proceeding with the investment, due regard being paid to the particular situation of each railway, and more especially the composition and structure of its wagon fleet. In order to do this, the savings and costs on both capital and operating account that would accrue if automatic coupling (a) were introduced and (b) were not introduced, had to be discounted by reference to different time scales. To give a fairly average example, the Swiss calculations show a return of from 5.7 to 7.2 per cent on the assumption that automatic coupling is introduced in 1980.

The studies brought to light a number of important factors which provided the basis for the decision made by the Council of Ministers of the ECMT: first, the cost for all the countries concerned would be approximately 6 or 7 billion French francs, a large outlay for which financial resources must be found; secondly—and this is even more important—the relationships between rates of return and alternative dates were sufficiently clearly established to provide a sound basis for negotiation, with a view to reaching a compromise acceptable to all the member countries of the Conference.

In the light of this information the date originally chosen (Easter 1976) was abandoned, and in June 1970 the ECMT Council recommended that all wagons used in *international* traffic should be equipped simultaneously soon after April 1979; in the same Resolution, the Council asked that conversion to automatic coupling for *internal* traffic should proceed at such a rate that side buffers (which remain essential so long as some wagons are not yet equipped with automatic coupling) may be removed before Easter 1981. This will give more time to see the budgetary implications of the operation more clearly and to complete the studies on the functioning of the UIC coupling under the most strenuous conditions (climate conditions in particular).

The introduction of automatic coupling is bound up with a whole series of other technical and economic issues. The fitting of a "mixed" coupling during the transitional period, which can be adapted to both the automatic and conventional systems, is one such problem. Another is the parallel development of the use of bogie wagon stock, which is expected to increase the return on automatic couplings since one bogie wagon is the equivalent of nearly two 2-axle wagons. This again is a step towards rationalisation; in a study on this topic the UIC points out that railway rolling-stock remains in service for some 30 years, and that the directives given now for wagon design concern vehicles which will still be in service after the year 2000.

It may be mentioned that governments of the ECMT member countries did not wish to make a decision involving so large a commitment for the future of the railways without leaving the door open for consultation with the East European countries with a view to wider agreement among railway administrations so as to ensure that equipment in this field remains technically compatible over the whole Continent.

RETIREMENT AGE : THE NEED FOR FLEXIBILITY

"Increased possibilities for individual choice should be available as between leisure and work, particularly for mature and older workers", OECD's Manpower and Social Affairs Committee has formally concluded.

One of the background investigations for this and other conclusions on age and employment is outlined in the following article (1). The conclusions themselves are to be found in the box on pages 36 and 37.

(1) *Flexibility of Retirement Age*, OECD, 1971. Issued in the series "Employment of Older Workers".

In most countries the number of retired people is growing, relative to the size of the labour force, and this for a number of reasons:

- the lengthening of the life span;
- the growing tendency for workers to stop work automatically at a given " normal " retirement age which itself is being lowered in most countries;
- the contraction of the labour force at the other end of the age scale as schooling is prolonged.

The results of these combined forces can be illustrated by an extreme case, that of the United Kingdom where the growth rate for the total population between 1964 and 1970 has been estimated at 0.80 per cent a year between 1964 and 1970, that of the working population only 0.25 per cent. This means among other things that existing pension schemes are becoming more costly in terms of the nation's productive resources, and one of the problems currently confronting most OECD countries is how, in view of this increased burden on the working population, more adequate pensions can be provided for the retired.

At the same time the health of older people is improving and there is evidence that many would like to continue to work after " normal " retirement age because—among other reasons—they take personal satisfaction in performing their jobs or prefer to maintain the larger incomes that are associated with working even in countries where pensions are relatively high.

A higher rate of activity on the part of older workers who, given reasonable options, will prefer to work would not only give the individuals concerned the satisfaction of continuing to be useful members of the economy and of society but would be beneficial from the point of view of the national economy. It would also be consistent with the aims of an active manpower policy, which favours the maximum use of the potential labour force and human productive capacity compatible with the individual's needs and desires, both financial and human.

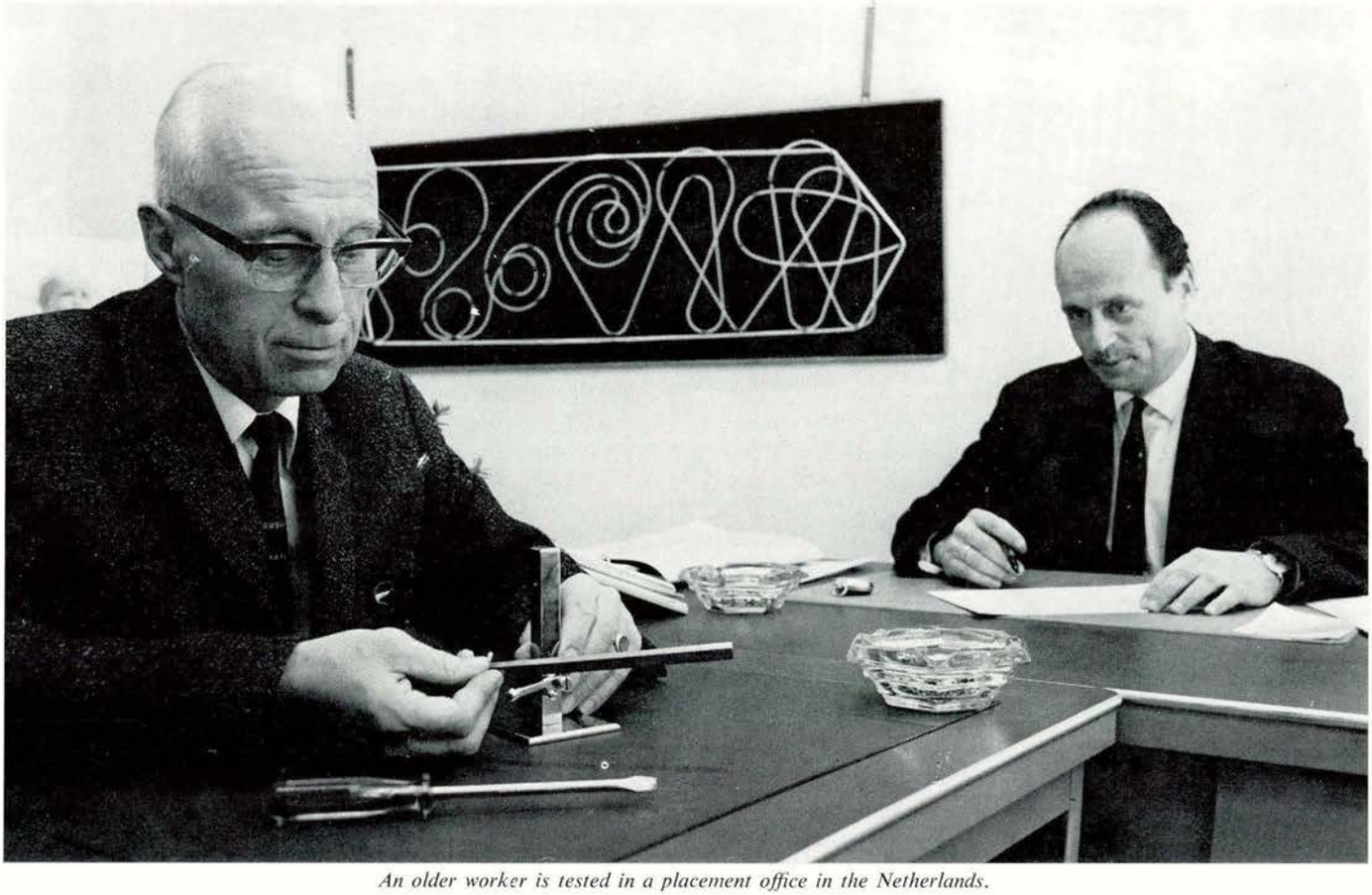
Many factors are involved in the older worker's decision whether or not to retire : the effect on his income, his requirements, his state of health, his attitude and that of the community. Other factors are the state of the labour market, job opportunities open to him, retraining facilities and employer and trade-union policies and practices. The rapid rate of technical and job-location changes in industry and the varying demand for skills have increased the difficulties that older workers must face in the market, and this too must be taken into account.

OECD's Manpower and Social Affairs Committee has investigated many of these aspects as well as the problem of choice between work and retirement at an earlier than " normal " age. Its current report concentrates on the obstacles to continuing work after retirement age inherent in laws and other rules governing private and public pension systems.

In three OECD countries investigated—Portugal, Spain and Turkey—these obstacles take the form of mandatory retirement upon receipt of a publicly financed pension and this type of requirement seems to characterise countries with a lower level of industrialisation and corresponding surpluses of labour. More commonly it is an earnings limit that acts as a barrier. Thus in five countries—again for public pension systems—pensioners must submit to an earnings test and, according to the results, have their pensions reduced or even eliminated completely. This means that withdrawal from the labour market is in effect required as a condition for receiving a full pension. Austria, Belgium, Greece, the United Kingdom and the United States fall into this category and Canada as well for part of its multiple pension scheme.

Of most of the remaining countries surveyed (ten in all) the pension is payable whether or not the person covered continues to work after he becomes eligible. Six countries provide a special bonus, sometimes substantial, to pensioners who defer their retirement and the beginning of pension payments beyond normal pensionable age—France, Iceland, Italy, Sweden, Turkey and the United Kingdom.

As to private pension schemes there is considerable disparity in their characteristics, but in the schemes investigated few encouragements to flexibility were found. One of the exceptions is the private scheme for white collar workers in Sweden where pensions can be accrued to salaries. In other countries, it was sometimes found that when private pension payments begin, wages received by the pensioner are reduced; or, if full wages are continued, the employer retains the pension.



An older worker is tested in a placement office in the Netherlands.

Specific Examples

To supplement the general survey, more detailed studies were undertaken in several countries. In the *United Kingdom* there were nearly 7 million pensioners under the state scheme in 1968 and the earnings limit rule served to enforce effective retirement. (This rule applies only to the first five years of retirement.)

Those who continue working and contributing to the pension system after retirement age, however, can earn increments to their pensions of up to 25 per cent, and wives and widows can benefit. About 27 per cent of the persons who retired in 1968 did so with a pension made higher than normal by this provision.

An investigation of the employment situation shows that people of pensionable age actually form only a small proportion of the active labour force and that this proportion has declined during the last few years: for example, only 33 per cent of the men between 65 and 69 years of age were at work in 1968 as against 43 per cent seven years earlier.

The overall estimate of the situation in the United Kingdom is that on the whole people have not been dissuaded from opting for retirement during periods of full employment, though many have taken their pensions and continued to work on part-time jobs in the services (particularly as guards) and in light processing industries.

In the *United States* pensioners under the social security system are also subject to an employment or earnings test up the age of 72, and pensions are reduced progressively and finally eliminated as earnings increase. Of the 17.9 million persons 65 years old and over eligible for pensions in 1968 it is estimated that 9.6 million were less than 72 years old, hence subject to the earnings test. Of these, 1,400,000 had their benefits reduced or withdrawn because of earnings; and another 1.5 million had earnings of less than the threshold amount.

A study of the Social Security Administration showed that the trade-off between benefits lost and earnings was the deciding factor in determining whether or not pensioners took jobs and the kind of employment they accepted. When the margin between possible earnings and benefits to be lost was narrow, beneficiaries appeared to have been discouraged from working. The test exerted its greatest influence on the work behaviour of those who could be earning slightly more than the exempt amount but had little effect on those not capable of reaching this level or on those whose earnings exceeded the adjustment figure.

Payment without Earnings Tests

In France, Germany and Sweden pension benefits in public schemes are granted on retirement age, irrespective of the subsequent level of earnings. *Germany* maintains a governmental plan which grants pensions to men at age 65 and to women at age 60, without requiring them to withdraw from the labour market, and the tendency among aged persons is for them to accept the benefits when they become eligible.

It is difficult to conclude from the available figures what was the effect of the pension system on people's decisions whether or not to continue work. During the years covered by OECD's survey, the participation rates for the aged, both men and women, continued to rise despite a longer term trend in the other direction. This reversal is attributed by OECD's study to Germany's tight labour market conditions, which prevailed over most of the period, rather than to the effects of the pension arrangements.

In *France*, the statutory plan gives nominal freedom of choice as to whether a worker will retire or not and offers an increment to pensioners if they continue to work, but supplementary plans are widespread and many of these prescribe mandatory retirement at 65 years without incentives for conti-

nued employment. In general, however, the retirement required is only partial as pensioners can " continue to work part-time or in positions of lower responsibility after drawing a pension or even resume work of the same kind after ceasing to work altogether for a certain period ".

Similar attitudes and practices prevail under the special retirement systems for civil servants and government-employed manual workers. The overall consequence of these systems is a marked decline in the rate of activity at age sixty-five but fairly widespread part-time work. One of the strongest pressures upon people to retire seems to be the prevailing attitude that 65 is the normal retirement age. In government arrangements recently developed to help relieve distress among older workers displaced as a result of technological change or large scale layoff, the emphasis is on facilitating their retirement through special allowances and extended unemployment benefits rather than upon retraining and placement.

In *Sweden*, where the normal pensionable age is 67, earnings are not generally limited though a municipally financed increment is subject to an earnings test. Only a very small fraction (less than one tenth of one per cent) took advantage of the

NEW CONCLUSIONS OF THE MANPOWER AND SOC

MANPOWER POLICY : POLICIES

EVOLUTION OF THE BASIC SOCIAL AND ECONOMIC POLICY

(I) The Manpower and Social Affairs Committee *believes* that *increased possibilities for individual choice should be available as between leisure and work, particularly for mature and older workers.* Flexibility in this sense would also be in line with changes as to working capacity and energy associated with ageing and yet give recognition to the fact that older people are usually reluctant to make drastic changes in the style of life to which they have grown accustomed.

The measures that would be desirable to overcome institutional or legislative obstacles to the prolonged employment of those who wish to work at advanced age should however not prejudice the establishment of fully adequate benefits for the retirees at the normal pension age.

The Manpower and Social Affairs Committee *recognises* that the widening of choice may lead a significant proportion of workers to opt *either* for continued employment over the traditional retiring age *or* for an intermediate condition of partial retirement and part-time employment *or* for early retirement (definitive or temporary) with the appropriate actuarial consequences. At present, it is not possible to do more than speculate on how individuals would react to this increased freedom of choice.

If such a major extension of the realms of personal choice is to be acceptable from both the economic and social points of view, its compatibility with a thoroughly viable system of social security must be demonstrated. In most Member countries the actuarial basis of the social security system would have to be modified to provide : a) for the increase or reduction in pension rates and b) for duration of the qualifying and benefit periods, which would result from the exercise of early or late retirement options. Furthermore, the basic viability of a fully flexible retirement system will depend on the maintenance of a satisfactory ratio between the active and the non-active population (dependency ratio).

The Manpower and Social Affairs Committee believes that if a higher participation rate of middle-aged and older workers can be combined with increased individual choice to enter or leave the labour market, there could be real benefits for all age groups of society.

The Manpower and Social Affairs Committee, therefore, proposes that Member countries should give consideration to ways of establishing the facts about individuals' behaviour over a period of time when retirement options are presented.

Such fact-finding exercises might take the form of *localised experiments* where these are feasible within the existing social security system or a follow-up of individuals who already have an option under existing schemes.

(II) More generally, the Manpower and Social Affairs Committee considers that a large amount of academic research on the different aspects of ageing has now been undertaken and that, for the time being, there is less need for research than for *action-oriented experiments* which might help to formulate the next-decade policies in the field. Limited fact findings and well-defined experiments, with suitable control groups, should help policy-makers to choose among the various alternative, sometimes controversial policies. Such small-scale pilot experiments would help to show how administrative difficulties in implementing certain new social policies can be overcome.

Many subjects can be mentioned for such experiments; the following evoked interest :

- Exploration of financial devices to stimulate employers to hire older workers, including retired people who wish to continue to work, and experimental measures to reduce the *labour costs* of employers for their older manpower (e.g. selective employment tax, wages subsidies for hard-to-place workers in case of mass redundancies, etc.).
- Search for the best methods of helping the individual to behave not only in his own interest but with

annual increment to the pension provided if a person continues work until the age of 70. Moreover relatively few (3 per cent) took the optional reduced benefit given in the case of early retirement which is possible from age 63.

OECD's report concludes that pension plans which either provide an incentive to or (at the very least) avoid penalising continued employment are a necessary prerequisite for increasing the activity rate among aged persons. Yet such measures will not in and of themselves enable this end to be attained. The effects of pension plans on the behaviour of pensioners cannot be separated from the influence exerted by the state of the labour market or by prevailing attitudes, particularly the willingness of employers to engage or maintain aged persons in employment. Programmes for retraining and job redesign as well as special campaigns to promote the employment of older workers and deliberate development of jobs for this segment of the population are nessary parts of a national scheme serving this purpose. OECD's Manpower and Social Affairs Committee took such considerations into account in formulating a 1968 set of conclusions on policies for the employment of older workers as well as the recent ones on age and employment.

IAL AFFAIRS COMMITTEE IMPLEMENTING AN ACTIVE ON AGE AND EMPLOYMENT

the aim of reconciling his wishes with economic and collective requirements. Under what circumstances, for instance, are financial incentives or " quota " obligations to enterprises for keeping people employed preferable to a generous unemployment allowance? Could *economic incentives* serve to influence enough people's choices between work and leisure during different periods in such a way that it could help to mitigate variations in the economy's need for manpower in general and in different areas and sectors?

• Development and application of *functional criteria* (personal capacity, functional age limits, or job description) which, as far as possible, should be preferred to arbitrary age criteria in considering job changes and retirement.

(III) While most of the preceding recommendations approach the problems in terms of the personal relationship of the individual to the system, it is also important to look at *the effects of retirement and employment policies for older workers on economic policies generally*, and the methods of adapting such older-worker policies for the benefit of the whole population as well. In this connection, the need of Member countries for preparedness to counteract the employment effects of economic stabilisation policies might find part of its fulfilment in the application of incentives which preserve the principle of free choice for the individual while actually achieving contracyclical variations as regards older workers' entry to and exit from the labour market.

STATISTICAL INFORMATION

(I) The *standard statistical methods* in use in most countries do not at present provide adequate information for policy-making. Data on under-utilisation and on short-term, long-term and *hidden unemployment*, as well as on rates of participation according to age, sex and regions are inadequate or lacking in most Member countries; unemployment statistics do not reflect the full range of problems of certain categories of workers, more particularly those in the older age brackets in which retirement often appears to be a form of hidden unemployment of serious dimensions.

The available information on new *statistical techniques* applied in various countries, e.g. longitudinal cohort analysis, special surveys on the rate of participation according to age and sex, and other information tools for improved policy development should be collected.

(II) In general, *international comparisons* of statistical data on older workers are now of only limited usefulness, owing to the lack of uniformity as to age classification, definition of the periods of activity and inactivity, and employment patterns in different industries and occupations. Standard-norms could be established to improve the feasibility of comparing country statistics relating to age and employment and could gradually be introduced in the different countries when designing censuses or other labour market surveys.

DEVELOPING COUNTRIES AND OLDER WORKERS

These countries obviously have an opportunity to draw lessons from the experience of the more-advanced countries; more particularly concerning the resistance they may meet on the part of older workers to their rate of technological progress. *Structural changes* to intensify training and to innovate lifelong continuing education will be needed, particularly in developing countries.

They may also use the experience of more advanced countries concerning the effects of different types of financial aid. In many cases counselling, training and placing services constitute a more positive approach to helping workers who risk unemployment.

Those countries which have not yet developed their *social security systems* might consider some of the problems which are now resulting from the rigidity of the systems of certain advanced countries, and try to avoid them from the start.

CONTAINER PORTS : RISING GROWTH AND COMPETITION

The most striking development in seaborne trade over recent years has been the swift climb in the use of containerisation. The employment of container ships, and consequent changes in techniques of cargo-handling, have resulted in the re-equipment of ports to serve as container terminals. The need for new installations and equipment has provided a spur for competition between the ports involved. In a new report prepared by the OECD Maritime Transport Committee on recent developments in seaborne container transport and related policy issues (1), a special section is devoted to port developments and the competitive challenge to which they give rise.

(1) For a study of the general problems of containerisation, see OECD OBSERVER No. 47, August 1970.

In Continental Europe, established container ports have recently increased their throughput at rates as high as 50 to 100 per cent per year (see Table) (2).

Rotterdam, where container tonnage grew by 80 per cent in 1969, increased by another 75 per cent in the first half of 1970. With 1.3 million tons handled between January and June, Rotterdam was second only to Antwerp (1.4 million tons) among Europe's container handling ports. Antwerp's very fast rate of increase in the first half of 1970 was exceptional, being largely attributable to the rapid development of the Europe-Australia container service which was centred on Antwerp and only transferred to its home port of Tilbury (London) after termination of a drawnout labour dispute. Bremen/Bremerhaven retained its place as the third largest container port, but its rate of increase during the first half of 1970 — 54 per cent — was significantly below the 73 per cent figure achieved in 1969.

For the United Kingdom ports it is not possible to determine the growth rate for traffic in large containers, as 1969 was the first year in which this traffic was recorded

(2) *The OECD report on which this article is based expresses considerable reserve on the comparability of available port statistics, as a result of differences of definition and details. Governments are co-operating on the provision of uniform statistics concerning the movement of large containers; but until these improvements are established, the report suggests that available statistics are better suited to describing developments in individual ports than for comparing the performance of different ports.*

separately. For all unit loads — containers as well as " wheeled " units and similar devices — the tonnage of foreign traffic through the major ports increased in 1969 as follows : London 31 per cent, Dover 30 per cent, Southampton 60 per cent, Liverpool 42 per cent, Hull 87 per cent and Felixstowe 74 per cent. These increases are similar to those of Continental ports, London's low figure being attributable to the labour conflict at Tilbury. Dover is almost entirely " wheeled " traffic of long standing. For the United Kingdom as a whole the increase in all unit load traffic was 56 per cent. According to the National Ports Council the total container traffic through British ports was 7.05 million tons in 1969, rather more than for the rest of North-West Europe and Scandinavia combined.

Outside Europe, Japan, as a country which is just entering the container field, is showing very high growth rates, in excess of 300 per cent per annum for 1969. In the United States, growth in the East Coast ports is comparable to that of European ports, while on the Pacific Coast, with new services developing rapidly, the most recent growth rates recorded were well over 100 per cent.

Development in Facilities

The trend in port developments over recent months has been more towards consolidation and expansion of existing ports than to the establishment of new ventures, since virtually all major general cargo ports in Europe and the United States now have container handling facilities. However, although many ports have only just brought container terminals into service, the speed of development has led to expansion plans in a great many ports. Of 83 deep-sea container ports surveyed, 48 have further development plans. The most important recently reported are those for Southampton, Fos (in Southern France), New York, Philadelphia, Baltimore and the four main Japanese ports.

In Europe, the Europe-Australian service will be taking up two additional new ports, Flushing and Zeebrugge, both of which will begin operating during 1971. Zeebrugge has already been active in the short-sea trades and it is intended to develop the existing feeder services. In France, although it has been decided as a matter of policy to concentrate major container trading at Dunkirk, Havre and Fos, Bordeaux is to have a single-berth terminal for containers, from which a service to Africa will operate.

The most significant new project in Europe is the Falmouth scheme, which has recently received British Parliamentary approval. This is the first major project to be conceived as an entrepôt scheme : Falmouth, in the extreme south-west of England, is not well placed for hinterland traffic, and the plans envisage cargo being transhipped onto feeder vessels running high-speed services to and from about 15 United Kingdom and continental ports.

Outside Europe, the major new developments have been in the Far East. Ceylon and Hong Kong have now joined Malaysia and Singapore to form a group of developing countries which are taking advantage of the development of containerisation. India is also starting to indicate interest in container ports but as yet no firm plans have been published. Other new ports to declare plans are Capetown and Niigata (on the north-west coast of Japan).

Competition between Ports

In recent months, problems of competition between certain ports have become more pressing. To maximise the economies of containerisation, and to justify the high speed and large capital investment required for container ships, port calls should theoretically be kept to a minimum. As several ports in a region equip themselves to handle a larger cargo volume and serve a wider hinterland than they did when handling conventional general cargo, it seems inevitable that competition will intensify, particularly if inland transportation costs become relatively less significant.

In Germany, competition between Hamburg and Bremen/Bremerhaven seems to have been at least temporarily relieved by certain services calling at both ports on alternate voyages. In the Netherlands, Amsterdam showed scarcely any increase in tonnage in the first six months of 1970 and its facilities were only half utilised, while Rotterdam continued to grow rapidly.

In the United Kingdom, problems of competition between ports have been examined in a national and international context. A study was commissioned by the National Ports Council on the possible development of short-sea movements between Britain and a continental entrepôt. One conclusion of this study was that deep-sea container services on most trade routes will visit one UK and one Continental port. There would, therefore, be little scope for transhipment of deep-sea container cargoes between the UK and the Continent. However, delays in UK ports leading to slower ship turnround than in continental ports could result in certain deep-sea container services bypassing the United Kingdom.

In the United States, competition between ports has led to a serious situation on the Pacific coast. Under US legislation, disputes between ports or ocean carriers can lead to legal proceedings, and the Federal Maritime Commission (FMC) has recently has been concerned with four cases.

- The first of these involves an agreement between six Japanese lines to form a consortium to operate between Japan and the states of Washington and Oregon in the US and Vancouver, BC, in Canada. Such agreements are subject to approval by the FMC. The Port of Portland, Oregon, filed a protest against the agreement, charging that the lines had unlawfully agreed among themselves to exclude service to Portland. Following hearings by the FMC and the US Court of Appeals, the Japanese lines and Portland reached an accord whereby the former agreed to serve Portland with one call approximately every 20 days.
- In a second proceeding, the Port of Portland, joined by the Port of Oakland, California, protested against a lease agreement between the Port of Seattle and the six Japanese lines for use of terminal facilities. Thus the FMC was obliged to order an investigation to determine whether or not the agreement could be approved under the provisions of the United States Shipping Act. As a result of the accord between the Japanese lines and Portland in the first

LARGE CONTAINERS HANDLED IN PRINCIPAL PORTS 1969 AND EARLY 1970 (1)

Ports	Loaded		Unloaded		Total		Per cent increase-decrease over similar period in previous year	
	'000 tons	'000 containers	'000 tons	'000 containers	'000 tons	'000 containers	tons	containers
Havre 1969					384	31.2	• •	77
1.1. - 1.7.70					300	30.3	134	131
Antwerp 1969	602	49.1	594	51.4	1,196	100.4	98	75
1.1. - 1.7.70	655	50.3	714	55.0	1,369	223	105.3	251
Zeebrugge 1969	311		509		821	59.8	166	• •
1.1. - 1.7.70	183		298		481	33.3	17 (3)	11 (3)
Rotterdam 1969 (8ft. and over)	989	92.8	1,054	103.3	2,043	196.1	80	72
1.1. - 1.7.70	623	53.7	723	60.6	1,346	114.2	75	54
Rotterdam 1969 (20ft. and over)	898	83.0	992	93.7	1,890	176.7	• •	• •
1.1. - 1.7.70	609	52.5	719	59.3	1,329	111.8	88	70
Amsterdam 1969 (8ft. and over)	103	21.7	96	19.6	199	41.2 (2)	15	— 9 (2)
1.1. - 1.7.70	51	9.7	52	8.7	103	18.4 (2)	4	— 11 (2)
Hamburg 1969	279	24.8	152	17.1	431	41.9	57	58
1.1. - 1.7.70	183	15.5	114	11.3	297	26.8	77	59
Bremen-Bremerhaven 1969	400	37.1	421	36.2	821	73.3	76	57
1.1. - 1.7.70	313	28.2	312	26.2	625	54.4	84	78
Montreal								
1.1. - 1.8.69						18.3		• •
1.1. - 1.8.70						31.7		73
Japan 1969 (4)								
Tokyo	605	26.0	453	21.4	1,058	47.4	231	224
Yokohama	279	8.7	18	1.2	297	9.9	(5)	(5)
Nagoya	123	5.8	35	2.0	158	7.8	(5)	(5)
Kobe	535	24.5	392	19.3	907	43.8	345	262
United Kingdom 1969 (20ft. and over)								
Tilbury	305	37.5	298	36.9	601	74.4	• •	• •
Southampton	79	9.3	56	7.2	136	16.5	• •	• •
Liverpool	120	13.7	146	14.1	266	27.8	• •	• •
Preston	157	20.3	172	22.0	329	42.3	• •	• •
Hull	318	28.5	276	25.1	594	53.6	• •	• •
Felixstowe	294	28.3	249	28.4	543	56.7	• •	• •
Spain 1969								
Barcelona					178	34.0	• •	240
Bilbao					122	11.5	• •	• •
Cadiz					110	13.4	• •	• •
Gotnenburg 1969		25.0		27.0		52.0		24
1.1. - 1.7.70		18.0		19.0		37.0		42 (3)
Genoa 1969 (8ft. and over)	110	16.9	187	16.2	247	33.1	53	34
1.1. - 1.7.70	133	15.0	121	14.5	254	29.5	105 (3)	78 (3)
Other Italian Ports (6) 1.1. - 1.7.70								
Leghorn	25	5.9	50	6.7	75	12.6	• •	• •
Naples	43	5.1	38	5.5	81	10.6	• •	• •
Cagliari	56	5.1	45	5.0	101	10.1	• •	• •
United States								
New York 1969					6,617		26	
Los Angeles 1969 (FY)					1,297	122.0	120	103
Seattle 1969					678		• •	
Baltimore 1969					509		69	
1.1. - 1.7.70					408		60 (3)	
Oakland 1969					3,001	190.0	97	• •
1.1. - 1.7.70					1,723		19	
Helsinki 1969	44	5.0	66	6.6	110	11.6		
1.1. - 1.7.70	39	4.2	50	5.6	89	9.8	62 (3)	69 (3)

(1) Criteria for inclusion : throughput equivalent to at least 100,000 tons or 10,000 containers per annum.
(2) These values include empty containers. If these are excluded the figures are : 1969 : 26.5, — 3 per cent; 1.1 — 1.7.70 : 12.7, — 4 per cent.
(3) Data for first half of previous year not available; percentage based on a pro-rata of previous full year.
(4) Tonnage figures are in freight tons. (5) 1968 quantities negligible.
(6) Containers 8ft. and over. Percentage of loaded containers 20ft. and over : Leghorn, 95 % Naples, 94 %, Cagliari 100 %.

Using a gantry crane for discharging containers in the port of Rotterdam

case, Portland and Oakland have recently withdrawn their protest, and the FMC has approved the agreement.

- Another protest by the Port of Portland — that the practice of the Sea-Land Co. of calling only at the port of Seattle (and moving cargoes to Portland via overland transportation) constituted a violation of the shipping statutes — led to FMC hearings. Many ports have intervened in this proceeding because the final decision will have great impact on future competition among container-handling ports.
- In a fourth case, Sea-Land charged the Port of Portland with refusing to accept the containers discharged by Sea-Land at Seattle and then moved by overland transportation to Portland. The basic issue which is relevant to the situation in many ports is whether or not they must accept at their terminal facilities containers which have not been discharged from vessels at that port.

The question remains whether and to what extent governments should control competition between ports and the type of service provided to the hinterland. A specific problem in the latter context is the degree of control over the use of inland transport as against maritime feeder lines to service ports not covered directly by major containership services.

On the one hand it is desirable, from a container operator's point of view, that he should be able to choose and to limit the number of ports he serves and be free to select methods of distribution purely on the grounds of efficiency and quality of service; from this point of view it could be argued that ports should not indulge in speculative investment in container handling facilities lest the under-utilisation of those facilities should waste capital resources and lead to pressures to distort the pattern of container services in order to give each port a " fair share " of the trade.

On the other hand, port authorities can argue that they have every right to compete for cargo and to invest for a potential future market. With the rapid pace of development of container services and the long time-scale required for port investment, it is often vital to plan for future handling capacity in advance of known demand. Where the ports are public utilities, it could be argued that the community might prefer to accept a lower than optimum return on their investment for social reasons.

The complex problems, which are reflected in the cases mentioned above have claimed the attention of OECD's Maritime Transport Committee for several years. However, the vigorous development of containerisation and the rapid changes which this entails for the seaports make it impossible to indicate the likely pattern of solution at the present time.

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