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\*\* Current investments in SHIPBUILDING suggest that world production capacity will be 32 million gross register tons around 1975, whereas the annual requirements for new tonnage between 1976 and 1980 are only estimated at 27-28 million tons. The surplus capacity thus created could not in itself place the European industry in jeopardy, but a certain unease is nonetheless felt at the extent of planned Japanese investments. A working party comprising experts from the Commission of the European Communities and representatives of the industry has been formed in order to study this problem. It will hold its second meeting in Brussels on 18 April 1972. ANNEX 1 gives the text of a reply from the Commission of the European Communities to a written question from Mr Vredeling, a Dutch member of the European Parliament, on the subject of a possible crisis in the shipbuilding industry in the near future.

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*The information and articles published in this Bulletin concern European scientific cooperation and industrial development in Europe. Hence they are not simply confined to reports on the decisions or views of the Commission of the European Communities, but cover the whole field of questions discussed in the different circles concerned.*

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\*\* HYDROGEN COULD BECOME AN IMPORTANT SOURCE OF ENERGY if it could be produced cheaply. Various laboratories throughout the world, and notably in the Community countries are at the moment examining the possibilities of using nuclear energy in order to extract the hydrogen from light water. In its preliminary draft multiannual research programme for the Ispra establishment of the Joint Research Centre, the Commission of the European Communities has proposed that the work on this problem should be continued (see IRT No. 114). For further details see ANNEX 2.

\*\* The Community OPTICAL, PRECISION INSTRUMENT AND CLOCKMAKING INDUSTRY will probably increase its annual production by about 5% over the next few years. The increase in exports will likewise be 5%, so that the proportion of output sent for export will remain constant. These are the estimates arrived at in a study of the optical, precision instrument and clockmaking industries in the Community carried out on behalf of the Commission of the European Communities by the Infratest-Industria Institute, Munich. A brief summary of the findings of this study is given in ANNEX 3.

\*\* THE EUROPEAN PARLIAMENT MUST HAVE EFFECTIVE MEANS AT ITS DISPOSAL IN THE FIELD OF SCIENTIFIC AND TECHNOLOGICAL POLICY in the Community and in particular the power to participate in decisions concerning budgets and major objectives.

This was the gist of a statement made by Mr Spinelli, the Member of the European Commission with special responsibility for industry and research, in a paper entitled "Parliamentary Democracy in the Age of Science and Technology" which he read to the European Parliamentary and Scientific Conference which took place on 11-14 April 1972.

After pointing out that the Community, which is in the course of enlargement, offers a chance and opportunity to map out a European research and development policy with a range and cohesion inconceivable to the Six, Mr Spinelli said that a policy of this kind first of all implied a joint examination of the priorities: Does Europe need a space programme and, if so, what should be its scope? Should it instead allot more funds to the improvement of life in its cities?

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Should it concentrate its efforts on intra-European modes of transport? Should it develop supersonic aircraft? What are the priorities for joint research as regards the environment?

The role of the Commission is to define the choices open to our society and to point out the social, economic and financial options involved in a particular choice, but the final choice should be with public opinion and its political representatives. This means that the European Parliament should have the necessary means at its disposal.

\*\* MOTOR-VEHICLE SAFETY is at present the subject of attention by the Commission of the European Communities. This year it intends to submit to the Council of Ministers nine draft directives which will be aimed at removing the technical obstacles to trade and will help to step up motor vehicle safety. They concern:

- (a) safety glass;
- (b) conventional types;
- (c) lighting equipment and warning lights;
- (d) safety belts;
- (e) seat-belt attachments;
- (f) head rests, integral or otherwise;
- (g) anti-theft devices;
- (h) impact absorbing steering systems;
- (i) strength of seats and seat mountings.

\*\* THE PROBLEMS OF THE MOTION PICTURE INDUSTRY in the Community and especially those raised by competition from non-member countries and the prospect of an enlarged Community were aired during a meeting held between experts from the Commission of the European Communities and the Committee of European Cinematographic Industries (CICE). Ways and means were also examined of including the European motion picture industry in a project covering this sector.

- \*\* The stabilization of the LEAD CONTENT IN PETROL at about 0.40 grams a litre of petrol does not seem to raise any problems from a health or technological point of view; a reduction beyond 0.40 grams a litre threatens to pose certain technical and economic problems which will need to be overcome before it is possible to analyse with any accuracy the possible consequences of this reduction from a health point of view. That, briefly, is the current position of the experts from the Member States of the Community who met in Luxembourg on 27-28 March in order to discuss the health problems linked with the reduced amounts of lead additives in petrol. Together they form a committee on "Air pollution due to motor vehicles - Health aspects" set up by the Commission of the European Communities.
- \*\* In accordance with Article 37 of the Euratom Treaty, the Commission of the European Communities has just published an opinion on the general data relating to the project concerning the DISCHARGE OF RADIOACTIVE WASTE from the Würgassen nuclear power plant in Germany.
- \*\* The Commission of the European Communities has undertaken a critical study carried out on the design and practical measures applied in NUCLEAR POWER PLANTS with a view to reducing the RADIATION BURDEN ON INSPECTION AND MAINTENANCE PERSONNEL still further.
- \*\* THE COMMUNITY'S LABOUR PROBLEMS IN 1971 have been analysed in a report just published by the Commission of the European Communities. The main subjects examined in this publication, which is on sale at the Official Publications Office of the European Communities, PO Box 1003, Luxembourg 1, concern the overall developments in the labour market, developments on a sectoral and regional basis and the initiatives and action taken under the heading "employment policy".

The Future Outlook for European Shipbuilding

(text of a reply from the Commission of the European Communities to a written question put by Mr Vredeling, a Dutch member of the European Parliament)

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The order books of the main shipyards in the Community are sufficient to provide work for three or four years so there can be no question of an imminent crisis.

The European Commission and the Liaison Committee for the Shipbuilding Industry feel, on the basis of a joint forward study, a revised version of which is to be published in the near future, that current investments suggest that world production capacity will run to 32 million tons gross by about 1975, whereas the annual requirements for new tonnage between 1976 and 1980 are only estimated at 27-28 million tons gross.

This surplus capacity is not likely in itself to jeopardize the European industry. However, there is some uneasiness over the high level of Japanese investments projects; it is surprising that, unlike other sectors (e.g., steel), the Japanese do not yet appear to have decided to slow down their rate of investment in shipbuilding as a result of the recent events affecting international trade. A decision along those lines would be especially logical since a downward adjustment of Japanese steel output targets should entail certain changes in the rate of expansion of Japan's shipping fleet (e.g., ore-carrying tonnage). It would appear to be out of the question to try to count a risk of excess capacity on a world scale by a further aid hike or by the unilateral diversion of some of the work on European stocks to shipyards in non-member countries which are backed by deliberate government policies. The public authorities should therefore, both within the OECD framework and, if necessary, at a bilateral level as part of the commercial relations between the Community and Japan, carry out comparisons of future prospects similar to those recently initiated by the industries in Europe (Association of Western European Shipbuilders) and Japan (Shipbuilders' Association of Japan).

Some European shipyards are admittedly going through hard times as a result of rising costs on fixed-price contracts, but nevertheless the majority of shipyards are in much better shape, at least in the Community, than certain quarters would have us believe.

The reorganization of the shipbuilding industry and the modernization of equipment in its main areas will bring about a large increase in productivity once the full effects make themselves felt. The re-emergence, since the end of 1969, of price-revision clauses will finally enable the industry to cope more easily with the general rise in prices. In addition, the Commission has submitted to the Council of Ministers a draft directive concerning the optional adoption by Member States of a system of public guarantees against unexpected price increases. However, in the case of shipbuilding this system would be subject to the limits set by the draft directive concerning aid to shipbuilding which the Commission has just submitted to the Council of Ministers (see IRT No. 123). The relative improvement in the performance of the Community's shipbuilding industry in recent years - which also justifies a certain optimism as regards the future - and the results recently obtained by the OECD in the standardization of the conditions of competition on the international market have prompted the Community Member States and the Commission to cut back on aid to shipbuilding. The draft of a new directive which the Commission has just submitted to the Council also provides for a considerable lowering of the aid ceilings. It was reaffirmed on this occasion that the Community's ultimate aim here is the gradual phasing-out of financial support for the shipbuilding industry.

In view of the future outlook for this industry, the Commission does not feel it is suitable at the moment to launch a general retraining and redeployment programme for the workforce as was done in the case of the coal mines, although certain operations might conceivably be justified. In more general terms the Commission is in regular contact with the European Committee of Metalworkers Unions, which has been consulted on several occasions, as has the Shipbuilders' Liaison Committee also, as regards the situation in the shipbuilding industry.

The applicant countries are consulted about every new Community initiative, this procedure being followed in the case of the above draft directive.

HYDROGEN extracted from light water by a nuclear reactor COULD QUICKLY BECOME AN IMPORTANT SOURCE OF ENERGY which is flexible, easily transported and stored

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If it could be produced cheaply, hydrogen could quickly become an important source of energy. The work aimed at the production of hydrogen at prices which would enable it to be used for industrial purposes, currently under way at the Ispra establishment of the JRC, the continuation of which was proposed by the Commission of the European Communities in a preliminary draft of a multiannual research programme (see IRT No. 114), assumes particular significance in a society which is consuming increasing amounts of energy.

In future, hydrogen could partly replace traditional sources of energy, such as petroleum, gas and coal, which possess the disadvantage of polluting the atmosphere to varying degrees; also, supplies are not very dependable. The increasing use of petroleum in the chemical industry will lead to a restriction on its use as a fuel in the longer term.

Nuclear energy, in the form of heat generated in large installations, admittedly is being drawn upon increasingly to replace conventional fuels in the production of electricity, but electricity only covers about 25% of the energy requirements of a technologically advanced society, the remaining 75% being made up of a wide variety of other types of energy. It is thus extremely important for an intermediate agent to be discovered which will enable nuclear energy to be converted into a flexible form which can be transported and stored; it could then be used to meet the various requirements of the market without necessitating excessively radical changes in technology.

Hydrogen appears to provide the answer. It can be transported easily and stored without much difficulty, even in small amounts (enabling it to be used, for instance, to propel aircraft, road vehicles, etc.).



Hydrogen can be obtained by breaking down water, a cheap and plentiful commodity. This breaking-down process has the advantage of yielding up another gas which can be put to industrial uses, namely, oxygen.

There is already a wide market for hydrogen: it is used in the synthesis of ammonia and also in oil refineries and steelmaking. However, if production costs were lower, hydrogen could be employed in many other fields.

The substitution of hydrogen for town gas (which already contains 50% hydrogen) would be a simple operation with the added benefit of eliminating carbon monoxide, which is especially toxic.

Liquid hydrogen, which has already been used as a propellant for the later stages of the Saturn rocket, thus enabling man to walk on the Moon, could also facilitate terrestrial journeys without polluting it too much, since it is a light fuel which is perfectly suitable for aircraft, boats, trains and heavy vehicles, where its use would considerably reduce atmospheric and noise pollution.

The problem is more complex in relation to the propulsion of private cars, which are subject to less continuous use, usually under stop-start conditions, so that the hydrogen would possibly have to be combined with other substances. An American company, Allis Chalmers, has undertaken the development of an electric car powered by ammonia fuel cells, this fuel being easily manufactured from hydrogen and air. Philips Laboratories are also planning to store hydrogen in a compound yielding an acceptable decomposition pressure.

Hydrogen could thus play a major role in the reorganization of the energy market if it were possible to divorce its price from that of the fossil fuels involved in its production.

The research workers at the Ispra Establishment of the JRC have been grappling with this problem for several years and have attempted to solve it by using the heat available at temperatures below 800°C, such as that produced by the Dragon-type gas reactors. The theoretical total thermal efficiency of an operation of this kind is about 75%.

In 1968 a process named Mark I, which satisfied these conditions, was devised at Ispra. It offers the advantage of only using water and nuclear heat as its raw materials.

The energy is converted into its final form without any intermediate stages, unlike the electrolyte process, where it must follow the sequence: steam- mechanical energy - electrical energy - electrolysis. This inevitably has a favourable influence on both efficiency and capital cost.

The Structure of the Community's Optical  
Precision Instrument and Clockmaking Industries

(extracts from a study carried out on behalf of the Commission of the European Communities by the Infratest Industria Institute, Munich)

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The Community's optical, precision-instrument and clockmaking industry is likely to show an annual growth rate of about 5% over the next few years. The increase in exports will likewise be 5%, so that the proportion of output exported will remain the same. Imports will rise by an average of only 1% a year in real terms, since trade between the Community Member States will become increasingly important. Britain's entry into the Common Market - currently the Community's third most important customer in this sector (after the United States and Switzerland) and its second biggest supplier (after the United States) - will thus boost intra-Community trade.

These are the predictions made in a study of the structures of the Community's optical, precision-instrument and clockmaking industries carried out on behalf of the Commission of the European Communities by the Infratest Industria Institute, Munich.

The Community's optical, precision-instrument and clockmaking sector comprises a small number of large companies and a large number of small and medium-sized firms. The latter will probably have to devote themselves more and more to specialist lines and act as subcontractors to large concerns. There have already been a number of agreements covering rationalization in the optical and precision-instrument field which are aimed at spreading the manufacture of a product over several companies, so that each one can benefit from longer production runs. This trend is likely to gain momentum in future.

Production costs in the Community are very high since these industries employ a large proportion of skilled labour; also, in many instances the products are not designed to yield the greatest return on outlay, since within the Community technological principles still outweigh commercial considerations. Future investments will remain considerable (i.e., possibly up to 7% of turnover) and will mainly be used to rationalize production. Programming and marketing techniques, which are still largely lacking in this area, will have to be developed over the next few years. Automation will make little progress in the optical and precision-instrument field since production figures are low, so companies cannot, for economic reasons, contemplate the acquisition of costly machinery and plant. The same applies to production and quality control.

The use of plastics is not widespread at the moment in the optical and precision-instrument fields, but it seems that they will be more widely employed in future. New materials have emerged in the optical lens industry, thus considerably facilitating manufacture in that the operations can be performed mechanically. The future outlook for this sector over the next decade is very favourable.

Research and development, which are currently being undertaken on a large scale in Germany and the Netherlands, are being geared to the introduction of a large number of advanced technologies in the optical and precision-instrument industries, thus placing them on the soundest possible footing as regards their future growth. The diversification of their activities towards electronics is a factor of particular importance. The majority of German concerns make their own electronic components, whereas French, Dutch and Italian companies buy out their electronic equipment from specialist firms.

Laser technology is still in its infancy in Europe. The technologies of lasers and allied fields such as infra-red and other electro-optical processes are very important to the optical and precision-instrument industries. They will assume great importance in the years to come.

The environment and research in general are also likely to create new markets for the optical and precision-instrument industries, which will, above all, have to produce the instruments needed for observing and measuring environmental pollution. Audiovisual teaching aids could also undergo a marked expansion.