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Report

**drawn up in accordance with the Resolution
of the European Parliament of 22 March 1965**

on

**the Eighth General Report on the activities
of the European Atomic Energy Community**

General Rapporteur: Mr. Roger Toubeau

***) This translation must not be treated as an official text. Readers are reminded that the official texts exist only in the Dutch, French, German and Italian languages.**

At its session of 22 March 1965 the European Parliament passed a Resolution to the effect that, as in previous years, the results of the examination of the General Reports on the activities of the Communities would be embodied in a single report drawn up on the basis of the Opinions of the Committees concerned.

In the course of its session of 13 May 1965 the European Parliament appointed Mr. Roger Toubeau General Rapporteur for the Eighth General Report on Euratom's activities.

Six Committees prepared Opinions on sections of the Eighth General Report coming within their province. These Opinions were adopted at the following meetings :

- Political Committee, Brussels, 20 July 1965.
Rapporteur : Mrs. Probst.
- External Trade Committee, Brussels, 12 July 1965.
Rapporteur : Mr. de la Malène.
- Committee for Co-operation with the Developing Countries, Brussels, 20 July 1965.
Rapporteur : Mr. Van Hulst.
- Energy Committee, Brussels, 12 July 1965.
Rapporteur : Mr. Battaglia.
- Research and Cultural Affairs Committee, Brussels, 29 July 1965.
Rapporteur : Mr. Merten.
- Health Protection Committee, Brussels, 19 July 1965.
Rapporteur : Mr. Santero.

At a meeting held in Brussels on 4 September 1965, the General Rapporteur submitted his draft report and a proposal for a resolution for examination by the framers of the Opinions.

At a meeting held in Brussels on 5 October 1965, the Committee of Presidents, in accordance with the Resolution of 22 March 1965, agreed that Mr. Toubeau's Report on the Eighth General Report on Euratom's activities should be laid before the Parliament.

The following were present : Mr. Leemans, President of the European Parliament ; Messrs. Battaglia, Vendroux, Kreyszig, Brunhes, Kapteyn, Vice-Presidents of the European Parliament ; Mr. Poher, Chairman of the Christian Democrat Group ; Mr. Metzger, for the Socialist Group ; Mr. Thorn, for the Liberal and Allied Group ; Mr. Bord, Chairman of the European Democratic Union Group ; Mr. Toubeau, General Rapporteur of the European Parliament ; Messrs. Boscary-Monsservin, Carboni, Edoardo Martino, Storch, Terrenoire, Troclet and Weinkamm, Committee Chairmen ; Messrs. Bousch and Vanrullen, Committee Vice-Chairmen.

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REPORT
on
**the Eighth General Report on the Activities of the European Atomic Energy
Community**

General Rapporteur : Mr. Roger Toubeau

INTRODUCTION

1. In a field of such recent origin, and involving so many imponderable factors, as that of nuclear energy, it is inevitable that techniques and policy aims should undergo rapid development and have to be constantly adapted.

This is strikingly brought out by the adaptation of Euratom's second five-year programme to which so much of the work done by the European Parliament, the Commission and the Council of Ministers was devoted during the period under review. Your Rapporteur therefore feels it is his duty to draw the Parliament's attention to this subject which, at the time of drawing up this report, appears to him to be one of its main concerns.

2. While in past years both the annual reports of the Euratom Commission and parliamentary debates tended to centre on the definition of a European policy on nuclear energy, the characteristic feature of the year under review was the transition from the stage of definition to that of concrete application of such a policy.

3. This preparatory — or "running in" — phase was not without incident and served as a sort of barometer of the degree to which the Governments were prepared to forge ahead with the development of the Communities — and therefore with European integration — or tended to adopt attitudes in the Council of Ministers that were largely inspired by national considerations.

4. It was precisely in connexion with the recasting of Euratom's second five-year research and investment programme that the varied aspects of the policies of the different Member States emerged during lengthy debates held in the Council in the light of memoranda prepared by each Government and subjected to detailed

analysis by the Parliament in the debate of September 1964⁽¹⁾.

5. The Parliament keenly followed the debates which were held on this subject in the Council from 25 June 1964 and had originally been scheduled to terminate at the end of 1964. A decision was finally postponed to the period ending on 1 April 1965, although not actually taken until the following May.

The Commission deserves recognition for its efforts to arrive at a definitive position regarding research and investment, which is undoubtedly the main aspect of its activities.

6. We should however have liked to see in the Eighth General Report a detailed survey of the work done by the Parliament in connexion with the adaptation of the second five-year programme. For example, a reference to the extremely interesting debates held during the September and November 1964 and January and May 1965 sessions would not have come amiss.

7. The Commission should moreover have specified what action it had taken on the various Resolutions adopted by the Parliament in the nuclear energy sector, and particularly that of September 1964. This would incidentally have made it easier for your Rapporteur to draw the necessary conclusions as to policy from the Eighth General Report.

8. It should not be forgotten that in addressing its annual report to the Parliament in pursuance of Article 125 of the EAEC Treaty, the Commission assumes political responsibility for its activities for which it is answerable to the Parliament.

⁽¹⁾ See also Pedini Report (Doc. 63, 14 September 1964), Annexes II, III, IV and V.

9. Your Rapporteur is pleased to note, however, that the Commission, in response to a wish expressed by the Parliament, has presented its Seventh and Eighth General Reports in a form that enables the policy problems that have arisen during the year under review, in a preponderantly technical field, to be more clearly distinguished.

As regards the activities of the Parliament, your Rapporteur would emphasize that in preparing the present report he has been guided by the excellent reports of Messrs. Brunhes, Armengaud and Pedini, who preceded him in the task of reporting on Euratom's policy (1).

10. Like his predecessors, your Rapporteur will not confine himself to a critical analysis of the Commission's Report but will endeavour, on the general policy lines already sketched out by the Parliament, to determine what should be the policy of the Atomic Community within the framework of the general energy policy. These two elements — he considers — constitute a whole and cannot therefore be treated separately.

11. In hammering out this overall approach your Rapporteur has drawn assistance from the excellent Opinions submitted by: Mrs. Probst, for the Political Committee; Mr. de la Malène, for the External Trade Committee; Mr. van Hulst, for the Committee for Co-operation with the Developing Countries; Mr. Battaglia, for the Energy Committee; Mr. Merten for the Research and Cultural Affairs Committee; and Mr. Santero for the Health Protection Committee — to each of whom he expresses his gratitude.

CHAPTER I

PRESENT SITUATION OF NUCLEAR ENERGY IN THE COMMUNITY

12. As mentioned in the Introduction, nuclear energy is entering upon its industrial phase. It now seems possible, therefore, to forecast the general lines on which it will develop and to attempt to assess the prospects for the various reactor types and the scale of investment required in the various sectors of nuclear activity in order to achieve certain specific goals.

This enables the Commission to apply the provisions of Article 40 of the Treaty. This lays down that in order to stimulate the initiative

(1) See reports by Mr. Brunhes (Doc. 73, 5 October 1962), Mr. Armengaud (Doc. 35, 18 June 1963) and Mr. Pedini (Doc. 63, 14 September 1964).

of persons and undertakings and to facilitate a co-ordinated development of their investment in the field of nuclear energy, the Commission should publish, at regular intervals, programmes indicating in particular targets for nuclear energy production and the investments of every kind required for their achievement.

The Parliament has been presented with the draft of the first target programme — regarding which the opinion of the Economic and Social Committee has to be obtained — and feels it desirable to refer to a number of its essential features.

13. First of all, it is interesting to examine the Commission's forecasts of the rise of electricity consumption in the Community up to the close of the century.

On the basis of the following rates of growth:

| 1960-65 | 1965-70 | 1970-80 | 1980-2000 |
|---------|---------|---------|-----------|
| 8.0 % | 7.5 % | 6.5 % | 6.0 % |

net consumption of electrical energy in the Community (in 1000 millions kWh) is worked out as follows:

| 1960 | 1965 | 1970 | 1975 | 1980 | 1990 | 2000 |
|------|------|------|------|------|------|------|
| 272 | 400 | 575 | 790 | 1080 | 1930 | 3450 |

14. The part that nuclear energy could play in satisfying this growing demand has been estimated — for the immediate future — in the light of known projects and published national programmes. These forecasts confirm the estimate already made by the Euratom Commission to the effect that installed nuclear capacity should reach 40,000 MWe by 1980.

15. For the period extending to the close of the century, it was assumed — as a working hypothesis — that the proportion of the increase in thermal power accounted for by nuclear plants run on « non-privileged » fuels (coal, fuel oil, natural gas) would rise as follows:

| |
|------------------|
| 1970-1980 : 40 % |
| 1980-1990 : 60 % |
| 1990-2000 : 80 % |

16. In that case nuclear power plants at the turn of the century would account for half the electricity works. Their output would be slightly more than two-thirds of the total electricity production of electricity and cover roughly 30 per cent of the Community's total energy consumption. Certain members, however, have

labelled this forecast as over-optimistic, adding that it would be unreasonable to expect this figure to exceed 26 per cent.

However, the supply situation will probably still be one requiring half the total energy requirements to be covered by imports.

17. A steadily rising output of nuclear energy appears therefore to be essential to satisfy the Community's overall requirements. Only thus will it be possible to avoid even greater reliance on imports, to increase security of supply and reach a satisfactory degree of stability in energy prices.

The Commission bases its view that nuclear energy increases security of supply on the fact that nuclear fuel costs less than the conventional types, is relatively easy and cheap to transport, and lends itself to stockpiling.

18. Your Rapporteur appreciates the work done by the Commission in compiling these estimates, which will certainly serve as a useful basis for the target programme referred to in Article 40 of the Treaty. The fact that the Euratom Commission arrived at these figures in close collaboration with the Executives of the ECSC and EEC is also worthy of note. However, as already pointed out by the Energy Committee, it is a pity that no mention is made of the effects the Protocol of Agreement on energy problems of 21 April 1964 has had on the work of the Executive.

One would also have welcomed more detailed information regarding the demand for and the consumption of coal, *i.e.* regarding the General Objectives for coal which the High Authority has promised to publish shortly ⁽¹⁾.

19. It must however be acknowledged that the assumptions made regarding the price of fuels used in conventional-type power plants, for comparison with the costs of nuclear plants, are fairly conservative.

Three reference prices — expressed in units of account per ton coal equivalent delivered at plant in the Community — were chosen: 12 u.a./tce as the average future price of imported fuel, 10 u.a./tce as the conceivable bottom limit over a relatively long period for imported fuel, and 15 u.a./tce as the upper limit based on the most reasonable prices for coal mined in the Community.

⁽¹⁾ At the time of writing, your Rapporteur still hopes that the High Authority will be able to make known its General Objectives for Coal before the Parliamentary debates on the Eighth General Report are opened.

20. While this important target programme induces a certain optimism regarding the prospect of meeting energy requirements in the next thirty years, it commits the Six to lay down and apply a common energy policy and to set about developing the nuclear industry. Moreover, if the European nuclear industry is to be run on economic lines and be capable of facing outside competition, it must be developed at Community level.

At the moment four high-capacity nuclear plants are in operation in the Community ⁽¹⁾, and others are under construction ⁽²⁾.

21. These nuclear power plants together represent a total of nearly 3,000 MWe, the graphite-gas reactors accounting for 1,515 MWe and the light-water reactors for 1,438 MWe. If the nuclear power plants planned are taken into account, we obtain a net installed capacity of 4,198 MWe, made up as follows :

| | |
|--------------------|-----------|
| Belgium | 143 MWe |
| France | 2,483 MWe |
| Germany (Fed. Rep) | 917 MWe |
| Italy | 607 MWe |
| Netherlands | 48 MWe |
| | <hr/> |
| | 4,198 MWe |

22. Moreover, electricity producers are showing increasing interest in nuclear power plants. In 1964, for example, German electricity producers, who form the biggest group of private electricity undertakings in the Community, definitely entered the nuclear scene with their decision to build the Lingen and Obrigheim power plants and with their plan to install a Franco-German power plant on the Rhine.

23. Of the problems still awaiting solution as far as industry is concerned, the General Report makes special mention of that of fuel-element fabrication. Here Community industry has to measure up to American industry with its longer technical and commercial experience and far greater financial resources to meet the financial consequences of any fuel-element failures.

⁽¹⁾ Latina (Italy), rated power 200 MWe, owned by ENEL; Garigliano (Italy), rated power 150 MWe, owned by ENEL; Chinon - EDF 1 (France), rated power 70 MWe, owned by EDF; Trino Vercellese (Italy), rated power 257 MWe, owned by SELNI.

⁽²⁾ Gundremmingen reactor (Germany), net rated power 237 MWe, owned by KRB, due for commissioning in 1966 (boiling-water string); Chinon - EDF 3 reactor (France), net rated power 480 MWe, due for commissioning in 1966 (gas-graphite string); Chooz reactor (France), net rated power 206 MWe, owned by SENA (Franco-Belgian undertaking), due for commissioning in 1966 (pressurized-water string); St. Laurent-des-Eaux - EDF 4 reactor (France, net rated power 480 MWe, due for commissioning in 1968 (gas-graphite string); Doodewaard reactor (Netherlands), net rated power 48 MWe, owned by GKN (limited company set up by participants in SEP), due for commissioning in 1968 (boiling-water string).

24. This highlights the need for a sound structure of the European market permitting the formation of powerful industrial groups equipped to meet the multitude of requirements peculiar to the nuclear industry. Indeed, if we turn to the great nuclear powers of the West, we find that the industry in Great Britain operates through two or three consortiums which deal directly with the Atomic Energy Authority, and that in the USA nuclear industry is virtually in the hands of two large undertakings: General Electric and Westinghouse.

25. There is a real need in the Community for an effective industrial policy to enable Europe to build up nuclear energy in complete independence of third countries, particularly in the field of supplies and patents.

26. The Political Committee has suggested that it is extremely important — and not merely for Euratom — to facilitate the operation of an internal market in the nuclear sector. The internal market is a top-priority objective which, particularly at the initial stage, calls for the Commission's undivided attention.

27. The Political Committee has noted with concern that "groups have sometimes been formed in the Community each of which has external links — frequently close-knit — with the outside world which owe nothing to any kind of joint-negotiation process". The state of dependence of certain key undertakings of the Community on foreign licences is a matter for concern from both the political and the economic point of view (see Introduction, sec. 3, of the Eighth General Report).

28. One cannot but endorse the view of the Commission that :

- a) the nuclear industry must be placed in the "basic industry" category, that is to say, among industries demanding very heavy capital investment ;
- b) the nuclear industry is one of the precision industries ;
- c) financially, it is among the industries that produce a high added value, *i.e.* the constructions it undertakes have an overall value when completed far in excess of the direct costs, the difference consisting in the cost of know-how and capital charges ;
- d) commercially, the nuclear industry deals with customers who demand very high quality.

29. In view of the above, the Commission could consider the formation of companies under

European law, taking as a guide the projects for European companies recently submitted by the French Government to the EEC Commission. Moreover the provisions on the setting up of joint undertakings, which have been only rarely applied, should now be reviewed.

Indeed, if the setting up and running of nuclear industries is primarily a matter for the industries themselves, it is the duty of the public authorities to guide and encourage private initiative making for progress.

30. This is why it is essential to work out an overall policy for the nuclear industry embracing the administrative and legislative infrastructure, the development of the market for nuclear power plants, the construction of reactors and the safeguarding of supplies. In other words the Community, having pursued a policy for the furtherance of research, should now turn its attention also to the industrial application of the results achieved.

CHAPTER II

DEVELOPMENTS IN NUCLEAR TECHNOLOGY AND THE JOINT RESEARCH PROGRAMME

31. Let us briefly review the four main phases in the development of nuclear techniques already outlined in the Commission's Seventh General Report.

- i) First there are the water and gas reactors which have already been the subject of thorough-going experiments, some in the United States (boiling- and pressurized-water types), others in France (gas-graphite type) and Great Britain (Calder Hall). Although these "proven-type" reactors have attained a high experimental level, they still only represent the first stage in a development which will be especially directed towards greater specific power and more compact plants, so that the smaller sizes involved will make it possible to cut down on capital investment.
- ii) The second phase consists in the development of intermediate-type reactors, the main effort being concentrated on obtaining higher capacities with more compact constructions. These reactors should also be designed with a view to obtaining optimum power output from natural uranium.
- iii) The third stage covers the construction of breeder reactors, which will produce more fissile material than they consume. These reactors are expected to make a major contribution to solving the problems relat-

ing to profitability and supply. The proportion of the uranium's fission energy used will rise from 0.5-1 to 100 per cent while it will also be possible to attain the same utilization rate with thorium.

iv) A fourth and more remote phase can be discerned, *i.e.* controlled thermonuclear reactions, in which energy will no longer be generated by the fission of heavy elements like uranium but by the fusion of hydrogen isotopes. Energy output would then be practically independent of problems of raw material supplies or waste processing.

32. To ensure optimum long-term development, the Commission should give preference to the construction of these four reactor types, to which research and development programmes in the Community should be geared. In pursuing this goal, the Commission should of course make the best possible use of the resources at its disposal in the light of the pattern of energy requirements outlined above.

a) Proven-type reactors

33. Nuclear power plants equipped with gas-graphite reactors — in commission, under construction or planned — represent a total of 2,475 MWe being well in excess of the total capacity of other reactor types.

34. The power plants in Latina (Italy) and in Chinon (France) are equipped with gas-graphite reactors. In 1964 these two plants supplied electric power under normal industrial conditions for a lengthy period. Since 1962 the Commission has been backing the work on gas-graphite reactors by concluding research and industrial development contracts with industrial firms and the competent authorities. The chief aim of the work is to lower the costs of power generation to a level comparable to that of conventional energy sources.

35. The Eighth General Report feels that in view of the economic possibilities presented by light-water reactors, a considerable proportion of all nuclear electricity capacity to be installed in the Community in the next few years will be accounted for by this type of plant. Large-capacity plants of this kind are already competitive in the USA.

Sight should not however be lost of the fact that the Community is to some extent lagging behind the United States in this field. The Commission is trying to make up this lag through the Euratom/US Agreement for Co-operation. As part of the Joint Euratom/USA Programme, 22 research contracts have been negotiated in the

Community and 19 in the United States. At the same time exchanges of information are taking place between about twenty American laboratories and their counterparts in the Community on the work of the USAEC⁽¹⁾ on two-phase flow plutonium recycling.

36. The Research and Cultural Affairs Committee has expressed regret that it has not been possible to back up these exchange agreements by adequate participation on the part of Community engineers in work carried out under contract in Europe and the United States. The lack of funds — and therefore of personnel — has made it impossible to maintain this participation even at its previous level, which was already low enough — this because of the "adaptation" of the second five-year programme decided by the Council of Ministers.

37. Despite these budget cuts, the Commission has pushed on with the development programme for light-water reactors launched by it in 1959. During the year under review it concluded 18 research contracts and the results obtained bear out the possibility of developing technically and economically European variants of American-designed light-water reactor strings.

38. As to making a choice between the two strings, the present position throughout the Community does not appear to warrant a definite decision in favour of one proven-type string rather than the other.

39. Both the natural uranium reactors (gas-graphite type) and those using slightly enriched uranium (light-water type) have entered upon approximately the same stage. This applies not only to completed projects and industrial development but also to the potential profitability and fissile-material consumption of the two strings. This is borne out both by the experience gained in the Community and by the state of development reached by these reactors throughout the world. It can therefore be assumed that these two reactor types will remain on an equal footing until about 1980, regardless of the varying importance that will be attached to the two of them in the light of various assumptions on the technical and economic success of more advanced reactors.

40. This assumption is also borne out by the following considerations :

- i) In view of the present virtual equivalence of the two strings, *it would certainly be unwise to rely solely on one or the other.* Indeed,

⁽¹⁾ US Atomic Energy Commission.

reactor constructors in the Community are equally interested in the two techniques. Moreover, even though the enriched uranium type tends at the moment to be slightly less costly, gas-graphite reactors offer the advantage of greater independence of supply and, above all, lend themselves to techniques which from the start were developed in Europe.

- ii) Even in the longer term, *preserving a balance between two techniques whose economic results would not be markedly different* would keep proven-type reactors under the spur of competition, the source of technological progress.
- iii) Moreover, the individual characteristics of the two types — particularly the different proportions of fixed and variable costs involved in their production — may lead to each playing a specialized rôle in meeting demand. This would make them complementary and establish between them a state of equilibrium, although this would not, of course, necessarily keep them on an equal footing.

41. There is every reason therefore to endorse the view already expressed by the Parliament to the effect that the Community should not make an exclusive choice of a particular nuclear technique. On this point your Rapporteur fully shares the views of the Energy Committee and the Research and Cultural Affairs Committee, while noting that the latter has made a number of reservations which merit the Parliament's attention⁽¹⁾.

Your Rapporteur also endorses the views of the Research and Cultural Affairs Committee which disapproved of the Council's decision to cut down credits for proven-type reactors from 29.5 to 22.75 million u.a., a decision which has made the situation in this sector even more difficult.

⁽¹⁾ *Opinion of the Research and Cultural Affairs Committee, No 53, Doc. PE 14.334.* The Research and Cultural Affairs Committee notes that French-built natural uranium reactors are not successful in other Community countries. Thus, the first German experimental power plant in Kahl-on-Main is equipped with an American-type reactor, i. e. one using enriched uranium. The first commercial-type nuclear power plant in the Federal Republic, which is under construction in Gundremmingen on the Danube, is also to be equipped with an enriched uranium reactor from the United States. The German firms Siemens and AEG have for years been in close collaboration with Westinghouse and General Electric. Although enriched uranium — at present supplied only by the USA and Great Britain — costs 10 u. a. per gram, reactors fuelled by it involve less constructional material, and therefore less capital outlay, than the natural uranium type. Judged by profit-and-loss criteria, the American type therefore seems to have the advantage. The question may soon arise whether the Community can much longer afford such additional capital investment merely to remain independent of its Atlantic partners in the matter of supplies. Moreover, the research being carried out in the Community on the production of enriched uranium will one day meet with success, so that it will no longer be necessary to turn for supplies to the USA and Great Britain. On this point it is worth recalling the statement made in September 1964 by a member of the French Atomic Energy Commission: "France is capable of producing enriched uranium, but production on economic lines demands a large plant designed on a European scale."

42. In the Eighth General Report the Commission points out that only if the industries concerned, the electricity producers and the public authorities pool their efforts, will the influence of powerful foreign enterprises on Community industry be counteracted. The Commission has applied itself to achieving the following objectives :

- i) Establishment of a programme for building an appropriate number of power plants for the various proven-type strings in line with a timetable acceptable to the parties concerned ;
- ii) Concentration of the technical and financial potential of the various industries in the Community into a limited number of large groups able to compete effectively with foreign industry and take the risks inherent in supplying nuclear plants under turn-key contracts ;
- iii) Co-ordination at Community level of the requisite means for achieving the above two objectives.

Your Rapporteur shares the view of the Research and Cultural Affairs Committee which has approved these objectives and invited the Commission to do its utmost to ensure that they are achieved as soon as possible.

b) Intermediate-type reactors

43. The Commission considers that fast neutron reactors will not come to industrial maturity before 1980 to 1990. Nuclear plants in which the fission reaction is sustained by moderated neutrons will remain in service for at least another twenty years. In order to safeguard long-term supplies of nuclear source materials it will be necessary to improve proven-type reactors so as to ensure a low specific consumption of fissile materials and to enable large amounts of plutonium to be obtained by conversion of the fertile starting material. The outlook for fast reactors is contingent on the production of a big initial stock of plutonium, which can only be provided through the prolonged operation of thermal reactors with high conversion ratios, such as heavy-water reactors. Thus even after fast reactors appear on the industrial scene, the most advanced types of thermal reactor seem certain to continue in operation alongside the new types for some years.

44. Intermediate-type reactors comprise heavy-water-moderated reactors — in Euratom, essentially the ORGEL project — advanced gas-cooled reactors and aqueous suspension reactors.

Heavy-water-moderated reactors can be fuelled by natural uranium, like gas-graphite reactors, so that fuel supplies are not a problem at the moment. Moreover they offer three advantages for a long-range nuclear programme :

- i) Their better neutron economy enables high burn-ups to be attained, which means low specific consumption of natural uranium ;
- ii) Their good conversion ratio makes it possible to obtain, from natural uranium, plutonium which can be used either to fuel breeder reactors or to generate extra energy by burning up part of it in the reactor itself ;
- iii) Because heavy-water reactors can use high specific power ceramic fuels, compact high-capacity units can be envisaged, which will mean substantial savings in capital investment.

45. The Commission points out that theoretical and technical studies are now well advanced, as is research on the behaviour of organic coolants, and results so far promise well for the future of the ORGEL project.

The undermentioned technical and economic considerations indicate that in the medium term the ORGEL reactor string is capable of making a valuable contribution to the solution of Europe's energy supply problem :

- i) natural uranium reactors contribute to Community self-sufficiency with regard to fuel supplies ;
- ii) the ORGEL reactor is relatively economic to run because the cost of the fuel cycle is very low ;
- iii) the requisite construction materials are not expensive ;
- iv) the design allows of extrapolation for higher power levels as a result of which it is possible to reduce the specific investments further and to extend the potential applications of the string beyond that of electricity production ;
- v) since the coolant outlet temperature is high, a good electrical efficiency can be expected provided that the correct steam cycle is used ;
- vi) in ORGEL-type reactors the utilization factor of both the fissile and the fertile materials is substantially higher than in other existing natural uranium reactors ;
- vii) the specific output of plutonium is particularly large in reactors of this type.

46. During the year under review the study of a reference power plant of the ORGEL string was pursued. The research team studied more particularly the prospects for technical advances, the fuel cycle and the fissile and fertile material economy. Studies were also undertaken on the possible use of ORGEL for industrial steam production or water desalination, either separately or in conjunction with electricity production. All the evidence points to these studies having been productive. Indeed it is stated further on in the report that the flexibility of organic-liquid cooling as regards the temperature levels obtainable has made it possible to plan a dual-purpose power plant producing both steam and electricity. Moreover a water-desalination plant is also under study at the moment ⁽¹⁾.

47. The Commission points out that the construction of a prototype power reactor can be envisaged in the near future. At the same time the Americans have shown renewed interest in the heavy-water-moderated organic-cooled reactor string, which could lead to collaboration between the Community and the United States in both research and industry.

The Research and Cultural Affairs Committee has suggested that Euratom should encourage the construction of this prototype power reactor.

48. Your Rapporteur is also glad to learn that the Commission has sent a note to the Council of Ministers and the Member States stressing the importance for the Community of a prompt decision to construct a prototype power reactor of the ORGEL type.

In fact, the results of the work and studies carried out by the Community under its research programme on the heavy-water-moderated organic-cooled reactor string would permit a prototype to be constructed and put into operation. On the other hand, any slackening of effort

⁽¹⁾ A reactor of the ORGEL type is cooled by a blend of terphenyls that enables fairly high outlet temperatures (400 °C and above) to be attained in circuits under low pressure. Moreover it is built from relatively cheap conventional materials. The organic coolant has high resistance to elevated temperature and radiation. Nevertheless the product degenerates in use, through pyrolysis and radiolysis, and can thus lead to fouling of walls and to progressive deterioration of heat transfer. Research workers are at present trying to develop a device for simple and speedy determination of fouling. In conjunction with this, the Commission is directing its attention to methods of purifying partially decomposed fluids. A device exploiting differences in solubility to eliminate heavy decomposition products has been tried out on a laboratory scale and yielded highly interesting results. The fuel chosen for the ORGEL reactor is natural uranium in carbide form. Uranium carbide has a higher density of fissile atoms and higher thermal conductivity. The canning and constructional material is from sintered aluminium or SAP (sintered aluminium powder); various manufacturing techniques are being tried to improve the conductivity of this material. Research is also being carried out on zirconium alloys, which may one day replace SAP as canning material.

by Euratom in the face of American enterprise would jeopardize the technical lead European nuclear industry has in this field.

In order to safeguard both the Community's interests and the industrial future of the ORGEL string, the Commission proposes to enter into consultations in autumn with makers of nuclear equipment and electricity producers prepared to take part in this venture.

49. In 1962 the Commission agreed to a limited extension of the agreement covering the Halden reactor (Norway) so as to complete the experimental programme begun there on a uranium oxide fuel-element core⁽¹⁾. In the Seventh General Report the Commission stated that the results of the experiments as a whole would be analyzed and interpreted in 1964 with the help of the large-scale computer and data-processing installations acquired by the Halden Project⁽²⁾.

Participation by the Commission in the Halden programme ended on 30 June 1964.

50. Your Rapporteur shares the regret expressed by the Research and Cultural Affairs Committee that in its Eighth General Report the Commission has not even briefly touched on the results obtained with this project, and hopes that this omission will be made good in the next General Report.

Also eagerly awaited are the results of the association contract entered into with CNEN (Italian Atomic Energy Commission) for the development of an organic-cooled reactor, on the subject of which the Commission is asked to report to the Parliament in due course.

51. One of the characteristics of proven-type *gas-graphite reactors* is the large size of the plants, which also involve *high capital investment*. In its efforts to improve the performance of these reactors, the Commission is directing its attention to high-temperature gas reactors alongside the ORGEL string⁽³⁾.

(1) The core is the innermost part of a reactor which contains the fissile material.

(2) See page 38 of Documentation attached to the Seventh General Report.

(3) High-temperature gas-cooled reactors permit both high power-density and excellent neutron economy to be obtained. They also make better use of available fuel stocks as they employ thorium, a fertile material which is in relatively abundant supply on the world market and readily accessible to the Community. Mixed with, or surrounding, uranium enriched to 90 % U-235, thorium yields the fissile material uranium 233 by neutron capture. Special fissile materials can thus be obtained by using this type of reactor.

The high operating temperatures of these reactors (700-800°C, as compared to 300-400°C in proven-type reactors) ensure a high yield. These can only be attained however if suitable casing material is invented. Helium is used as cooling gas as it does not react with graphite at these high temperatures. Another problem is the elimination of radioactive fission products which spread through the primary cooling circuit and contaminate it.

52. In 1959 an agreement was concluded under the aegis of the OECD for the construction and operation of a high-temperature test reactor at Winfrith (Great Britain). This project, which is known under the name of "DRAGON" and in which Euratom is participating financially, is due to be completed in March 1967. It comprises, in addition to the construction and operation of a graphite-moderated helium-cooled test reactor⁽¹⁾, a comprehensive research programme together with technical and economic studies and the basic plans for a high-temperature power reactor based on the same principle as DRAGON and incorporating the know-how gained with it.

53. In 1964 the Commission concluded an association contract with the Kernforschungsanlage at Jülich (North-Rhine-Westphalia) and with the Brown Boveri/Krupp group⁽²⁾ for the development of a reactor using thorium (based on the principles of high-temperature gas reactors). This reactor uses ceramic fuel in pebble form.

54. Since 1959 the Commission, under the association with KEMA⁽³⁾ in Arnhem, has been conducting research which is mainly concentrated on assessing the prospects for a reactor in which the fuel is kept in suspension in an aqueous medium serving simultaneously as moderator and coolant⁽⁴⁾.

a) Fast breeder reactors

55. Unlike proven-type and intermediate-type reactors, fast breeders contain no moderator.

(1) The test reactor on which construction began in 1960 went critical in August 1964. This reactor enables testing to be carried out on fuel elements developed for use in future power reactors of this string. The fabricating process developed enables relatively high burn-ups to be achieved (around 100,000 MWd/t) in power reactors without undue contamination of primary circuits.

(2) The overall programme pursued under this association, better known by the initials THTR (Thorium High Temperature Reactor), comprises a research and development programme, the design of a power prototype of approximately 500 MWth, and participation in the operation of the AVR reactor (Arbeitsgemeinschaft-Versuchs-Reaktor) now under construction at the Jülich Nuclear Centre. The AVR reactor can serve, right from start-up, for the purpose of full-scale experiments to yield fresh data on the operation of a pebble-bed reactor and on fuel element behaviour.

The research and development programme of the THTR Association covers the following points:

- i) fissile and fertile fuel elements with irradiation tests and post-irradiation examination;
- ii) reactor physics;
- iii) reactor technology: loading/unloading circuit with burn-up measurement of each pebble, pressure vessel, exchangers, auxiliaries, etc.;
- iv) reactor chemistry.

(3) Maatschappij tot Keuring van Elektrotechnische Materialen (company for the testing of electrical materials).

(4) This is a project for an aqueous suspension reactor of the homogeneous type, the characteristic feature of which is the fine mixture of fuel and moderator or the solution of the former in the latter. This design should serve to eliminate difficulties connected with the fabrication and use of fuel elements and make for simpler heat exchange circuits. In the light of the results of research and development studies connected with this project, in which the Commission is participating, KEMA has undertaken, on its own technical and financial responsibility, the construction of a prototype reactor based on this principle. The Commission is not contributing financially to the construction of this prototype.

The neutrons maintaining fuel fission are not therefore slowed down and possess high energy. However, the elaboration and industrial development of these reactors, which have a remarkable performance, is hedged with numerous difficulties and the following problems remain to be solved :

- i) the study of the physics of fast neutron systems ;
- ii) necessity for very compact, highly enriched cores to minimize the risk of neutron leakage and maintain a fairly low fissile material investment ;
- iii) use of a highly split-up and thus costly core structure to permit of heat extraction ;
- iv) use of a non-moderator coolant to allow of heat extraction from a very compact core (liquid sodium, a high-pressure gas or even dry steam being considered) ;
- v) safety problems, particularly those connected with control kinetics.

If full advantage is to be taken of the breeder process, the plutonium must be utilized as fissile material.

56. The Commission has followed up the work on fast reactors in collaboration with the national agencies at the Cadarache, Saclay, Fontenay, Karlsruhe, Bologna and Casaccia research centres.

The Ispra establishment and the European Transuranium Institute are co-operating in terms of design studies, research and development studies, and perfecting industrial prototypes planned for 1972-75 to be the forerunners of the big fast-neutron plants whose prime virtue will consist in producing from fertile material (U238) more fissile material (plutonium) than they consume.

It should be noted that the co-operation agreement concluded between the USA and the Commission is doing much to advance the work on fast reactors.

57. The Eighth General Report (secs. 25 and 26) gives a detailed account of the work being carried out in this field which, in view of the bright prospects it holds out for the Community's energy supplies, deserves the Parliament's closest attention.

d) Controlled thermonuclear reactions ⁽¹⁾

58. It is satisfying to note that all non-military research into fusion undertaken in Member States is carried out under contracts of association between Euratom and specialist laboratories belonging to the following institutions :

CEA (Fontenay-aux-Roses and Saclay)

CNEN (Frascati)

Institut für Plasmaphysik (Munich-Garching)

FOM (Stichting Fundamenteel Onderzoek van de Materie-Laboratoires in Jutphaas, Amsterdam, Utrecht and Arnhem)

KFA (Kernforschungsanlage des Landes Nordrhein - Westfalen) (Jülich laboratories) ⁽²⁾

Liaison and co-operation is maintained with foreign laboratories, above all in the United States and Great Britain, reinforced by exchanges of highly skilled scientific personnel.

59. Like the Research and Cultural Affairs Committee, your Rapporteur realizes that with research of this kind decades must pass before there are any practical applications. It is precisely for this reason that the Community should make a point here and now of ensuring that these promising efforts are directed along the right lines, so that it will not lag too far behind the United States, Great Britain and the Soviet Union.

It may be asked whether the Council of Ministers' decision, in connexion with the adaptation of the second five-year programme, to increase the credits for these activities from 34 million to only 37 million units of account, will

⁽¹⁾ In contrast to fission, by which energy is extracted from heavy nuclei, fusion could enable it to be obtained from light nuclei. It is only possible in a sufficiently dense, stable plasma raised to a temperature of the order of 100 million degrees. The fundamental problem involved in fusion is to generate and contain, *i. e.* confine, such a plasma. So far the fusion of light atoms has only been used for military purposes (H-bomb). Countless laboratories throughout the world are studying ways of harnessing these reactions in view of the vast quantities of energy they release. Moreover, thermonuclear fuels are plentiful and relatively easy to obtain. This applies particularly to deuterium (heavy hydrogen) which can be extracted in large quantities from the oceans.

⁽²⁾ Under contracts of association for the controlled use of energy produced by nuclear fission, these research institutes of the Community have devoted particular attention to :

- magnetic well configuration ;
- turbulence heating ;
- production of laser beams ;
- movement of charged particles in a magnetic field
- use of high-frequency electromagnetic waves for heating, confinement and acceleration ;
- diffusion of high-intensity magnetic fields in metals
- physical properties of high-density plasma ;
- experimental pinch research ;
- injection of high-energy ions ;
- plasma injection by gun ;
- production of high-density plasma ;
- high-frequency projection and confinement of plasma.

permit the many-sided and advanced tasks involved to be carried out as effectively as the importance of this research warrants.

e) Other research connected with reactor development

60. A number of specialized industries have now mastered nuclear fuel fabrication techniques sufficiently to go on to industrial-scale development of fabrication methods. A more favourable situation prevails in regard to natural uranium fuel elements; France already possesses a production capacity capable of satisfying the Community's present requirements. The Commission is also tackling the problem of the carriage of highly-enriched uranium-based fuel discharged from materials-testing and research reactors as well as the reprocessing of such fuel discharged from the Community's materials-testing reactors.

61. As we shall see (sec. 134) the Commission has embarked on extensive research as part of its programme for permanent storage of radioactive waste. As the research contracts were only recently signed, it is too soon to record any significant results.

Your Rapporteur feels he must stress the importance attached by the Parliament to this research which is aimed at eliminating hazards that are inevitable if insufficiently neutralized radioactive waste is allowed to subsist and to spread.

62. Through a contract with the Gesellschaft für Kernenergieverwertung in Schiffbau und Schifffahrt mbH (GKSS), the Commission is participating in the design, construction and operation of the nuclear research ship "Otto Hahn" launched in June 1964. In return for its co-operation, i.e. the supplying of information and financing to the tune of four million u.a., Euratom acquires certain rights, more particularly as regards the dissemination of the knowledge derived from the research carried out on this vessel⁽¹⁾.

Thanks to its deadweight capacity of 15,000 tons it is possible to obtain on the "Otto Hahn"

(1) Nuclear marine propulsion owes its superiority over conventional propulsion by means of steam boilers and turbines mainly to the fact that nuclear reactors can operate for years without the need to replenish or replace the fuel. Moreover, the weight and bulk of nuclear fuel are so much smaller than those of conventional fuels that nuclear ships can be designed with a higher useful load than conventional vessels of the same deadweight capacity.

Moreover, the present state of nuclear techniques allows for the design of marine reactors with a higher output-to-bulk ratio; this will make for higher cruising speeds than those of ships fitted with steam-boilers or Diesel engines. Finally, the experience acquired in nuclear power plants suggests that in due course automation of nuclear propulsion will make such progress as to make possible a reduction in the size of crews.

operating and test results applicable to vessels of a higher tonnage⁽¹⁾.

63. Under Euratom's contracts of association with RCN (Reactor Centrum Nederland) and Fiat-Ansaldo, research is being carried out on marine reactors of advanced design. As early as 1963 comparative studies were carried out of various types of water reactor. This new mode of propulsion obviously affects the overall design of ships, so that their hulls and the question of their seaworthiness must be studied from a new angle. It will also be essential to introduce on these ships anti-collision structures and radiation-shielding devices. All these modifications call for co-ordination of the research and tests outlined in the programme of work of these two contracts of association.

64. The Commission has always sought to ensure that the Community possesses the requisite means to test out the irradiation behaviour of the materials destined for use as components in the various reactor projects. It has two very high neutron flux reactors available for the purpose — the BR 2 at Mol operated jointly with CEN, and the HFR, technical management of which it has entrusted to RCN.

During the period under review irradiation operations were carried out on materials-testing reactor BR 2 for account of undertakings and other bodies in the Community and in third countries.

The high-flux reactor (HFR) in Petten carried out irradiation of samples of graphite for account of the DRAGON project. Other tests covered nuclear graphites for EDF gas-cooled reactors, special graphites, beryllium oxide and zirconium hydride.

65. In addition, research has been carried out on the application of radioisotopes and labelled molecules in industry (sec. 30 of the General Report) and plutonium recycling (sec. 33).

66. From the above it can be seen what difficulties are involved in bringing about the necessary transition from the stage of research to that of industrial application.

(1) The "Otto Hahn" is equipped with several laboratories and can accommodate a scientific staff of 40. It also has a plant for the ship-board handling and storage of the radioactive parts of the reactor, in particular the fuel elements.

It is equipped with a light-water-moderated reactor of the FDR (advanced pressurized-water) type with a thermal power of 38 MW. The reactor core and the steam generator are housed in the pressure vessel. Everything has been done to ensure that the operation of this vessel will be such as to add to the stock of knowledge in this field. Installation of the reactor is expected to start during 1965 at the same time as the assembly of the containment shell.

The difficulties of adapting national research programmes both to each other and to the Community's programme must be overcome by a process of harmonization to which the Commission should devote the closest attention, with the collaboration — due to it under the Treaty — of the six Governments.

CHAPTER III

THE JOINT NUCLEAR RESEARCH CENTRE

67. The Parliament has already had an opportunity of examining the activities of the establishments of the Joint Nuclear Research Centre in the light of reports submitted to it in previous years by the various General Rapporteurs.

We would therefore refer readers to these reports as far as the activities of the Centre are concerned, limiting ourselves to a few observations on how the situation has developed during the period under review.

68. As regards the Ispra establishment, it should be noted that the plan to introduce new research activities there has still not materialized. This plan, which has the backing of the Parliament, could not be carried out because of the shortage of funds caused by the decision of the Council of Ministers to reduce credits for research — in particular for work unconnected with the ORGEL project — from 2.44 to 1.7 million u.a. in the supplementary budget of 25 May 1965. As a result, research of a more general nature and investigations into the operation of research reactors, shielding devices etc., will continue to suffer from the lack of funds.

69. On the other hand the Council's decision of 15 June 1965 regarding the adaptation of the second five-year programme led to credits for research at Ispra being increased by 8 million to 86.8 million u.a. This increase has however been largely swallowed up by labour costs. If we take into account the reductions mentioned above, we must conclude that the opportunity of allocating adequate funds for research unconnected with the ORGEL project has not been taken. At the moment, therefore, those engaged on such research cannot be offered an assured future geared to the development of the establishment.

70. Although work connected with the ORGEL project made good progress, the establishment still suffers from a shortage of skilled technical personnel. As far as the staff and operating budgets are concerned, Ispra has of course to carry out most of the development work on the ORGEL project out of its own funds. Now al-

though the Council has decided that the staff at Ispra can be increased by 150, the extra numbers needed for the ESSOR project amount to 200 to the end of 1967. This means that as new staff is engaged it must be assigned to the ESSOR project and all other departments must remain at their present strength until the end of 1967.

71. The Ispra management is planning new activities for departments in which work in connexion with the ORGEL project is expected to decline. The allocation of funds for research on heavy-water-moderated reactors — in particular ECO (ORGEL critical experiment) and ESSOR (ORGEL test reactor) — is thus regarded as an excellent opportunity for working in the field of heavy-water-moderated reactors. The Ispra establishment is also looking into the possibility of specializing in the development of the thorium conversion cycle.

72. Following completion of the ESSOR reactor, plant extensions at Ispra will temporarily be at an end. But the Community can also use the establishment, for example, as a computer centre, in which capacity it could develop into a central establishment accepting orders from private industry or State organizations.

73. Ispra has always regretted that it has never been able to play more than a very limited rôle in the development of fast reactors. Its capacity cannot be fully utilized until ample funds are allocated for research work carried out alongside the ORGEL project, and until it is permitted to recruit more staff. At present a clear disparity remains between the level of investment in installations and the funds available to cover the operating and personnel costs involved⁽¹⁾.

74. In a few months Ispra will be submitting a fast reactor project (SORA reactor). If the Council of Ministers approves the project, Ispra could become the focal point for the physical research already initiated. This would lead to close collaboration with the universities.

75. In order to meet the needs of the Ispra establishment the Council of Ministers should :

- i) bring forward by one year the date of recruitment of the 150 new workers for the ESSOR reactor so that they can be adequately trained, and approve the engagement of

⁽¹⁾ Interesting facts about the situation at Ispra are contained in the report of the *Bundestagsausschuss für Atomenergie und Wasserwirtschaft*. This report recommends that at least 30 per cent of the establishment's research should be devoted to work not connected with the ORGEL project and that scope should be provided for pushing ahead with any such work already started on. Moreover, the results obtained on the ORGEL project should be passed on to industry without delay. The report finally recommends that the SORA project should be got under way.

a number of auxiliaries of Categories B and C and of establishment assistants in order to increase the working capacity of the academic staff ;

- ii) increase the funds allocated to research carried out alongside the ORGEL project.

76. The Central Nuclear Measurements Bureau (CNMB) at Geel is also faced by the problem of shortage of staff, its strength — originally set at 230 — having been reduced by decision of the Council to 180.

Another problem arises from the fact that in all establishments of the Centre the operating budget must cover the costs of the European Schools. This burden weighs particularly heavily on the CNMB because it has such a small staff.

The outlook for the future is not very encouraging. The CNMB will not be able to fulfill its task satisfactorily unless further essential measuring instruments are made available to it. If these cannot be provided under the third five-year programme, the efficiency of the establishment may suffer.

77. The Petten establishment continues to be engaged on materials testing. Another of its fields of activity is the development of the DRAGON project and questions connected with high-temperature reactors.

This establishment too is faced with budget problems. However, the steadily increasing interest shown by nuclear research centres in the Member States and in third countries in developments at Petten augurs well for its future.

For the future it is planned to specialize in high-temperature and remote-handling techniques.

78. The establishment at Karlsruhe is also suffering from a shortage of staff. The technicians employed there consider that, if it is to be adequate, the present strength of 150 should be doubled. The shortage mainly affects safety of the plant which requires non-stop supervision.

On the other hand the outlook for this establishment — given the importance of the research on which it is engaged — is highly promising. Its highly satisfactory collaboration with the nearby German establishment should also be placed on the credit side.

79. It would be wrong to close this chapter without drawing the Parliament's attention to the need for vigorous action to ensure that all staff problems are as far as possible solved. It

is inconceivable that the Community, having set up the Joint Nuclear Research Centre — undoubtedly one of the major aspects of its activity and, owing to the magnitude of its installations, a veritable treasure-house of scientific knowledge — should fail to derive the maximum benefit from it ⁽¹⁾.

80. There is another source of anxiety which it would be pointless to conceal. Are members of the Council of Ministers sufficiently well informed on technical matters to take decisions at their meetings on questions connected with so complex a subject as nuclear research? Are not their decisions sometimes influenced by those responsible for running national nuclear research centres whose is at all costs to retain their prerogatives?

81. Your Rapporteur would like to raise yet another point. Since the Joint Nuclear Research Centre offers its services to private undertakings and public bodies, why should not the revenue it earns in this way be used to increase the funds allocated for research and training? Such revenue would increase as the Centre developed, thus enabling it to work more smoothly.

82. Another problem is the financing of the European Schools situated in Varese, Karlsruhe, Mol and Petten in the vicinity of the Centre's different establishments. These schools offer facilities for the children of officials to receive instruction in their own languages. The corresponding costs are entered under Title II of the research budget and distributed among the various establishments proportionately to the number of agents employed.

83. The Commission, in view of the fact that the cost of running these schools has made increasing demands on funds earmarked for research proper, recently asked the Council to charge the costs of all the European Schools to the administrative budget. The Council however decided :

- a) that the costs of these schools should continue to be met out of the research budget ;
- b) that the costs of schools in the vicinity of research establishments should be charged in each five-year programme to individual projects and no longer proportionately to the number of agents, *i.e.* roughly the number of children.

⁽¹⁾ The Commission, for example, has submitted welcome proposals for an accommodation allowance to be granted where housing conditions are difficult, and a transport allowance where the place of work is unduly distant. Unfortunately the Council has not yet reached a decision on this matter.

Such an arrangement weighs particularly heavily on smaller establishments such as that at Geel whose overall funds are on a relatively modest scale.

84. Your Rapporteur urges that the whole question should be reviewed once again, bearing in mind in particular that the activities of the European Schools have nothing to do with research but are connected rather with the administration of the Community. The corresponding expenditure should therefore be charged to the appropriate budget.

CHAPTER IV

SUPPLY

85. Two events have characterized the Community's activities during the period under review and could influence its future supply policy: the amendment of the provisions of Title 2, Chapter VI of the Treaty and the new trends emerging on the markets for raw materials.

86. With regard to the amendment of the Treaty provisions governing the supply of ores, source material and special fissile material, the Commission, as is well known, proposes that the principle of equal access to sources of supply should be replaced by that of non-discrimination and that the conclusion of supply contracts should be largely liberalized.

87. Your Rapporteur shares the view of the Political Committee that, whatever amendments may be desired, the Community spirit of the Treaty should be respected and the new regulations be kept in line with the principles of a common European energy policy as repeatedly defined by the Parliament, *i.e.* :

- i) cheap supplies ;
- ii) long-term stability of supplies ;
- iii) unity of the Common Market ;
- iv) balanced phase-in of substitutes ;
- v) free choice of the consumer.

88. The question arises whether, and to what extent, surrender by the Agency of the exclusive right to supply contracts in or outside the Community encourages "centrifugal forces" which it is felt desirable to keep in check. Nor should it be forgotten that the goal to be aimed at, according to both the spirit and the provisions of the Treaty, is a common supply policy.

The Energy Committee, for its part, wonders whether the concepts underlying the supply policy have been sufficiently explored to justify amending the provisions of the Euratom Treaty, experience having shown that forecasts in the nuclear sector are subject to wide variations.

On the other hand the Commission's proposal to leave it exclusively to the Council to amend the Agency's right of option by making decisions from case to case, is liable to weaken the right to take initiatives and make proposals it enjoys as a Community organ.

89. One of the Supply Agency's vital tasks in the years that lie ahead will be to ensure reliable and cheap sources of supply for the Community. There are signs that a race for the control of the uranium market by the nuclear powers is in the offing ; it is essential therefore that the Community should not allow itself to be caught napping.

The declaration by the Canadian Government that uranium deliveries for stockpiling purposes would not be authorized except under agreements extending over only five years, shows that the attitude towards uranium stocks has in the meantime completely changed.

90. Your Rapporteur shares the view of the External Trade Committee which asks that the Community should lay down a common commercial policy without delay.

91. As regards the Community's reserves, France has definite uranium reserves estimated at 34,000 tons and potential reserves of about 50,000 tons, while in the remaining Member States no deposits have been found. This does not of course mean that uranium may not be discovered there if prospecting is carried out deeper. However, extraction under such conditions would tend to send up the cost of the fuel.

92. As the Commission estimates the Community's needs of uranium between 1970 and 2000 at 275,000 tons of uranium, steps must be taken to ensure an adequate supply from third countries.

93. The Community has concluded agreements for co-operation with Canada, Argentina and Brazil, which have large stocks of uranium. In addition it has established contact with South Africa, although there is no immediate prospect of regular supplies as uranium extraction in that country is bound up with the mining of gold and is therefore relatively rigid.

France is continuing to prospect for uranium in the African countries and has discovered large deposits in Gabon and Madagascar which it is mining jointly with the governments of these States.

94. The problem of uranium supplies is lightened by the fact that it is relatively easy to stockpile; for example, it can be stored for three months at the same cost as incurred in storing petroleum for three years.

95. The United States are the Community's only suppliers of enriched uranium. Thanks to the excellent relations existing between Euratom and the United States Atomic Energy Commission, Euratom enjoys a privileged position as regards supplies of uranium 235 and, according to the competent authority in that country, need have no fear that this source of supply will dry up.

96. The Eighth General Report states that it will probably be necessary in about 1980 to bring in extra isotope-separation facilities to cover the requirements of the Western world.

The position taken up by the Parliament, which supports any initiative facilitating "the establishment of joint European undertakings for the production of isotopes and, if necessary, for the enrichment of natural uranium" (1) still holds good. It is also backed by the Commission which maintains that such a project lies well within the technical and financial capacity of the Community's industry.

97. At present the Community also depends on the United States for its plutonium supplies. It seems highly likely that in 1969-70 it will start on its own production, particularly in Italy.

CHAPTER V

TRAINING AND INSTRUCTION, DISSEMINATION OF INFORMATION AND INDUSTRIAL PROPERTY

a) Training and instruction

98. No one can dispute the conclusion reached by the Commission that "the rapid and coherent expansion of the nuclear industry throughout the six Community countries depends on the number of experts and research workers available". The nuclear industry's growth is bound up with the training and instruction of specialists in every field connected with nuclear energy. There is a growing need in research establishments for research workers and tech-

nicians which can no longer be met by the universities and schools of technology. The ever-widening range of tasks in the scientific field tends increasingly to encourage greater specialization. In practically every country, therefore, great efforts are being made to encourage young people to embark on scientific careers.

The nuclear sector does not call for basic instruction specifically different from that given in traditional faculties of science. On the other hand, the chemist, metallurgist or mathematician seeking a career in nucleonics must be able to follow up his general instruction either by post-graduate courses or by a period of on-the-job training in industry.

99. The Commission arranged courses in the nuclear research centres, and particularly in the JRC establishments and nuclear power plants, for students nearing the end of their studies. In 1964 it accepted 156 candidates for these courses, of whom 64 started during that year, the others being due to begin in 1965.

We agree with the Research and Cultural Affairs Committee that these courses should extend over at least one year.

In addition, the Commission accepted for courses in JRC establishments 24 qualified research scientists (17 of them from non-member countries) from other research centres or industrial undertakings interested in Euratom's scientific and technical activities.

100. In the *Journal officiel des Communautés Européennes* No. 7 of 21 January 1964 the Commission announced the new conditions for the grants of scholarships and the introduction of trainee courses. The new grants system will provide grant-holders with an opportunity to acquire further knowledge in the nuclear field after they leave their universities.

The Commission makes thesis grants, specialization grants and grants for young university lecturers to study at nuclear research centres. Thesis grants are intended for the experimental or theoretical preparation of a doctor's thesis to be presented at a science faculty or a teaching establishment of equivalent standard. Specialization grants are designed for graduates studying for a further specialized degree or diploma or for a specialist scientific publication.

Finally, some of the grants are intended to enable young university teachers to take part in scientific research work and keep abreast of the latest developments in their subject.

(1) See Resolution of 23 September 1964, *Journal officiel* N° 153, p. 2441/64.

In 1964 the Commission selected 63 applicants out of 178. Details are given in Document No. 38 of Documentation attached to the Eighth General Report (Grants awarded in 1964).

Whereas student trainees share normally in the day-to-day work of the permanent teams at the research centre or carry out studies on minor problems, grant-holders work more or less independently on specific subjects within the context of the research programme. This system should be regarded as an effective method of helping to train the nuclear experts needed by the Community in ever-increasing numbers.

101. The Commission is continuing its endeavours to co-ordinate the training received in nuclear science received by technicians in Community countries. With the aid of national experts a programme for training nuclear instrumentation and control technicians has been added to the published curricula for radiation hygiene, radiochemistry and isotope applications.

The Commission proposes to form a Central Board for the co-ordination of nuclear training which, working closely with the national authorities, will ensure that the instruction programmes are properly followed and kept up to date, and will have the right to endorse diplomas awarded on the strength of the Euratom programmes. Your Rapporteur welcomes this measure which is intended to give grant-holders easier access to nuclear jobs and to facilitate the exchange of technicians within the Community.

102. While the Eighth General Report has nothing to say about the post-graduate training of scientific and technical personnel, the Commission points out that it has followed up these measures. As is already known, a large number of research workers took the opportunity in 1963 of carrying their knowledge a stage further by attending trainee and study courses, conferences or debates. Moreover 40 scientific officials underwent lengthy training courses in laboratories, the subjects including plutonium technology, the development of advanced reactors and certain aspects of biology.

103. It is highly regrettable that the Council reduced the credits in this field under the second five-year programme from 3 million to 2 million units of account, i.e. by one third. In taking this step it ignored the wishes of the European Parliament which has always insisted on the need to set aside adequate funds for educational purposes.

The reduction of credits in this sector has a demoralizing effect on research workers and tends to sow doubts into their minds as to the importance of their work and the results they achieve. This is a perfect illustration of how large sums can be wasted by effecting relatively small economies.

104. Your Rapporteur regrets that in speaking of the European University in its Eighth General Report the Commission confines itself to observing that at its session in May 1964 the European Parliament voted a resolution on the setting-up of a European university in which it broadly approved the Italian Government's proposals, subject to certain amendments which it deemed essential.

It appears necessary to draw attention to this omission because the Commission knows that the European Parliament and its Research and Cultural Affairs Committee have constantly urged the Commission to take the initiative in this matter.

The Research and Cultural Affairs Committee has concerned itself with this project since 1959, having submitted six interim reports on the subject to the European Parliament. The Committee has also studied the problem in the light of an interim report by Mr. De Block on cultural co-operation between Member States ⁽¹⁾.

b) Dissemination of knowledge and industrial property

105. In a statement to the Council at its session on 1 April 1963 the Commission defined its policy on the dissemination of non-patented information deriving from its research. It also outlined its future policy on the issue of patent licences to States, individuals and undertakings established outside the Community.

These principles laid down by the Commission are aimed at ensuring for Community industries prior or even exclusive rights in the exploitation of information of industrial value arising out of the implementation of the research programme. Information of an industrial character is only published where there is no risk of depriving Community industries of priority in exploiting it. So far more than 200 persons and undertakings in the Community have asked for access to such industrial information.

106. In the same spirit of collective safeguards for Community industries in the use of informa-

⁽¹⁾ See Doc. 32/1963-64.

tion of Community origin, the Commission is developing as wide and effective a patent portfolio as possible. To close certain gaps in the Treaty, the Commission has defined the position on the concession of licences to non-Community industries, namely, that save in the case where patents or data are exchanged, use of the inventions covered by such patents is restricted to industrialists in the Community. A good number of the patents in Euratom's portfolio are already being employed in Joint Research Centre establishments by associations and contractors.

107. Negotiations have been entered into with a view to a licence for some dozen patented inventions in fields not restricted to the nuclear sphere, the marketing of which involves only limited development costs. In six cases the negotiations have resulted in the granting of a licence.

As long ago as January 1961 the Commission laid down the rules governing patents in connexion with research contracts. This system ensures a fair balance between the rights acquired by the Community in return for its financial contributions and the industrial and commercial interests of contractors. It facilitates collaboration with industry and the effective exploitation of the results of research.

Lastly, the problem of basic patents belonging to the contractors has been solved. This solution obviates interference with the use by the Commission and Community industries of the results of research carried out under contract without thereby prejudicing the contractor's industrial property rights.

108. To provide for the dissemination of scientific and technical information, the Commission is constantly developing the resources of its Information and Documentation Centre (CID) whose capacities are progressively being placed at the disposal of research workers and industrialists in the Community. It has a twofold function: first to serve as a channel for passing the results of research undertaken by the Community to possible users, and second to inform research organizations and industry as fully and rapidly as possible on the state of technical advances.

109. The CID discharges its function by communicating to individuals and undertakings in the Community those results of the research programme likely to be of use in industry. In addition it publishes the Euratom Reports and two periodicals — *Euratom Information*, which contains abstracts of published research results,

the broad outlines of the programme and the subject of contracts signed and patents granted, and the *Euratom Bulletin* which, catering for a wide public, deals with questions relating to the peaceful use of nuclear energy.

110. The CID also endeavours to fill the gaps in the international nuclear documentation system. To this end it publishes the monthly *Transatom Bulletin*, which gives information on nuclear documents translated from Slavonic or oriental languages. Finally it shares, by contract, in the publication of *Nuclear Medicine*, a bibliographical journal published by the *Excerpta Medica* Foundation, and *La Propriété Industrielle Nucléaire*, a review dealing with nuclear patents.

111. The CID's most important work is the elaboration of an automatic reference system by which, beginning in 1965, an electronic computer will ensure rapid retrieval of comprehensive bibliographical selections from the 300,000 odd nuclear data units now being analyzed and stored in its memory.

It is gratifying to note that this automatic documentation system, in which various countries, including the United States, have offered to collaborate, will be available to Community research and industry during 1966.

The Research and Cultural Affairs Committee regrets that the Council of Ministers' decision to cut down the credits for the programme for the dissemination of information will make the CID's job more difficult, and that the planned transfer of the CID to Luxembourg will not only make it impossible to adhere to the set time-limits but also affect the efficiency of the Centre.

112. The CID also supervises the work of the Euratom Commission's five libraries, located at Brussels and the Ispra, Geel, Petten and Karlsruhe JRC establishments. The Brussels library, where acquisitions for all except the Ispra library are centralized, is also responsible for meeting the needs of Euratom personnel engaged elsewhere than at Euratom institutions. Mechanization of the whole of the Euratom libraries' acquisition and accounting transactions by means of electronic equipment is on the point of completion.

113. In 1964 the Commission issued 524 technical and scientific reports which are listed in Document No. 33 of the Documentation attached to the Eighth General Report. During the same period it circulated 329 communications (under Article 13 of the Treaty) — some consisting of a large number of voluminous documents and

therefore only available on microfilm — to individuals, undertakings and Member States of the Community through “national correspondents” appointed in each of the member countries.

114. Your Rapporteur joins the Research and Cultural Affairs Committee in welcoming the work being done by the Commission on the dissemination of information and industrial property.

115. He would however draw the Commission's attention to the wish expressed by the External Trade Committee that Euratom should not surrender its lawful right to grant licences.

It should on the contrary ensure that these licences are not negotiated bilaterally as this could prejudice the technical negotiations it might be called upon subsequently to handle.

CHAPTER VI

HEALTH AND SAFETY, SAFEGUARDS AND CONTROLS, AND THIRD-PARTY LIABILITY

A. Health and safety

a) *Implementation of Euratom directives in Member States*

116. In its Eighth General Report (see Chapter IV) the Commission points out that the implementation in Member States of the Euratom directives laying down the Basic Standards ensures that the health and safety of workers and the public at large is effectively safeguarded in the Community. Moreover, a number of rules and legislative provisions supplementing existing directives have been issued at national level during the period under review⁽¹⁾.

117. Your Rapporteur realizes, like the Health Protection Committee, that these provisions (which incidentally have not yet come into force) fill gaps that have so far existed and

⁽¹⁾ Further details can be found in Document No. 26 of the Documentation attached to the Eighth General Report — “Health and safety legislation enacted and draft texts submitted to the Commission under Article 33 during 1964”. This covers, in addition to the provisions already quoted in the Eighth General Report, the following Belgian regulations:

- i) draft “Ministerial Order on approval of a type of apparatus containing radioactive substances” (this is the draft Ministerial Order mentioned without further details in sec. 53 of the Seventh General Report);
- ii) draft “Ministerial Order amending certain provisions of the general regulations for the protection of workers”;
- iii) preliminary draft “Royal decree amending the general regulations for the protection of workers and relating to the establishment of industrial medical services and to the organization of first aid and emergency treatment for workers injured or contaminated”;
- iv) preliminary draft “Royal decree amending the Decree by the Regent of 25 September 1947 prescribing general rules on health and safety measures for mineworkers”.

remedy a number of shortcomings. On the other hand, certain criticisms raised by the Parliament last year have not been followed up. The Parliament deplored at the time the absence of implementing regulations for medical protection against ionizing radiations and insisted that the Commission should use its influence with the Member States, in the interest of workers and the general public, to ensure that these gaps in legislation were made good without delay.

In its reply to a written question by Mr. Santero relating to the implementation of the 1959 directives on the Basic Standards, the Commission⁽¹⁾ pointed out that Member States had taken the necessary measures for their implementation by introducing legislation of exceptional scope and importance. The Commission added that even in a field as specific as that of the use of radiation in medicine, there is no question of a complete lack of regulations. On the contrary, there has been a steadily increasing stream of regulations on this subject in Member States; the importance of the results achieved can be gauged from the texts listed in the appendix to the reply in question.

118. The Health Protection Committee further points out that in spite of the fact that the directives concerning the protection of workers and of the general public against ionizing radiations have been in force since 1959, differences still exist in national regulations, or practices still to be made the subject of legislation, on the medical supervision of workers exposed to radiation.

For example, under Title V, Chapter II, Article 23 of the directives laying down the Basic Standards, supervision should be in the hands of “approved physicians”. According to Title I, para. 2, of the directives, an “approved physician” is one who is responsible for medical checks and whose qualifications and authority are recognized and answered for by the competent authority. Unfortunately Member States do not employ uniform criteria in applying the rules concerning the requisite medical qualifications and in appointing the authority responsible for giving approval.

119. According to Recommendation No. 112 of the International Labour Office of 1949, the qualifications of the “approved physician” necessitate special training, of which however no details are given. A study group set up at the end of 1960 by the Euratom Commission, after detailed discussions, expressed the opinion that

⁽¹⁾ See *Journal officiel des Communautés européennes*, 1 June 1965, pp. 1628/65 ff.

an "approved physician", within the meaning of the directives laying down the Basic Standards, should possess, in addition to the approved medical qualifications, certain knowledge and experience in the following fields :

- i) general radiobiology ;
- ii) human genetics ;
- iii) special radiopathology, particularly hematology, taking account of medical protection against radiation ;
- iv) physical and chemical methods of protection as well as physical checks on radiation protection ;
- v) emergency medical measures in the event of accidents in nuclear undertakings ;
- vi) legislation on radiation protection, taking account of the recommendations of the "International Committee for Radiation Protection" and of Euratom's Basic Standards.

The Health Protection Committee considers that where the physician possesses this knowledge, there is no point in making his approval conditional on his being recognized as a specialist in a particular field such as industrial medicine or hematology.

120. The views of the study group on the training required by an "approved physician" appear to be reasonable and to the point. The Commission should therefore ensure that Member States immediately train enough physicians in the specialist fields referred to and allow only them to carry out medical checks on workers exposed to radiation.

b) Revision of the Basic Standards

121. The procedure for revising the Basic Standards, and more particularly the provisions on the exceptional irradiation of workers, has been brought a good step forward with the finalization of the draft directive amending the Basic Standards and its transmission to the Council of Ministers. After listening to the report submitted on the subject by Mr. Santero on behalf of the Health Protection Committee, the European Parliament approved the draft directive on 13 May 1965 ⁽¹⁾.

It should be noted that with this draft the Commission has reconciled economic interests with the requirements of public health.

⁽¹⁾ See *Journal officiel des Communautés européennes*, No. 96, 2 June 1965, p. 1696/65.

122. The Basic Standards relating to exceptional irradiations cannot be put into effect immediately. The Council of Ministers must first adopt the directives which must then be put into effect by publication in the *Journal officiel des Communautés européennes*. Even this will not ensure that the new provisions will necessarily be applied as each Member State is free to decide when the necessary implementing measures should come into force on its own territory.

123. The position will not change until the Council of Ministers acts upon the urgent recommendation of the European Parliament and lays down a one-year limit within which the measures necessary for implementing the directives must be taken. Although this could pose certain difficulties, these should not be insurmountable since all that is required is to make certain technical amendments to the directives embodying the Basic Standards drawn up in 1959.

Your Rapporteur backs the Health Protection Committee's request that the Commission should comply with the wish expressed by the European Parliament and amend its initial draft directive in accordance with Article 119,2 of the Treaty.

c) Background radioactivity monitoring

124. Under the terms of the Treaty, the Commission is pursuing the analytical and comparative study of a prototype portable device for measuring radioactive contamination of foodstuffs in the event of a nuclear accident.

The Health Protection Committee feels that such a device could be of particular value in a disaster to protect the population from radioactive poisoning. It would therefore have welcomed more details as to the nature and mode of operation of this device. It would like to know when the device can be put into practical use and if the Commission intends that these instruments should be acquired in sufficient numbers by Member States.

As the Commission points out, however, these questions cannot be answered until the development of the device is completed.

125. It has been found that different methods and equipment are still used in the Member States to measure background radioactivity. For example, artificial radioactivity in the atmosphere is detected by sampling dust suspended in the air. Portable filters are used for this purpose in the Federal Republic of Germany, and stationary filters in the other countries of the Community. As soon as the radioactivity of

naturally radioactive short-lived substances has died down, other measures are resorted to, in Germany after two days and in the other Member States after five days.

126. The Commission reports that the co-ordination programme on apparatus and methods is proceeding satisfactorily. It should be noted that a co-ordination programme for measuring methods is still in progress. In the centres set up at Brussels and Saclay, simultaneous measurements have been carried out with the ten types of device most commonly used in the Community. The results will be analyzed statistically and will make comparison of the efficiency of these devices possible.

Although it as so far not been possible to monitor radioactivity with standardized methods and equipment, it should be noted that comparable results are in fact obtained with the measuring techniques and apparatus used in Member States.

127. In order to monitor the level of background radioactivity in accordance with Article 35 of the Treaty, it is particularly important to measure overall beta radioactivity, the radioelements (strontium 90, strontium 89, caesium 137, etc.) contained in atmospheric dust, and the radioactivity of all precipitations collected and of surface waters. The network comprises 118 atmospheric monitoring stations and 132 fall-out posts ⁽¹⁾ distributed throughout the entire territory of the Community ⁽²⁾.

128. The Health Protection Committee stressed the importance of monitoring the radioactive contamination of the food chain. As the radio-nuclides enter the human organism largely through the absorption of milk, the main emphasis has been placed on the measurement of milk pollution ⁽³⁾.

It is therefore felt essential to ascertain with the utmost accuracy in the years to come whether caesium and strontium activity increases

⁽¹⁾ Fall-out is the surface deposit of radioactive dust due to rain or dry sedimentation.

⁽²⁾ Radioactivity showed low values in 1964 apart from a slight upturn in the middle of the year. At Ispra, for example, the mean total beta-activity in the air was only 1.14 pCi/m³ (picocurie per m³ of air sampled) and that for strontium 0.04 pCi/m³. These values represent only a very small percentage of the "maximum permissible concentration" laid down by the Basic Standards.

⁽³⁾ From the diagrams in Document No. 27 of the Documentation attached to the Eighth General Report it can be seen that caesium-137 and strontium-90 activity in milk rose sharply after May 1963. The figures for strontium-90 in the Community, for instance, increased from 12.4 pCi/gCa (picocurie per gram of calcium) in April to 34.4 pCi/gCa in July, stabilizing around 30 pCi/gCa for the remainder of 1963. This increase was due to the heavy radioactive fall-out dating back to the early summer. Between April and July 1963 the caesium-137 content rose approximately from 80 to 250 pCi/litre. The radioactivity figures obtained for strontium represent about 10 per cent of the maximum permissible concentration and for caesium about 4 per cent. The health of the public is not therefore in danger.

or decreases, particularly in milk which is such an important factor for the health of the population.

129. The Health Protection Committee has moreover pointed out that it is not enough to monitor the radioactive content of milk. Other foodstuffs should also be subjected to searching analysis. Everyone knows that the chief cause of contamination in humans is the absorption of water or food contaminated by radioactive substances.

According to the Commission, the first completed study was devoted to the monitoring of radioactivity in milk. With the co-operation of experts from all Member States, investigations are at present being carried out at Community level with a view to laying down uniform principles for the monitoring of radioactivity in the following foodstuffs :

- i) fruit, vegetables and potatoes ;
- ii) meat products, poultry and eggs ;
- iii) cereals.

It is planned to publish the principles formulated in the course of these investigations in the appropriate legal form.

Last year the Commission had to admit that the systems of measuring radioactivity in foodstuffs do not yet permit comparable results to be obtained ⁽⁴⁾.

According to the Eighth General Report, the Commission is increasingly concerned with co-ordinating measurements and observations made in Member States and establishing certain criteria for monitoring the radioactive contamination of foodstuffs. It is to be hoped that Member States will back the Commission's efforts in this field.

130. The question has been raised whether the Commission has sufficient staff and resources available to tackle this rather difficult problem. At the time the second five-year programme was revised in May 1965, the Council reduced credits for "Health and Safety and Biology" by 1.5 million u.a., leaving this vast and important sector with only 16 million u.a.

The Commission has announced that in spite of this reduction of the total credits allocated to this sector, a credit of 1.8 million u.a. will continue to be given to research on the food chain, dosimetry and genetics.

⁽⁴⁾ See Euratom's Seventh General Report, sec. 55.

The Commission also intends to lay down certain criteria for the monitoring of radioactive contamination of foodstuffs. This programme should be pushed through as rapidly as possible and the criteria published in the most effective legal form so as to ensure they are immediately applied.

131. It is known that in 1961 a contract of association was concluded between Euratom and the French Atomic Energy Commission for the purpose of discovering the levels of radioactive contamination in animals and plants used as human food that would be tolerable to the individuals or populations exposed. Complementary nutrition surveys were carried out for a year in every Community country and the findings will be statistically analyzed during 1965. These results are awaited with interest.

132. The study of Rhine Basin radioactivity, which now extends over three years, should be completed in 1965.

Moreover, the biology unit at Ispra has conducted an investigation into the movement of radionuclides in the waters of Lago Maggiore and in the grasslands and rice-fields of the upper plain of the Po. Again one wonders whether the funds initially allocated for the purpose will permit this work to be satisfactorily carried out in line with the established programme.

d) *Transportation, processing and disposal of radioactive waste*

133. Section 29 of the Eighth General Report deals with the transportation and processing of radioactive waste. Document No. 10 (reprocessing and transportation of irradiated fuels) provides a valuable supplement to this study. Section 58 deals with the disposal of radioactive waste.

134. As the use of nuclear energy increases, the problem of processing radioactive waste becomes more and more urgent. This is why the Commission has drawn up a programme for the permanent storage of radioactive waste and made a start on its implementation. Under current research contracts, studies are being carried out into the advisability of burying radioactive waste in derelict salt mines or pits dug in salt strata, or storing it at the surface of desert regions with a minimal hydrographic network.

There is every reason for insisting on the urgent need for a solution of these problems (see sec. 57), and the Parliament hopes that it will be informed of the findings of these investigations

as soon as they become available to the Commission.

135. During the period under review, eight radioactive waste projects were submitted to the Commission by Member States in accordance with Article 37 of the Treaty. Three were from Belgium, two from France, two from Italy, and one from the Federal Republic of Germany. Each is subjected to searching analysis by the relevant Euratom departments before it is passed to a group of experts of the Member States.

The Commission has on several occasions been obliged to make recommendations for the improvement of safety devices and to spell out the health hazards stemming from radioactive wastes⁽¹⁾.

The Commission has stated that it ensures that its recommendations are followed up through permanent contacts and co-operation with the national departments concerned and the heads of nuclear establishments.

e) *Nuclear plant safety*

136. The Commission continued its activities in this field. At the request of the Belgian Government it had a study made of the safety report drawn up for the modified BR 3 reactor now called BR 3 VULCAIN. Moreover, an opinion has been sought on certain safety aspects of the Eurochemic plant, in particular on the possible hazards of developing the installation for processing highly enriched fuels.

Other safety assessments were carried out on the SEP⁽²⁾ project in the Netherlands and AKB⁽³⁾ in Germany, as well as on the American nuclear vessel NS "Savannah".

To avoid overlapping, the Commission's departments work in close collaboration with the competent national authorities and technical bodies.

137. As pointed out in the Seventh Report⁽⁴⁾ emergency plans in case of accidents have been drawn up in liaison with national or regional

(1) See written question No. 84 (*Journal officiel* No. 201 of 5 December 1964, p. 3409) addressed to the Commission by Mr. Pêtre in 1964. The Commission was asked in particular to state why Member States have interpreted Article 37 of the Euratom Treaty in different ways, how uniform application of these provisions can be ensured, and whether it had been notified of all projects for the disposal of radioactive waste from nuclear plants in the Community. From the Commission's reply it appears that it has published a recommendation for a uniform basis for the presentation of projects for radioactive waste disposal.

(2) SEP: Samenwerkende Electriciteits Productiebedrijven (Joint undertakings of electricity producers).

(3) AKB: Atomkraftwerk Bayern (Nuclear power plant of Bavaria).

(4) See sec. 57 of the Seventh General Report.

authorities. In the meantime emergency plans have also been prepared for the research establishment at Ispra and for the Central Nuclear Measurements Bureau at Geel.

These measures are to be welcomed and it is hoped that similar emergency plans will be drawn up as soon as possible for all nuclear plants in the Community.

f) *Nuclear medicine and hygiene*

138. During the period under review the Commission had a comparative study of dosimetry by film badges carried out. By comparing the dose readings with the doses actually delivered it has been possible to carry out not only absolute calibrations but also relative calibrations as between the different bodies involved. The results obtained may be regarded as extremely important in that they have enabled modifications and improvements to be made in reading methods and, in some cases, even in the screens around the films (¹).

139. Research into the contamination of milk and cereals, most of which has been going on for several years, relates first and foremost to the causes of contamination. Only when these causes are known will it be possible to carry out effective decontamination. The importance of these studies is obvious: they can be very useful in the event of a disaster if decontaminated food is indispensable.

140. In the absence of any practical quantitative or qualitative methods of checking whether food has been satisfactorily preserved by means of ionizing radiations, the Commission is continuing its research in this field. As it will be years before this programme is completed, it is essential that sufficient credits and skilled staff should be available in the future.

141. The Commission states that the general aims of the biology programme remain largely unchanged. The emphasis has been placed on co-ordination of the efforts deployed within the Community and on bringing them into line with outside projects. The Commission adds that this task grows more complex from day to day, and at the same time more useful and indeed vital.

The question is whether the cut in credits for the biology programme may not in the future

(¹) To acquire further data on the irradiation dose received by certain sectors of the population, the Commission, in conjunction with the national authorities, has perfected a survey method for evaluating radioactive contamination originating from the total diet of young people. A survey is likewise in progress with a view to standardizing the processes employed in the Community for the direct determination of the presence of radionuclides in the human body.

prevent the Commission from carrying out its many tasks in this field in a satisfactory manner.

142. The Commission has replied that so far the items affected have not been specified. It is however assumed that these will include in particular the training of new skilled personnel, fundamental research into the effects of radiation on living cells, and contracts of association in the biology sector. So far, Euratom's participation in these contracts has been on a fifty-fifty basis. Because of the cut in credits, this has had to be reduced by about 20 per cent, *i.e.* to about 40 per cent of the total sum. Moreover, Euratom is left with no alternative but to cut down its own research team. This is all the more regrettable because it is precisely research workers who, through their contacts with colleagues, have done so much towards the dissemination of information and the creation of a true Community spirit.

143. We should like once again to draw the Council of Ministers' attention to the false economy involved in curtailing funds earmarked for the biology programme.

The Commission has stated, incidentally, that it is determined to demand the essential funds from the Council under a third five-year programme.

Collaboration in the field of radiobiology in the Community is based on a contract successfully continued in 1964 (¹).

144. The studies have formed the subject of more than 200 publications and a large number of scientific reports.

The contract of association with the Universities of Brussels and Pisa has yielded noteworthy results in the field of nuclear medicine. Extremely accurate analytical techniques combined with through-going research into the physico-chemistry and metabolism of certain marked proteins is opening up new possibilities for the diagnosis and treatment of a series of diseases such as cancer, lipoid nephrosis, diabetes and arteriosclerosis.

(¹) This programme includes in particular:

- diagnosis and treatment of radiological lesions;
- research into the genetic hazards bound up with radiations;
- exploration of the carcinogenic effects of radiations;
- chemical radioprotectors;
- possible consequences of radioactive contamination of our environment;
- application of nuclear techniques to medicine and agriculture;
- study of radiation-induced congenital malformations.

In addition, research is being carried out at Fontenay-aux-Roses on the toxicity of certain radioelements (more especially plutonium 239 and cerium 144) in conjunction with the French Atomic Energy Commission (CEA).

145. Paragraph 64 of the Eighth General Report deals with the work on the use of nuclear techniques in agriculture. Studies on the conservation of foodstuffs by irradiation have shown that satisfactory results can be obtained. Moreover, the first irradiations of vegetable matter were effected in the reactor, and the dosimetry of these irradiations has been studied in detail.

146. In October 1964 the Commission published a list of its health and safety research projects ⁽¹⁾, the main subjects being dosimetry, decontamination of air, clothing, food and water, accompanied by statistical studies of the delayed effects of irradiations in man.

The numerous proposals received in reply to this announcement will enable a certain number of research projects in the field of radiation protection to be carried out before the end of the five-year programme.

147. The Health Protection Committee has requested that the authorization procedure should be speeded up so that projects can be rapidly completed and the results published with a minimum of delay.

148. The Commission has done a great deal of work on the use of labelled molecules in biology and medicine. The award of a whole series of research contracts led to the development of more than 60 new labelled molecules. The Universities of Heidelberg and Milan prepared a series of compounds which can be used in cancer research. Moreover, the Universities of Dijon and Milan and the Belgian Inter-University Institute of Nuclear Science prepared new hormones labelled with iodine, carbon and tritium which are proving extremely useful in endocrinology ⁽²⁾ and in protein synthesis. Montpellier University has developed labelled substances of great importance for research on intermediary metabolism and diagnosis. For the study of molecular spectrochemistry, the Paris Faculty of Science has prepared 20 compounds labelled with stable isotopes. The Collège de France has discovered a method for preparing labelled compounds which involves biosynthesis with the aid of isolated organs.

⁽¹⁾ See *Journal officiel des Communautés européennes*, No. 154, 7 October 1964, p. 2463-64.

⁽²⁾ The study of internal secretions, i. e. of glandular hormone secretions in the blood.

149. The Health Protection Committee has recognized the fact that a great deal has been accomplished in the field of nuclear medicine and radiation protection, but is concerned about the shortage of specialists which is particularly acute in this field.

150. In 1964 the Commission drew attention to the need for co-ordination of the medical services at the Community's nuclear plants and for specialist training for practitioners in industrial medicine ⁽¹⁾. The Health Protection Committee asked at the time what results had been achieved as a result of the Commission's efforts to promote and co-ordinate the different types of training given in radiation protection. This important matter is not however referred to in the Eighth General Report.

B. Safeguards and controls

151. Safety supervision is based on Articles 77 to 85 of the Euratom Treaty. Since, in addition to nuclear plants for research purposes, power reactors are being commissioned in ever-increasing numbers, the quantity of nuclear materials used is rising rapidly.

152. Nuclear materials today pass through a process which is at once longer and more complicated from the safeguards angle. While the initial charge for research reactors was once in almost every case imported in the form of fuel elements, source materials — particularly enriched uranium — are now imported into the Community mostly in the form of metal ingots or slabs, or even in the form of uranium hexafluoride, a still less refined product, from which the metal and the fuel elements are made. The fuel fabrication cycle in the Community will shortly be completed by the starting up of a chemical plant for irradiated fuel reprocessing. An amendment to the US/Euratom Co-operation Agreement has opened the door to reprocessing of materials of American origin under Euratom's exclusive control.

153. The quantities of nuclear materials delivered under co-operation agreements between Euratom and certain non-member countries have continued to rise. These materials are intended first of all for power reactors and for the fast reactor research programme. It was possible to obtain these materials and the specific equipment for power reactors from non-member countries because the Commission possesses an effective system of safeguards and controls adequate to ensure compliance with the guarantees underwritten by the Community.

⁽¹⁾ See Euratom's Seventh General Report, sec. 58.

154. As can be seen, the tasks allotted to the Commission in the field of safety and controls have shown a considerable increase. Thanks to measures introduced to rationalize both the internal organization and the inspection procedure, the Commission has managed to cope with the increasing pressure of work without increasing its staff. Moreover, the number of inspections was stepped up by 44 per cent in 1964 and a similar improvement is forecast for 1965.

155. Nevertheless, in spite of these praiseworthy rationalization measures, the steadily increasing volume of work entailed by safeguards and controls makes an increase in the number of inspectors inevitable. The Commission should therefore train additional inspectors in good time to ensure that safety supervision continues to be carried out satisfactorily in the future.

156. The Commission also concerned itself with the development and application of new methods for the physical control of nuclear materials. These new techniques make for greater speed and accuracy and enable maximum efficiency to be maintained while subjecting the undertakings involved to minimum interference.

157. In pursuance of Article 84 of the Treaty, the Commission has worked out a system of special statements which reconciles the defence needs of Member States with the obligations laid down in Chapter VII of the Treaty (safety supervision).

158. The Commission's control system embraces 168 undertakings covering the entire range of the Community's nuclear activities. In the six years it has been in operation the system has proved its worth and won recognition from non-member countries.

159. Your Rapporteur would emphasize that Euratom's system of safeguards and controls is at once the most effective and original in the world. With the exception of the States that signed the Convention, drawn up in the OECD, on the adoption of a safety supervision system in the nuclear energy sector⁽¹⁾, non-Community countries are subject only to the supervision — based on a simple international agreement — of the International Atomic Agency of Vienna. What is original about the Euratom system is that Member States have surrendered their sovereignty in this sphere and have submitted themselves to the Community's authority and to the strict supervision laid down in the Treaty.

⁽¹⁾ Austria, Belgium, Denmark, France, Germany (Fed. Rep.), Great Britain, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Sweden, Switzerland and Turkey. Although not a signatory, Spain has adhered to the Convention since 1959.

The Euratom system is thus far more effective than that of the Vienna Agency, a fact that appears to be recognized by the appropriate authorities in non-member countries who maintain permanent relations with Euratom or judge its activities objectively. The extremely frank conversations your Rapporteur held on this subjects bear out this opinion.

160. It is therefore difficult to understand the attitude of certain Eastern bloc countries who allege that Euratom is pursuing non-peaceful aims. We will confine ourselves to drawing attention to the provisions on safeguards and controls of Article 2, e and of Chapter VII of the Treaty which clearly prove that their accusations are groundless. A change in their attitude towards Euratom would help to create a climate of mutual understanding which would encourage the exchange of information and know-how and thus promote the peaceful development of atomic energy for the well-being of all peoples. Your Rapporteur feels that such a prospect should induce the countries in question to reconsider their position.

C. Third-party liability and insurance

161. In 1959 the Commission, under the obligation imposed on it by Article 98 of the Treaty, drew up a draft directive on the conclusion of insurance contracts covering nuclear risks which was passed to the Economic and Social Committee as laid down in the second paragraph of that Article. The Opinion of the Economic and Social Committee was delivered on 4 July 1959. The draft directive was then submitted to the Council which did not however either consult the European Parliament or issue the directive, as at the time Member States were studying the same questions at a governmental conference called to draw up the Paris Convention. With the conclusion and signing of the Paris Convention in 1960, the Commission's draft directive was to all intents and purposes superseded. The Paris Convention was signed by all the European member States of the OECD. In view of the risks to be covered, the Commission welcomed regulations with which other States besides those of the Community must comply.

162. Still in pursuance of Article 98 of the Treaty, the Commission took the initiative of drawing up the Supplementary Convention signed in Brussels in 1963. This was at first only intended for the Member States but one by one the other European members of the OECD, except Portugal and Turkey, signed it. As pointed out in the Eighth General Report, ratification of the two Conventions was held up by the conclusion of the negotiations relating to the international

Conventions of Vienna which diverge from the two European Conventions on certain points. With the signing of two additional protocols in 1964, drawn up with the help of Euratom, it became possible for Member States to adhere simultaneously to all the Conventions.

163. It should be borne in mind that the Conventions establish the principle of third-party liability. Moreover, it is not the person who has created the risk but the owner of the nuclear plant who carries exclusive responsibility. The owner is responsible for a sum ranging from State to State between 5 and 15 million u.a. Risks involving larger sums are borne by the signatory State concerned up to 70 million u.a. and by all signatory States jointly beyond that figure.

164. So far the Conventions have been ratified only by Spain; in France, Belgium and Great Britain progress has been made with the necessary legislative work. The other signatory States show no hurry to ratify them. The Commission is doing all it can to speed up ratification in the Member States. Your Rapporteur invites the European Parliament to take the initiative and call on Member States to ratify these Conventions.

165. Finally, it should be noted that third-party risks arising from the use of radioisotopes are not covered by the 1960 Paris Convention, the 1963 Supplementary Brussels Convention, or the Vienna International Convention. According to the Commission, such cover is obtainable although it is at present compulsory only in Germany.

166. The Commission observes that certain Member States have challenged its right, under Article 98 of the Treaty, to take the necessary co-ordination measures.

It is difficult to understand the attitude of these Member States. After all, what measures other than co-ordination measures could the framers of the Treaty have had in mind? Clearly the conclusion of insurance contracts covering nuclear risks can only be facilitated by the introduction of such measures, which are expressly referred to in the Eighth General Report.

The Commission states that during the period under review it continued its efforts to bring provisions on third-party liability into line through negotiations with experts from the national Governments.

CHAPTER VII

EXTERNAL RELATIONS AND COMMERCIAL POLICY

167. Apart from relations of a less institutional nature, Euratom's external relations take the form of international agreements and conventions between the Community and non-member States, international organizations and nationals of non-member States, relating more especially to:

- i) implementation of research programmes (Article 10);
- ii) exchange of information (Article 29);
- iii) security of supply (Article 64).

168. During the period under review the Commission, on behalf of the Community and of its associates — the French CEA, the Italian CNEN and the Gesellschaft für Kernforschung — signed an important 10-year agreement with the USAEC covering a vast programme of co-operation on fast reactors.

Euratom also maintained important relations with the United Kingdom, the Canadian Government and Atomic Energy of Canada Ltd. (AECL). The Euratom/Argentina Agreement is now in the implementation stage and that with Brazil came into effect on 24 June 1965 after ratification by both Chambers of the Brazilian Parliament. Moreover, relations with Japan, Sweden and Israel are in the course of being built up.

Twenty-four non-member countries maintain diplomatic links with Euratom, and others will follow.

169. Your Rapporteur would like to draw the Parliament's attention to a problem that deserves special attention — that of bilateral relations between Member States and non-member countries. Admittedly most supplies are at the moment procured on a Community basis and a number of bilateral agreements with non-member countries are being allowed to expire because supplier countries are no longer prepared to renew them where a Community agreement exists. Nevertheless signs of increasing two-way links between Community and non-member countries can be observed in the industrial sector.

170. A number of Member States and associated organizations have submitted their draft agreements to the Commission in accordance with Article 103 of the Euratom Treaty.

It would however be interesting to learn in how many cases this obligation to declare agreements falling under the Treaty has not in fact been complied with. The Parliament should more especially be informed of the nature of the links which groups of undertakings have established on their own with the outside world without resorting to any process of joint negotiation.

Do such agreements and conventions fall within the province of the Treaty? Can they be reconciled with the provisions of the Treaty within the meaning of Article 104?

171. In its Sixth General Report of 18 June 1963, the Commission had already announced that it would try to give a precise interpretation to Article 103. The Eighth General Report of 11 June 1965 states that methods of implementing Articles 103 and 104 have been under discussion between the Council and the Commission. Although these discussions have been going on for two years, no result is yet in sight.

172. The Political Committee has pointed out that in its Resolution on Euratom's external relations of 23 January 1964 the European Parliament stressed the importance of the obligation to communicate information under Articles 103 and 104 of the Treaty. In this Resolution the Parliament called for prompt clarification of the contents of Article 103 of the Treaty under which Member States are obliged to communicate to the Commission their draft agreements or conventions in so far as these concern matters covered by the Treaty. The European Parliament advocated a prompt exchange of information between Member States and the Commission. It also considered it essential that Member States should communicate all agreements or conventions concluded by their nationals in so far as these concern matters covered by the Treaty.

It should not be forgotten that the Commission is responsible for protecting Community interests and for ensuring that the provisions of the Treaty are complied with; otherwise there would always be the risk for the Community that the right of control over all fissile materials, vested in the Commission by the Treaty, would not be respected. Practical arrangements to suit individual cases are no substitute for implementation of the Treaty.

173. The Political Committee has once again urged that the Community, in pursuance of Article 106 of the Euratom Treaty, should take over bilateral agreements concluded by Member States before entry into force of the Treaty and

providing for co-operation in the field of nuclear energy.

174. The relevance of the provisions of Article 106 is in no way affected by the fact that a number of these agreements concluded before the Treaty entered into force were not, or are unlikely to be, renewed by non-member States, for example the United States.

175. Article 106, which is of a fundamental character, will assume increasing importance in connexion with bilateral agreements for co-operation with non-member countries which Member States have concluded, or wish to conclude, after entry into force of the Treaty.

176. The Political Committee feels that joint action is not only justified on legal grounds but also reflects the international situation from a policy angle. It is in the interest of all Member States that balanced development of the Community should not be hindered by "centrifugal forces" or by shifts of forces precipitated by bilateral agreements.

177. Joint action makes for the best negotiating and competitive conditions to the benefit of all. The Preamble to the Euratom Treaty expresses the conviction of the signatory States that "only a joint effort undertaken without delay can offer the prospect of achievements in keeping with the creative capacities of their countries".

Commercial policy and the Kennedy Round

178. Your Rapporteur shares the External Trade Committee's view that Euratom's participation in the trade in nuclear products is almost entirely as an importer. For geological and technical reasons it has to obtain supplies of both fissile materials and equipment mainly from non-member countries or non-Community organizations. The position is different, however, with natural uranium, and is steadily changing as regards technical equipment. The supply position is shown in the tables appearing in the Eighth General Report⁽¹⁾.

179. Moreover, in sec. 45 of the Report the Commission states — without however venturing any comment — that "export opportunities will fairly soon assume great importance for the development of Europe's nuclear industry". This view calls, we feel, for a detailed explanation.

⁽¹⁾ See Doc. No. 25 of Documentation attached to the Eighth General Report.

180. The negotiations under GATT during the period under review were characterized more particularly by the submission of lists of exceptions, that is to say, of products to which the across-the-board cut in rates of duty will not apply.

In this connexion the Council of the EAEC decided at its session of 11 to 15 November 1964 :

- i) against consolidation of duties on nuclear source materials ;
- ii) in favour of maintaining duties now in force on reactors and fuel elements, while prolonging their suspension until 31 December 1966 ;
- iii) in favour of placing a small number of non-ferrous metals on the list of exceptions.

The actual negotiations will have to be conducted on Euratom's behalf by the EEC Commission. Only thus can the Six ensure an overall approach making for a balanced result in all the sectors covered by the negotiations.

181. While rates of duty on nuclear materials are at about the same level in the United States and in the Community, they are higher in Canada and in the United Kingdom. Within the Community itself, these duties have been entirely abolished. When the list of exceptions was worked out, the Euratom Commission made a distinction between natural uranium and enriched uranium fuel elements, and between reactors, reactor parts and reactor spares. The Commission thus adopted a different approach to all these classes of product. As far as fuels are concerned, the EAEC should be regarded mainly as an importer. But as regards reactors, the Commission feels that, thanks to the progress made by Community industry, there is no need to fear that there will be heavy imports. Indeed, in this sector the Community may well become an exporting area.

182. In broad terms, the position adopted by the Commission can be summarized as follows :

- i) the 10 per cent duty on non-irradiated natural uranium fuel elements was suspended by decision of the Council of Ministers in 1961, and replaced by a duty of 2 per cent up to 31 December 1964 and 5 per cent up to 31 December 1965 ;
- ii) this duty gives fuel fabricators an actual customs protection of 20 per cent, since, in line with normal customs practice, the value of the uranium is included in that of the fuel elements.

183. The Commission feels that customs protection for natural uranium fuel elements should be at the same level as that fixed for fuel elements from enriched uranium. Community producers of enriched uranium fuel elements are protected to the tune of 25-40 per cent (again in accordance with current customs practice).

The Commission felt therefore that there were no grounds for entering enriched uranium fuel elements on the « negative » list. On the other hand inclusion of natural fuel uranium elements on the list would bring the effective protection for both types of fuel elements more or less into line. Moreover, production of fuel elements in the Community would be free to develop naturally, and at the same time production costs could be kept to reasonable levels by saving on royalties for foreign licences. Lastly, maintenance of high rates of duty on enriched uranium fuel elements would encourage outside undertakings to set up works in the Community and thus hamper the development of a European industry.

184. The Commission decided not to include reactors and reactor parts in the "negative" list since French production of gas-graphite reactors is technically the most advanced and the Community industry is capable of building light-water reactors almost on its own.

According to reports from light-water reactor manufacturers, competitive offers can be made for reactors of this string.

185. The Commission, while welcoming the fact that the Council has worked out a common approach for Member States, regrets that its proposals have not been followed up in their entirety.

The final compromise as regards :

- a) natural uranium fuel elements
 - b) enriched uranium fuel elements
 - c) reactors, parts of reactors and reactor spares
- is as follows :

- the three products will be entered on the "negative" list ;
- the duties shown against these products will however be suspended until 31 December 1966 ;
- the following rates of duty will be applied by the Community up to that date :
 - 7% for reactors, parts of reactors and reactor spares ;

- 0 % for enriched uranium fuel elements ;
- 5 % for natural uranium fuel elements up to 31 December 1965 ;
- 2 % for natural uranium fuel elements from 31 December 1965 to 31 December 1966.

CHAPTER VIII

EURATOM AND THE DEVELOPING COUNTRIES

186. Since the establishment of the institutions provided for in the Yaounde Convention of Association between the European Economic Community and the African and Malagasy States, the Euratom Commission has taken an active part in the work of the parliamentary bodies of the Association.

In its Resolution adopted on 10 December 1964 in Dakar, the Parliamentary Conference of the Association invited Euratom to study the possibilities of applying nuclear science to energy production, biological research and prospecting in the Associated States⁽¹⁾.

187. The Commission was also represented at the meetings of the Joint Committee of the Parliamentary Conference of the Association held at Gisenyi (Ruanda) from 1 to 4 March 1965 and in Berlin from 5 to 8 July 1965. At these meetings highly interesting discussions took place on possible Euratom measures to assist developing countries.

188. Your Rapporteur supports an initial conclusion arrived at in the course of these debates, that is, that it is still too early to set up nuclear power plants in the developing countries. Such plants only become economic when they are built on a large scale, the minimum dimensions varying with local conditions. Only in industrialized areas that can absorb immense quantities of energy can nuclear power plants be made to pay, and these conditions certainly do not obtain at the moment in the Associated States.

189. Nuclear power plants could of course be built for the desalination of seawater. This however raises the problem not only of economic dimensions of plants but also of competition from petroleum. Desalination plants obviously have to be set up in coastal areas which can be readily supplied with cheap heavy oil from ocean-going tankers. It will be many years

therefore before nuclear desalination plants can be run as economically as those run on heavy oil.

190. The closest attention should however be paid to the use of isotopes and the application of irradiation techniques in biology. In the next three to five years these techniques may well bring about a radical improvement in the living conditions of large sections of the population in Africa and Madagascar, and at a relatively modest outlay.

In view of the work that has already been done in South America, the Far East and Africa itself, and of which Euratom is aware, the Community has no need to engage in scientific research but should rather confine itself to the practical application of the results already achieved and the research already in progress.

191. The immense benefits to be derived from applying the above-mentioned techniques can be illustrated by some examples quoted by the Euratom Commission.

Over vast areas of Africa millet forms the people's staple diet ; in Senegal, Mali and the Ivory Coast, and in Upper Volta and Nigeria, the millet is grown over an area of more than 1,660,000 acres. This plant, however, produces relatively little grain and an abundance of leaves of which no use can be made. Moreover a bird that is native to these regions — the "mange-millet", or millet eater — feeds entirely on millet and consumes a third of the crop.

By means of radiobiological techniques it would be possible to develop a variety of this plant possessing an involucre which would deny the bird access to the grain and at the same time yield more grain and put out fewer leaves. This development could be pushed through in five years at a cost of some 500,000 u.a. In this way the harvest could be doubled, that is, increased in value from 820 million French francs (1963 estimate) to 1,600 million French francs, or about 320 million u.a.

192. Another example is the destruction of parasites that prey on livestock — particularly the tsetse fly — by sterilization. The necessary credits have been estimated at 650,000 u.a.

193. Moreover by means of isotopes it can be established which species become more easily acclimatized and hold out the best prospects for the improvement and increase of livestock. The cost which would be involved has been estimated to be 545,000 u.a. over a period of five years.

⁽¹⁾ See *Journal officiel des Communautés européennes* No. 218, 30 December 1964, p. 3721/64.

194. Irradiation techniques also permit fish to be preserved at a very economic cost (about 700,000 u.a. for a one-year preparation period) as well as bananas in transit (the cost of an irradiation plant being estimated at about \$600,000).

In view of the importance of proteins in the diets of Africans and Malagasians, this project may be regarded as of outstanding interest and one calculated to help in the fight against certain symptoms of malnutrition among these peoples.

195. Other projects concern the extermination of larvae in fresh meat, the fight against diseases that hinder development in certain countries and against parasites. If these projects are to be carried out successfully, Euratom will require about 5 million u.a. and a number of research scientists possessing the necessary knowledge and skill.

196. In view of the enormous benefits that could be derived from all these projects, your Rapporteur feels that the Parliament should instruct the Parliamentary Committee concerned to study the possibilities of financing them. In his opinion it should be possible to arrange for the European Development Fund to help.

197. Your Rapporteur shares the regret of the Committee for Co-operation with the Developing Countries that the Eighth General Report provides only one item of information relating to activities within the Association (sec. 51):

“... and remains mindful of the possibilities of co-operation with the African and Malagasy States.”

198. Mention should also be made of the good working relations maintained by the Commission with the Afro-Malagasy Union for Economic Co-operation.

The Committee for Co-operation with the Developing Countries has pointed out that the Associated States, for their part, must work for closer relations with Euratom by sending it accredited diplomatic missions. So far only two of the eighteen Associated States (the Ivory Coast and Upper Volta) have taken this step.

199. As regards the prospecting of fissile materials in Africa, it appears from the General Report that this is being done only by France.

Your Rapporteur feels that Community-wide action should be taken alongside and in full agreement with France.

As regards the dissemination of information, your Rapporteur hopes that the Commission will be able to step up its activities. Like the Committee for Co-operation with the Developing Countries, he stresses the need to set up one or more Community information centres in Africa.

CONCLUSIONS

200. In the light of this comprehensive survey of the Community's activities during 1964 and the beginning of 1965, a number of conclusions can be drawn.

Your Rapporteur would first like to point out to the Parliament that if he has developed some arguments more thoroughly than others, it was not to establish a scale of priorities but because he felt that certain questions are of greater topical interest than others. In making his choice he received strong backing from the Parliamentary Committees which furnished him with excellent opinions on which he largely drew in arriving at his conclusions.

Your Rapporteur also realized that certain problems which had already been the subject of important debates in the Parliament had lost nothing of their topicality. He was thus able to refer to earlier work by the Parliament, more particular regarding the merger of the Executives⁽¹⁾.

201. One conclusion at once emerges from an overall examination of Euratom's Eighth General Report, that is, that at a time when nuclear energy is about to become incorporated into the economy, research still remains Euratom's fundamental activity. Moreover, even with the industrial application of nuclear energy, monitoring and research will continue to be necessary to enable proven-type reactors to be still further improved and to keep the Community competitive vis-à-vis non-member countries.

202. The four technical lines of development for the utilization of nuclear energy, and the measures they involve, must be co-ordinated. The result could perhaps be division of labour as between the Member States. Any such action must be consonant with the clearly defined task of the Community to create the necessary conditions for the rapid establishment and growth of the nuclear industries so as to raise the standard of living in Member States and build up relations with non-member countries.

(1) See Item 29 of the Resolution of 23 September 1964, *Journal officiel des Communautés européennes* No. 153, pp. 2443/64 and 2444/64.

203. This aim can only be achieved by laying down a common research policy and co-ordinating the research programmes of Member States.

Your Rapporteur again draws the Commission's attention to the need for dovetailing these measures with the overall energy policy of the Europe of the Six:

This goal obviously cannot be attained solely with the means available to the Commission, but also calls for the wholehearted co-operation of the Member States.

204. The Council's decision to step up the credits for the second five-year programme from 425 to 430.5 million u.a. — an increase of scarcely 1.3 per cent — remains one of our chief concerns. The Council of Ministers knows very well that because of the rise in cost of labour and materials in recent years a minimum increase in credits of 11 per cent is essential if the second five-year programme is to be implemented satisfactorily.

205. An 11 per cent increase would have represented a real adaptation to present-day conditions. In real terms the Council's decision means a reduction in credits the brunt of which must be borne by research projects reputed to be of minor importance — biology, health protection, advanced gas and proven-type reactors, fuel reprocessing, treatment of radioactive wastes, new reactors, marine propulsion, radio isotopes and biological studies — as well as training and the dissemination of information.

206. There is therefore reason to doubt whether, with this adaptation of the second five-year programme, the Council of Ministers has succeeded in concentrating research on priority items. It would be wrong, on scientific, technical and economic grounds, to place all the emphasis on a few specific types of reactor. The Commission is expected to promote research in the various sectors to the point where rational decisions can be taken on the construction of reactors on an industrial scale.

207. Constant backing for the Commission's request for increased appropriations for the adaptation of the second five-year programme has been received not only from the Parliament but also from the Scientific and Technical Committee (see sec. 116 of the General Report). The Consultative Committee on Nuclear Research could not however arrive at a unanimous decision on this proposal.

208. As regards the Joint Nuclear Research Centre, it is a matter for concern that the pro-

gramme to be carried out at Ispra, after completion of the ORGEL project in a few years' time, has still not been drawn up.

In this connexion it is worth quoting from sec. 142 of the report on the Seventh General Report submitted by Mr. Pedini (Doc. 63/1964-1965):

"Working at full capacity and with an adequate staff, Ispra could thus become a model centre for Euratom. It could carry out specialized research, investigations and computational work on behalf of private or public industry, and serve as an experimental research establishment and as a contact centre for the promotion of initiatives in the private industrial sector. Ispra already has the necessary facilities to enable it to carry out mathematical, engineering, metallurgical and chemical calculations in the nuclear field."

209. In addition to the funds needed for specific projects forming part of joint research activities, a given sum should be set aside for fundamental research which is not, and cannot be, catered for in the research programme. Greater scope should be provided for non-specific research, and the freedom of action of research workers should not be unduly restricted.

210. Future research in the Community should moreover be aimed increasingly at the development of fast breeder reactors and at direct energy conversion with a view to putting small reactors into space.

In principle, long-term projects involving risk and heavy financial and staff commitments should be entrusted to Euratom.

211. At the same time, research wrongly considered to be of secondary importance should not be neglected as it can make a major contribution to the achievement of the main objective — the peaceful use of atomic energy — and to ensuring the safety of workers and the public at large. For this reason the Parliament has always urged the stepping up of research in the fields of biology, health protection, fuel reprocessing, radioactive waste processing and the use of isotopes. The Commission must make provision for major research under the third five-year programme, as well as for research on nuclear marine propulsion which is growing in importance from day to day.

212. The Commission should also go ahead with the application of Article 9 of the Treaty which provides for the establishment, within the framework of the Joint Nuclear Research Centre, of

schools for the training of specialists, particularly in the fields of prospecting for minerals, the production of nuclear materials of a high degree of purity, the processing of irradiated fuels, nuclear engineering, health protection and the production and use of radioactive elements. The setting up of such establishments could clearly reduce, if not entirely eliminate, the manifest shortage of recruits possessing the requisite qualifications.

On this subject the Commission states :

“With regard to schools for the training of specialists, in 1964 the Commission submitted to the authorities of the Member States proposals for the setting up at Saclay of a Joint Research Establishment to be called the “European Institute for Nuclear Science and Technology”. This Institute would be based on the existing National Institute for Nuclear Science and Technology which the French Government was prepared to put at Euratom’s disposal. The intention was that the new establishment should provide training in nucleonics and post-graduate instruction. The Commission’s proposal for the setting up of the European Institute for Nuclear Science and Technology formed part of the proposals relating to the adaptation of the second five-year programme. At the very first meeting held by the Commission with representatives of Member States in the Consultative Committee on Nuclear Research for the purpose of studying all the problems arising from the adaptation of the second programme, it became clear that all Member States were in favour of postponing discussion of any activities not covered by the original version of the second five-year programme. This was because the three new projects proposed by the Commission — among them the setting up of the European Institute for Nuclear Science and Technology — would have necessitated credits in the region of 30 million units of account, including 5 million units of account for the Institute.”

213. Your Rapporteur would draw the Parliament’s attention to the future of the Joint Research Establishment, sharing as he does the Commission’s view that :

“Such establishments represent intellectual riches which could be drawn on by other advanced sectors outside the field of nucleonics when the time comes for the introduction of a common policy in the scientific and industrial fields.”

After the Treaty on the merger of the Executives has come into force and with a view to the subsequent merger of the Communities,

provisions will have to be made to enable the Joint Research Establishment to develop in fields other than that of nuclear energy. Your Rapporteur has gathered certain information which will enable him to bring this question before the Parliament. He feels however that a more thorough investigation is required to safeguard, and indeed to increase, these intellectual assets on which Europe can call.

This possibility could be investigated simultaneously with the overall problem of European research for which, of course, the necessary funds should be made available to enable Europe to close the considerable gap that exists vis-à-vis the larger industrialized countries.

214. The General Reports submitted to the Parliament have repeatedly criticized the hesitance and resignation displayed by the responsible bodies as regards the setting up of a European University. The Commission is once again invited to take the necessary steps to deal with this problem, thus discharging its obligations under Article 9,2 of the Treaty.

215. Apart from ensuring the setting up of specialist schools and of the European University, the Commission should take steps to improve the training of its own staff and the level of instruction. Only thus can the challenge presented by the rapid development of nuclear techniques be satisfactorily met.

Moreover, efforts should be made to attract qualified teachers to the European Schools near the Community’s research establishments and elsewhere. It is only natural that Euratom officials should wish their children to receive instruction of a high standard.

216. As regards the development of nuclear techniques and the joint research programme, recent trends bear out the view already expressed by the Parliament that the Community should not take final technical decisions but endeavour to achieve practical results in the various fields by increasing research credits and closely collaborating with nuclear establishments throughout the world.

217. As regards the supply problem, serious doubts remain as to whether revising the provisions of Title 2, Chapter VI, of the Treaty would at the moment serve a useful purpose.

On the other hand it is essential that the Supply Agency should take steps as soon as possible to secure for the Community reliable long-term sources of raw materials at economic prices.

The possibility of setting up joint European plants for the enrichment of natural uranium should also be borne in mind.

218. Special attention must be paid to the application of the provisions of Articles 103, 104 and 106 of the Treaty to prevent the balanced development of the Community in the nuclear sector from being hampered by divergent trends and shifts of forces precipitated by the adoption of a bilateral approach.

219. The Opinions gathered by your Rapporteur are unanimous in considering that there is every reason to be satisfied with the application of the safeguards and controls introduced in pursuance of the Treaty provisions — one of the most striking examples of the effectiveness of the Community approach as contrasted with the conventional system of international agreements.

220. Mention should also be made of the Commission's highly successful work in the press and information services sector, which is described in sections 118 and 126 of the General Report. This work deserves full recognition from the Parliament.

221. In the field of health protection, the necessary measures should be taken with a view to achieving the various aims outlined in this report, more particularly :

- i) uniform application by Member States of the directives embodying the Basic Standards ;
- ii) training of specialists for the medical examination of workers exposed to radiations ;
- iii) revision of the Basic Standards ;
- iv) standardization of methods for the monitoring of background radioactivity ;
- v) measurement of radioactivity in foodstuffs ;
- vi) application of the provisions of the European Conventions of Paris and Brussels, and of the protocols annexed thereto, concerning third-party liability and insurance against nuclear risks ;
- vii) checks to ensure compliance with the Commission's recommendations.

On the other hand, we can only insist that the cut in credits for the "Biology" programme was completely uncalled for.

222. As to possible Euratom help for the developing countries, it has this year for the first time become possible to take highly effective measures through the use of isotopes and the biological application of irradiation techniques.

Your Rapporteur considers that this field too calls for urgent action by the Parliament, which should closely investigate the possibility of putting the projects at present under consideration to practical use and of making available the credits necessary for the rapid completion of the projects in question.

223. Finally, the Commission should be invited to make a start on the preparation of the third five-year programme, taking into account the experience it has acquired over the past eight years and of the different policy alternatives that have been indicated by the Parliament.

224. As regards the preparation of the first target programme referred to in Article 40 of the Treaty, your Rapporteur considers that the Parliament should instruct its appropriate Committee to submit to it a report on the subject as soon as this programme is officially presented to it.

225. On the question of the merger of the Executives, your Rapporteur would refer to the views already expressed by the Parliament which remain as cogent as ever. He invites the Commission to express its own attitude on the subject as soon as possible.

226. Before closing his remarks, your Rapporteur feels he must say a few words regarding the current political situation of European integration which must be considered as particularly difficult.

Other bodies of the European Parliament have already concerned themselves — or will in future concern themselves — with this serious problem and methods of reaching a solution.

Your Rapporteur would like to express his firm conviction — in which he is supported by the attitude so clearly maintained by the Parliament in previous years — that any breakdown of the process of European integration would have the gravest effects on the nuclear sector.

Those who pay lip-service to European independence should wake up to the fact that such a breakdown would reduce Europe to a group of States that would have to rely entirely on the techniques of the present nuclear powers, could afford only very limited research and investment, and would have to renounce once and for all, in the nuclear as in other spheres, the rôle that a united Europe could play vis-à-vis the rest of the world.

227. In the light of these conclusions, your Rapporteur would invite the Parliament to adopt the following Proposal for a Resolution :

Proposal for a Resolution
on the Eighth General Report on the Activities of
the European Atomic Energy Community

The European Parliament,

- having examined the Eighth General Report on the Activities of the European Atomic Energy Community (Doc. 55-I/II) ;
 - having examined the Documentation attached to the said General Report (Doc. 55-III) ;
 - in the light of the Report submitted by Mr. Toubeau in accordance with the Resolution of 22 March 1965 (Doc. 91) ;
- adopts the findings, observations and conclusions contained in Mr. Toubeau's Report, and in particular :

1. *Recognizes* the efforts made by the Euratom Commission, in its relations with the Council of Ministers, with a view to bringing a European nuclear energy policy to the stage of implementation ;

2. *Draws the attention* of the Commission to the need for deploying its entire activities within the framework of a common energy policy of the Community countries ;

3. *Appeals*, to this end, for an effective display on the part of Member States of that spirit of co-operation without which there can be no co-ordination of their energy programmes ;

4. *Underlines* the outstanding importance — not only for Euratom but also for Member States — of establishing an international market for nuclear energy ;

5. *Stresses* the need for strict application of Articles 103, 104 and 106 of the Euratom Treaty, relating to agreements on nuclear matters between Member States and third countries, to prevent the balanced development of the Community in this sector from being hampered by divergent trends and shifts of forces precipitated by bilateral agreements ;

6. *Expresses concern* regarding the Council of Ministers' decision to limit the appropriations for the second five-year research and investments programme to 430.5 million units of account, that is, an increase of barely 1.3 per cent, a step which in fact involves a reduction in credits for a number of research projects which nevertheless remain important, as well as in credits for training and instruction and the dissemination of information ;

7. *Regrets* that Euratom must therefore concentrate its attention on a few reactor types in spite of the fact that research should cover all spheres likely to be of help in arriving at rational decisions regarding the construction of reactors on an industrial scale ;

8. *Confirms* its frequently expressed wish that the European Community should not commit itself definitely to a particular technique but should endeavour to achieve concrete results in the various sectors, by stepping up the credits allocated for research, in close collaboration with the efforts undertaken in the nuclear field throughout the world ;

9. *Requests* the Commission to embark without delay on the drawing up of a third five-year programme, taking into account the experience acquired over the past eight years and the policy alternatives presented by the European Parliament ;

10. *Recalling* the statement made in November 1964 by a member of the French Atomic Energy Commission to the effect that France would be in a position to produce enriched uranium, provided production was entrusted to a large enterprise designed on a European scale, *calls upon* the Commission to look into the possibilities of tackling this important question in the light of the provisions of Chapter V of the Treaty relating to joint enterprises ;

11. *Expresses concern*, as regards the work carried out at the Joint Nuclear Research Centre, about the fact that no programme has been drawn up for execution following completion of the ORGEL project ;

12. *Suggests* that the Commission makes provision in the third five-year programme for extensive research in the currently neglected fields of biology and health protection, reprocessing of fuels, radioactive waste processing and isotopes, as well as marine propulsion and space travel ;

13. *Instructs* its Budget and Administration Committee to report to it on the possibility of using revenue derived from the activities of the Joint Nuclear Research Centre for the purpose of increasing the appropriations for that establishment ;

14. *Stresses*, on the eve of the merger of the Executives and in view of the subsequent merger of the Communities, the importance for Europe of preserving the intellectual and material assets represented by the Joint Nuclear Research Centre by providing it scope, as soon as possible, to expand its activities beyond the strictly nuclear sphere ;

15. *Considers*, in this connexion, that Euratom should from now on be entrusted with long-term tasks calling for a large staff and appropriate funds, to enable it to contribute substantially towards the essential aim of the Community, namely, the peaceful use of nuclear energy in all fields ;

16. *Instructs* its Research and Cultural Affairs Committee, in view of the gap between research in Europe and in the large industrial powers, to submit to it a report on technological progress and scientific research in the European Community ;

17. *Invites* the Commission to alleviate the current shortage of qualified recruits in Europe by setting up, within the framework of the Joint Nuclear Research Centre, schools for the training of specialists, particularly in the fields of prospecting for minerals, the production of nuclear materials of a high degree of purity, and nuclear engineering ;

18. *Suggests*, in this connexion, that the French proposal for the establishment at Saclay of a "European Institute for Nuclear Science and Technology" should be taken up ;

19. *Censures* the hesitance and resignation displayed by the bodies responsible towards the setting up of a European University within the meaning of Article 9,2 of the Euratom Treaty ;

20. *Invites* the Commission to step up the training of its staff in view of the rapid advance of nuclear techniques ;

21. *Requests* the Commission to endeavour to attract qualified teachers to the European Schools operating near the establishments of the Joint Nuclear Research Centre ;

22. *Stresses* the necessity for the Community to ensure that the Supply Agency is armed with the legal means to secure for the European countries long-term supplies of fissile materials at satisfactory prices ;

23. *Expresses doubt*, therefore, as to the advisability at present of amending the provisions of Title 2, Chapter VI, of the Euratom Treaty relating to supplies ;

24. *Instructs* its International Market Committee to follow this matter closely and, if necessary, submit to it a fresh report on the subject ;

25. *Takes note* with satisfaction of the efficacy of the safeguards and controls introduced and *stresses* the satisfactory operation of the regulations issued thereon in the light of the Community provisions laid down in the Euratom Treaty ;

26. *Congratulates* the Commission on its particularly effective activities in the press and information service sector ;

27. *Notes* the scope that exists for Euratom to render effective aid to the developing countries through the use of nuclear energy ;

28. *Instructs* its Committee for Co-operation with the Developing Countries to prepare a report investigating this problem as a whole and to suggest ways and means of carrying out the projects at present undergoing study ;

29. *Invites* its Energy Committee to prepare a report on the first target programme provided for in Article 40 of the Euratom Treaty ;

30. *Requests* its Health Protection Committee to continue to devote its attention to the Commission's activities concerning the safety of workers in the nuclear industry, and in particular to the way checks are carried out to ensure uniform compliance by Member States with the directives embodying the Basic Standards ;

31. *Expresses concern* about the present precarious state of European integration and the feeling of uncertainty it is creating ;

32. *Invites* its Political Committee to keep it constantly informed of the development of the general political situation ;

33. *Desires* — as it has already stated (1) — to be kept constantly informed of the Commission's ideas for the future, particularly regarding the merger of the Communities ;

34. *Fully alive* to the disastrous consequences which a breakdown of the integration process would have for all European countries, solemnly *reminds* all Governments of the Member States of the obligations entered into by these States when they signed and ratified the Treaties of Paris and Rome.

(¹) See Resolution of 23 September 1964, item 29, *Journal officiel* No. 153, pp. 2443/64 and 2444/64.

Decision of the Council dated 15 June 1965

**concerning the amendment of the second research and training programme
of the European Atomic Energy Community**

THE COUNCIL OF THE EUROPEAN ATOMIC ENERGY
COMMUNITY,

Having regard to the Treaty establishing
the European Atomic Energy Community, and
more especially Article 7 ;

Having regard to the Decision of the Coun-
cil of 23 July 1962 adopting the Community's
second research and training programme, and
more especially Article 4 ;

Having regard to the proposal by the Com-
mission which has consulted the Scientific and
Technical Committee ;

Believing that the developments that have
taken place, both in the economic and social and
in the scientific and technical fields, since the
second research and training programme was
drawn up, make it necessary to recast that
programme and to raise the ceiling of the bud-
getary commitments required for its imple-
mentation ;

HAS DECIDED :

Sole Article

The second research and training programme
of the Community shall be amended as follows :

1. In Article 2, the figure "425" to be replaced
by "430.578" ;
2. In Article 3, the figure "3,200" to be re-
placed by "3,150" ;
3. In Annex I :

I. Ispra establishment

(Joint Nuclear Research Centre)

The first paragraph to be amended as
follows :

"A sum of 80 million units of account, in
addition to 6.6 million units of account
brought forward from the first five-year
programme, is appropriated under this
heading."

II. European Transuranium Institute, Karlsruhe

(Joint Nuclear Research Centre)

The first paragraph to be amended as
follows :

"A sum of 25.5 million units of account, in
addition to 3 million units of account
brought forward from the first five-year
programme, is appropriated under this
heading."

III. Central Nuclear Measurements Bureau

(Joint Nuclear Research Centre)

The first paragraph to be amended as
follows :

"A sum of 12 million units of account, in
addition to 0.322 million units of account
brought forward from the first five-year
programme, is appropriated under this
heading."

IV. Petten establishment

(Joint Nuclear Research Centre)

The wording of this chapter to be amended
as follows :

"A sum of 17 million units of account, in
addition to 8.5 million units of account
brought forward from the first five-year
programme, is appropriated under this
heading."

Utilization of the materials-testing reactor HFR will form the backbone of the programme of this general-purpose establishment, and will absorb most of the credits made available to it. Moreover, it will necessitate improving dismantling methods and carrying out work on the operation of active circuits.

This establishment is also responsible for technical co-ordination of the association relating to the DRAGON project and the THTR (thorium high-temperature reactor) association, in which connexion it will have work carried out on research and on irradiations. The development of methods of investigation and irradiation at high temperatures will receive special attention.

To enable these programmes to be carried out, it will be necessary to invest in real property and to erect laboratories and general facilities, more particularly :

- dismantling cells ;
- a medium-activity laboratory ;
- a chemical laboratory ;
- a technology hall .»

V. ORGEL programme

The first paragraph to be amended as follows :

“A sum of 64 million units of account is appropriated under this project ; this excludes operating and staff expenditure entailed by the work to be carried out at Ispra.”

VI. Fast reactors

The first paragraph to be amended as follows :

“A sum of 82.5 million units of account is appropriated under this heading.”

VII. Advanced gas reactors

The first paragraph to be amended as follows :

“A sum of 24.5 million units of account, in addition to 6 million units of account brought forward from the first five-year programme, is appropriated for this project which will in the main be carried out on a contract basis.”

VIII. BR 2 reactor

The first paragraph to be amended as follows :

“A sum of 14 million units of account is appropriated under this heading.”

IX. Proven-type reactors

Technical and economic studies

The first paragraph to be amended as follows :

“A sum of 22.75 million units of account is appropriated under this heading.”

X. Reprocessing of fuels

The first paragraph to be amended as follows :

“A sum of 5.75 million units of account is appropriated under this heading.”

XI. Processing of radioactive wastes

The first paragraph to be amended as follows :

“A sum of 3 million units of account is appropriated under this heading.”

XII. New reactor types

The first paragraph to be amended as follows :

“A sum of 7 million units of account is appropriated for this work, which will in the main be carried out on a contract basis.”

XIII. Nuclear marine propulsion

The first paragraph to be amended as follows :

“A sum of 6 million units of account is allocated under this heading.”

XIV. Radioisotopes

The first paragraph to be amended as follows :

“A sum of 3 million units of account is appropriated for this project which will in the main be carried out on a contract basis.”

XV. Fusion and plasma physics

The first paragraph to be amended as follows :

"A sum of 34 million units of account is appropriated under this heading."

XVI. Health protection and biological studies

The first paragraph to be amended as follows :

"A sum of 16 million units of account is appropriated under this heading."

XVII. Training and instruction

The first paragraph to be amended as follows :

"A sum of 2 million units of account is appropriated under this heading."

XVIII. Dissemination of information and general documentation

The first paragraph to be amended as follows :

"A sum of 8.5 million units of account is appropriated under this heading."

4. Chapter XIX — to read as below — is to be added :

"RESERVE

A sum of 3.078 million units of account is appropriated for the reserve which covers the following contingencies :

— inadequate revenue ;

— purchase of heavy water for the ORGEL programmes ;

— prolongation of the DRAGON agreement."

Done at Brussels, 15 June 1965

By the Council

The President

signed : Couve de Murville

Appropriations for the various projects of the second five-year programme

(in million units of account)

| | | Appropriations for the unrevised second programme ⁽¹⁾ | Appropriations adjusted to economic conditions in January 1964 | Commission proposal April 1964 | Council decision May 1965 |
|---------------|---|--|---|--------------------------------------|------------------------------|
| I | Ispra | 78.6 | 87.4 | 94 | 86.6 |
| II | Karlsruhe | 28 | 31 | 32 | 28.5 |
| III | Geel | 11.322 | 12.1 | 13 | 12.322 |
| IV | Petten | 27.5 | 29.8 | 30 | 25.5 |
| V | Orgel | 57 | 63.3 | 64 | 64 |
| VI | Fast reactors | 73 | 81.1 | 81 | 82.5 |
| VII | Advanced gas-cooled reactors | 31 | 32.5 | 31 | 30.5 |
| VIII | BR 2 | 12 | 12.9 | 16 | 14 |
| IX | Proven-type reactors | 29.5 | 33.5 | 29.5 | 22.75 |
| X | Reprocessing of fuels | 14 | 15.9 | 8 | 5.75 |
| XI | Radioactive waste processing | 5 | 5.7 | 3 | 3 |
| XII | New reactors | 9 | 10.2 | 9 | 7 |
| XIII | Marine propulsion | 7.5 | 8.5 | 7.5 | 6 |
| XIV | Radioisotopes | 5 | 5.7 | 5 | 3 |
| XV | Fusion | 31 | 34.5 | 34.5 | 34 |
| XVI | Health and safety and biological studies | 17.5 | 19.8 | 17.5 | 16 |
| XVII | Training and instruction | 3 | 3.4 | 3 | 2 |
| XVIII | Dissemination of information | 9.5 | 10.4 | 9.5 | 8.5 |
| XIX | Reserve | — | — | — | 3.078 |
| Totals | | 449.422 | 497.6 | 487.5 | 455 |

⁽¹⁾ These appropriations take account of the credits brought forward from the first programme.

Breakdown of credits for the second five-year programme

| Heading | Credits from the first programme | Credits of the second programme | Breakdown (to serve as a guide) | | | | | | | |
|-----------------------------|--|---------------------------------|---------------------------------|---------------------------|------------------------------|-----------|---------|-----------|-------------|----------------------|
| | | | Staff and operating expenses | Apparatus equipment, etc. | Investments in real property | Contracts | Reserve | Staff | | |
| | | | | | | | | at 1.1.63 | at 31.12.67 | |
| in million units of account | | | | | | | | | | |
| I | JNRC — Ispra | 6.6 | 80 | 64.8 | 10.9 | — | 4.3 | — | 1.270 | 1.700 |
| II | — Karlsruhe | 3 | 25.5 | 8.9 | 7.4 | 3 | 6.2 | — | 60 | 300 |
| III | — CNMB | 0.322 | 12 | 8.1 | 3.1 | 0.6 | 0.2 | — | 120 | 180 |
| IV | — Petten | 8.5 | 17 | 8.5 | 8 | — | 0.5 | — | 50 | 300 |
| V | ORGEL programme | — | 64 | — | 47 | 8.5 | 8.5 | — | — | — |
| VI | Fast reactors | — | 82.5 | 2.9 | — | — | 79.6 | — | 25 | 90 |
| VII | Advanced gas-cooled reactors | 6 | 24.5 | 1.5 | — | — | 23 | — | 42 | 60 |
| VIII | BR 2 reactor | — | 14 | 2.1 | — | — | 11.9 | — | 60 | 70 |
| IX | Proven-type reactors | — | 22.75 | 1.6 | — | — | 21.15 | — | 21 | 43 |
| X | Reprocessing of fuels | — | 5.75 | — | — | — | — | — | — | — |
| XI | Radioactive waste processing | — | 3 | — | — | — | — | — | — | — |
| XII | New reactor types | — | 7 | 1.4 | — | — | 23.35 | — | 20 | 40 |
| XIII | Marine propulsion | — | 6 | — | — | — | — | — | — | — |
| XIV | Radioisotopes | — | 3 | — | — | — | — | — | — | — |
| XV | Fusion and plasma physics | — | 34 | 4.3 | — | — | 29.7 | — | 85 | 130 |
| XVI | Health and safety and biological studies | — | 16 | 3.5 | — | — | 12.5 | — | 60 | 110 |
| XVII | Training and instruction | — | 2 | 0.3 | — | — | 1.7 | — | 7 | 7 |
| XVIII | Dissemination of information and general documentation | — | 8.5 | 4 | 3 | — | 1.5 | — | 90 | 120 |
| XIX | Reserve | — | 3.078 | — | — | — | — | 3.078 | — | — |
| Totals | | 24.422 | 430.578 | 111.9 | 79.4 | 12.1 | 224.1 | 3.078 | 1.910 | 3.150 ⁽¹⁾ |

⁽¹⁾ Maximum strength laid down in Article 3 of the Council's Decision adopting the second programme.

Procédures antidumping
appliquées dans certains des pays signataires du G.A.T.T.
pendant la période 1958 - 1963

| Pays (1) | Nombre de cas | | | | | Mesures provi- soires | Droits anti- dumping |
|---------------------|---------------|-------------------|--|-----|---|-----------------------------|----------------------------|
| | total | Pays de l'OCDE | Autres pays si- gnataires du GATT | | | | |
| République fédérale | 19 | 10 | 9 | (2) | - | | |
| France | 30 | | | - | 3 | | |
| Royaume-Uni | 31 | | | (2) | 5 | | |
| Norvège | 10 | 10 | - | - | 1 | | |
| Danemark | 3 | 2 | 1 | 1 | 1 | | |
| Autriche (3) | 22 | 22 | - | (2) | 6 | | |
| Espagne | 4 | | | - | 3 | | |
| Etats-Unis | 183 | 126 | 37 | 72 | 4 | | |

(1) A défaut de données, il n'est pas fait mention du Canada ni de la Suède.

(2) La législation nationale ne prévoit pas de mesures provisoires.

(3) Dans 13 de ces 22 cas, il s'agit de dumping, et pour le reste, de cas d'importation à bas prix, auxquels la législation antidumping est également applicable.

(Source : O.C.D.E.)

AVIS DE LA COMMISSION DE L'AGRICULTURE

Rédacteur : M. R. BLONDELLE

Le Parlement Européen, dans sa séance du 18 juin 1965, a renvoyé pour examen au fond à la Commission du commerce extérieur et pour avis à la Commission de l'agriculture, une proposition concernant un règlement relatif à la défense contre les pratiques de dumping, primes ou subventions de la part de pays non membres de la C.E.E. (doc. 78).

La Commission de l'agriculture a désigné M. BLONDELLE comme rédacteur pour avis.

La Commission de l'agriculture a examiné cette proposition de règlement lors de sa réunion du mercredi 29 septembre 1965 et a adopté, à l'unanimité, le présent avis à transmettre à la Commission du commerce extérieur.

Etaient présents :

M. BOSCARY-MONSSERVIN, Président,
MM. SABAVINI et VREDELING, Vice-Présidents,
M. BLONDELLE, Rapporteur,
MM. BADING,
BERNASCONI, suppléant M. ESTEVE,
BERTHOIN,
BRACCESI,
BREYNE,
van CAMPEN,
CHARPENTIER,
DUFONT,
HANSEN, suppléant Mme STROBEL,
HERR,
KLINKER,
MARENGHI,
MAUK,
RICHARTS,
STORCH.

1. La Commission de l'agriculture a été chargée d'émettre un avis à l'intention de la Commission du commerce extérieur sur une proposition d'un règlement du Conseil relatif à la défense contre les pratiques de dumping, primes ou subventions de la part des pays non membres de la C.E.E., qui a été déposé par la Commission de la C.E.E. le 5 mai 1965.

2. La Commission de l'agriculture a examiné cette proposition sous les divers aspects suivants (1) :

- I. Observations sur certains articles du règlement
- II. Le cas des produits agricoles
- III. Conclusion.

I. Observations sur certains articles du règlement

3. La Commission de l'agriculture s'est particulièrement intéressée à la façon dont la procédure pouvait être ouverte. Elle a en particulier pris acte des déclarations du représentant de la Commission de la C.E.E. concernant la possibilité pour un plaignant d'introduire une plainte auprès de la Commission de la C.E.E. par le canal d'un organisme ou groupement professionnel, organisé au niveau de la Communauté étant entendu qu'il peut s'agir d'un "organisme" à compétence très générale.

(1) Le rédacteur de cet avis avait, lors de l'examen en Commission, souligné le but poursuivi par le présent projet de règlement et en avait analysé les principales dispositions. Ces parties du projet d'avis qui auraient fait double emploi avec le rapport de la Commission compétente au fond n'ont pas été reprises ici.

Il serait donc ainsi toujours possible à un plaignant d'introduire une plainte auprès de la Commission de la C.E.E. alors même que la branche professionnelle à laquelle il appartient ne serait pas représentée au sein d'un "groupement professionnel" organisé au niveau de la Communauté.

4. La Commission de l'agriculture a eu également le souci que la Commission de la C.E.E. soit en tout état de cause informée de l'introduction d'une plainte auprès de l'autorité compétente de l'Etat membre et c'est pourquoi elle propose d'amender le § 2 de l'art. 8 en indiquant qu'une "copie de la plainte peut être adressée par le plaignant à la Commission de la C.E.E.".

5. La Commission de l'agriculture s'est étonnée du caractère trop vague, selon elle, de la formulation du § 1 de l'art. 10 selon laquelle l'Etat membre saisi d'une plainte en informe "aussitôt" la Commission.

Aussi bien, propose-t-elle d'amender cet article en fixant à huit jours le délai laissé à un Etat membre pour informer la Commission.

6. La proposition d'amendement faite au § 2 de l'art. 8 concernant la possibilité d'adresser une copie de la plainte à la Commission de la C.E.E. entraîne une modification purement formelle du § 1 de l'art. 11.

7. La Commission de l'agriculture avait cru voir une certaine contradiction entre le § 2 de l'art. 24 et l'art. 15.

En effet, il n'apparaît pas clairement, selon elle, que les Etats membres peuvent prendre des mesures nationales avant que l'on connaisse le résultat des consultations au stade communautaire.

Le représentant de la Commission de la C.E.E. a tenu à faire observer que, conformément au § 1 de l'art. 24, les Etats membres étaient autorisés, jusqu'à l'application intégrale du tarif douanier commun ou jusqu'à l'entrée en vigueur d'une organisation commune de marché, à prendre les mesures nationales appropriées pour la sauvegarde de ses intérêts.

La Commission de l'agriculture a pris note de cette déclaration, mais elle a estimé que le texte du § 2 de l'art. 24 devrait être modifié afin de faire mieux ressortir les conditions de procédure.

II. Le cas des produits agricoles

8. Ce règlement étant d'application générale, il vise aussi bien les produits industriels que les produits agricoles. L'article 1, paragraphe 3 précise néanmoins qu'il ne peut pas faire obstacle à l'exécution des règlements communautaires en matière de politique agricole commune." Aussi bien doit-on examiner séparément le cas des produits agricoles non soumis à une organisation de marché et celui des produits pour lesquels des règlements de politique agricole commune ont déjà été arrêtés.

A) Les produits agricoles non soumis à une organisation de marché

9. Ce règlement présente au regard de ces produits un intérêt évident pour la Communauté. En effet, la Commission de l'agriculture a souvent eu l'occasion d'évoquer la situation difficile qui résulte pour certaines productions agricoles du fait qu'une organisation de marché n'a pas encore été mise sur pied ou n'est pas envisagée à leur égard. On sait que ces difficultés se situent à la fois sur le plan de l'équilibre interne de la Communauté et sur le plan de la politique commerciale (1).

B) Le cas des produits agricoles soumis à une organisation de marché

10. Il résulte de la rédaction de l'article 1, paragraphe 3 qu'en théorie, ce règlement peut s'appliquer conjointement avec les règlements de politique agricole commune, sans toutefois faire

(1) Voir avis de la commission de l'agriculture à la commission du commerce extérieur sur "les questions de politique commerciale commune de la Communauté à l'égard des pays à commerce d'Etat", doc. 10, 1965-66, rapporteur M. LOHR, page 24.

obstacle à ces derniers. En d'autres termes, les règlements communautaires de politique agricole commune jouissent d'une priorité par rapport à ce règlement.

11. Avant de mentionner les mesures de protection dont la Communauté dispose actuellement et qui devront jouer en priorité par rapport au règlement étudié ici, il importe de préciser que ce dernier ne peut avoir pour effet que d'instituer des droits anti-dumping ou compensateurs; il ne joue donc pas sur le plan quantitatif mais uniquement sur le plan des prix.

Il y a lieu de rappeler pour mémoire, que sur le plan quantitatif les règlements d'organisation de marché prévoient tous la possibilité pour le Conseil, statuant à la majorité qualifiée sur proposition de la Commission, de déroger au principe de base selon lequel l'application du régime de prélèvements envers les pays tiers entraîne la suppression de toutes restrictions quantitatives ou mesures d'effet équivalent.

Il faut aussi rappeler le règlement 3/1963 qui, par le jeu des montants évaluatifs, permet le contrôle des importations en provenance des pays à commerce d'Etat et la suspension de ces importations dans des cas déterminés (1).

12. Sur le plan des prix proprement dits, les règlements d'organisation de marché ont institué une protection à la frontière de la Communauté, protection dont la méthode est du reste variable selon les produits :

- en ce qui concerne les produits de base et en particulier les céréales, le prix à l'importation se trouve automatiquement ramené au niveau du prix indicatif par le jeu du prix de seuil, étant entendu que le montant du prélèvement est égal à la différence entre le prix CAF du produit établi à partir des possibilités d'achat les plus favorables sur le marché mondial et le prix de seuil de l'Etat membre importateur;

1) Voir avis de la Commission de l'agriculture joint au rapport joint au rapport de M. LOHR sur les questions de politique commerciale commune de la Communauté à l'égard des pays à commerce d'Etat (doc. 10 - 1965-66, pages 23 et 24).

- en ce qui concerne les produits transformés tels que la viande de porc, les oeufs ou la volaille, le prélèvement correspond à l'incidence des différences de prix des céréales fourragères, à l'application d'un coefficient de transformation et enfin, à une certaine marge de protection rappelant les droits de douane existant auparavant.

En outre, il existe un prix d'écluse valable pour l'ensemble de la Communauté, prix d'écluse qui joue le rôle d'un prix minimum. Un montant supplémentaire est ajouté au prélèvement lorsque le prix d'offre tombe au-dessous du prix d'écluse.

La Commission de la C.E.E. a arrêté, en 1962, le règlement 109 (J.O. 67 du 30 juillet 1962) pour la mise en application des règlements de base des articles 7 du règlement n° 20 et de l'article 6 des règlements 21 et 22 (oeufs et volaille).

L'une des caractéristiques de ce montant supplémentaire est qu'il est fixé sur la base du prix d'offre le plus bas. Si les offres en-dessous du prix d'écluse ne proviennent que d'un seul pays tiers, le montant supplémentaire ne joue qu'à l'égard de ce seul pays; par contre, si plusieurs pays offrent des produits en-dessous du prix d'écluse, le système actuel fait peser une charge identique sur des prix qui peuvent être différents bien que se situant les uns et les autres entre le niveau le plus bas et le prix d'écluse.

Il faut cependant signaler qu'"un montant supplémentaire n'est pas fixé pour les produits importés des pays tiers qui sont disposés à garantir qu'à l'importation en provenance de leur territoire le prix appliqué ne sera pas inférieur au prix d'écluse" (art. 4 du règlement 109).

- au regard des fruits et légumes, l'article 11, paragraphe 2, prévoit l'instauration d'une taxe compensatoire entre le prix de référence et le prix à l'importation. On sait que la nouvelle rédaction de cet article 11 (règlement n° 65/1965 du 13 mai 1965, J.O. du 20/5/65) donne à cette taxe un caractère automatique sous réserve des engagements qui auraient pu être pris dans le cadre du G.A.T.T.

L'application de la taxe compensatoire en matière de fruits et légumes a du reste eu dans le passé une application beaucoup plus différenciée que celle des montants supplémentaires sur les prélèvements relatifs à la viande de porc, aux oeufs et à la volaille.

13. L'analyse des mesures de protection dont la Communauté dispose et qui seront appliquées en priorité pour les produits agricoles soumis à organisation de marché, laisse en définitive assez peu de place au jeu du présent règlement concernant les pratiques de dumping ou subventions.

La Commission de la C.E.E. fait cependant observer dans l'exposé des motifs (chiffre 40 a) qu'il pourrait être utile de compléter les dispositions agricoles actuellement appliquées par les dispositions du présent règlement ayant en vue, en particulier, d'éviter que la Communauté doive faire recours, cas par cas, à des solutions spéciales. En employant l'expression "cas par cas", la Commission pense plutôt aux termes "produit par produit". C'est ainsi que dans le domaine des fruits et légumes le règlement visant les pratiques de dumping pourrait s'appliquer aussi bien aux fruits frais seuls visés par le règlement n° 23 qu'aux fruits en conserve par exemple.

III. Conclusions

14. L'examen des aspects agricoles du règlement amène la Commission de l'agriculture à émettre un avis favorable à la proposition de règlement.

L'adoption de celui-ci lui paraît tout d'abord indispensable en ce qui concerne les produits agricoles non soumis à une organisation de marché.

Au regard des produits pour lesquels une organisation commune de marché existe, le règlement comble une lacune de la réglementation actuelle. Celle-ci est, en effet, essentiellement axée sur le bon fonctionnement des organisations de marché mais peut apparaître quelque peu aveugle dans la mesure où elle s'applique à toutes les offres faites en-dessous du niveau de protection de la Communauté, sans rechercher les éléments qui ont contribué

à la fixation d'un prix d'offre inférieur à ce niveau. En d'autres termes, le présent règlement vient ajouter à la politique agricole suivie jusqu'à ce jour un élément de politique commerciale à la fois plus individualisé vis-à-vis de l'extérieur et plus généralisé à l'intérieur de la Communauté dans la mesure où des règlements généraux d'application pourront être pris à l'égard de tel ou tel produit.

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Texte proposé par la Commission de la C.E.E.

PROPOSITION DE REGLEMENT DU CONSEIL RELATIF A LA DEFENSE CONTRE LES PRATIQUES DE DUMPING, PRIMES OU SUBVENTIONS DE LA PART DE PAYS NON MEMBRES DE LA C.E.E.

LE CONSEIL DE LA COMMUNAUTE ECONOMIQUE EUROPEENNE,

Article 8

1.
2. La plainte est introduite par écrit auprès de l'autorité compétente de l'Etat membre dans lequel le plaignant exerce son activité, quel que soit par ailleurs l'Etat membre où les pratiques dénoncées peuvent produire leurs effets.
3.

Article 10

1. Lorsque la plainte introduite auprès d'un Etat membre contient les éléments prévus à l'article 9, l'Etat membre intéressé en informe aussitôt la Commission.
2.
3.
4.

Article 11

1. En vue d'un examen immédiat des faits sur le plan communautaire la Commission, en collaboration avec les Etats membres et dès réception des communications visées à l'article 10 §§ 1 et 2 ou, en vertu de l'art. 8 § 3, d'une plainte contenant les éléments prévus à l'article

Modifications proposées par la commission du commerce extérieur

PROPOSITION DE REGLEMENT DU CONSEIL RELATIF A LA DEFENSE CONTRE LES PRATIQUES DE DUMPING, PRIMES OU SUBVENTIONS DE LA PART DE PAYS NON MEMBRES DE LA C.E.E.

LE CONSEIL DE LA COMMUNAUTE ECONOMIQUE EUROPEENNE,

article 8

1. (Inchangé)
2. La plainte est introduite par écrit auprès de l'autorité compétente de l'Etat membre dans lequel la plaignant exerce son activité, quel que soit par ailleurs l'Etat membre où les pratiques dénoncées peuvent produire leurs effets; copie de la plainte peut être adressée par le plaignant à la Commission de la C.E.E.
3. (inchangé)

Article 10

1. Lorsque la plainte introduite auprès d'un Etat membre contient les éléments prévus à l'article 9, l'Etat membre intéressé en informe la Commission dans les 8 jours.
2. (inchangé)
3. (inchangé)
4. (inchangé)

article 11

1. En vue d'un examen immédiat des faits sur le plan communautaire la Commission, en collaboration avec les Etats membres et dès réception des communications visées à l'article 10 §§ 1 et 2 ou, en vertu de l'art. 8 § 2 in fine et § 3, d'une plainte contenant les éléments

9, recueille toutes informations utiles et procède à toutes vérifications appropriées.

2.

3.

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Article 24

1.

2. Lorsqu'une telle mesure nationale est envisagée et préalablement à toute autre action l'Etat membre en informe la Commission et les autres Etats membres en leur communiquant les résultats de l'examen des faits auquel il a procédé sur le plan national. Des consultations sont immédiatement ouvertes à la demande d'un Etat membre ou à l'initiative de la Commission. Les articles 14 et 23 sont d'application.

3.

prévus à l'article 9, recueille toutes informations utiles et procède à toutes vérifications appropriées.

2. (inchangé)

3. (inchangé)

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Article 24

1. (inchangé)

2. Lorsqu'une telle mesure nationale est envisagée et préalablement à toute autre action l'Etat membre en informe la Commission et les autres Etats membres en leur communiquant les résultats de l'examen des faits auquel il a procédé sur le plan national. Après en avoir informé la Commission, l'Etat membre peut arrêter les mesures qu'il juge opportunes. Des consultations sont immédiatement ouvertes à la demande d'un Etat membre ou à l'initiative de la Commission. Les articles 14 et 23 sont d'application.

3. (inchangé)

