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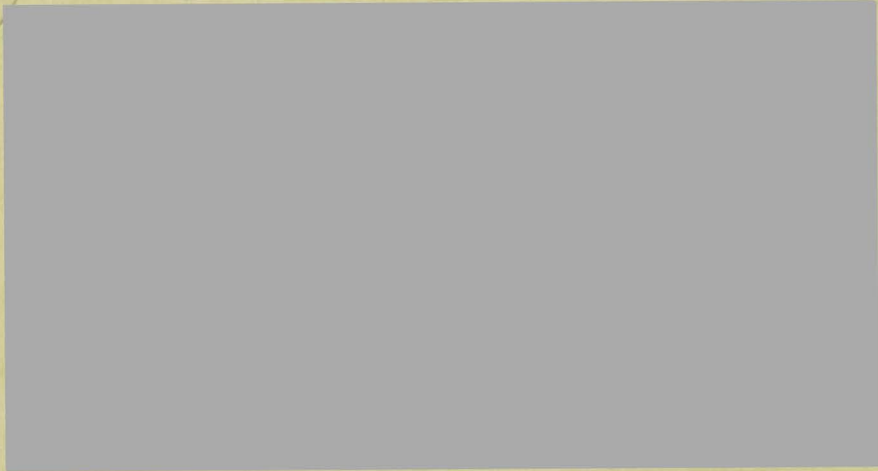
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Canalization of the Moselle - Exposes Prononces a l Hotel de Ville de Metz

CANALIZATION OF THE MOSELLE

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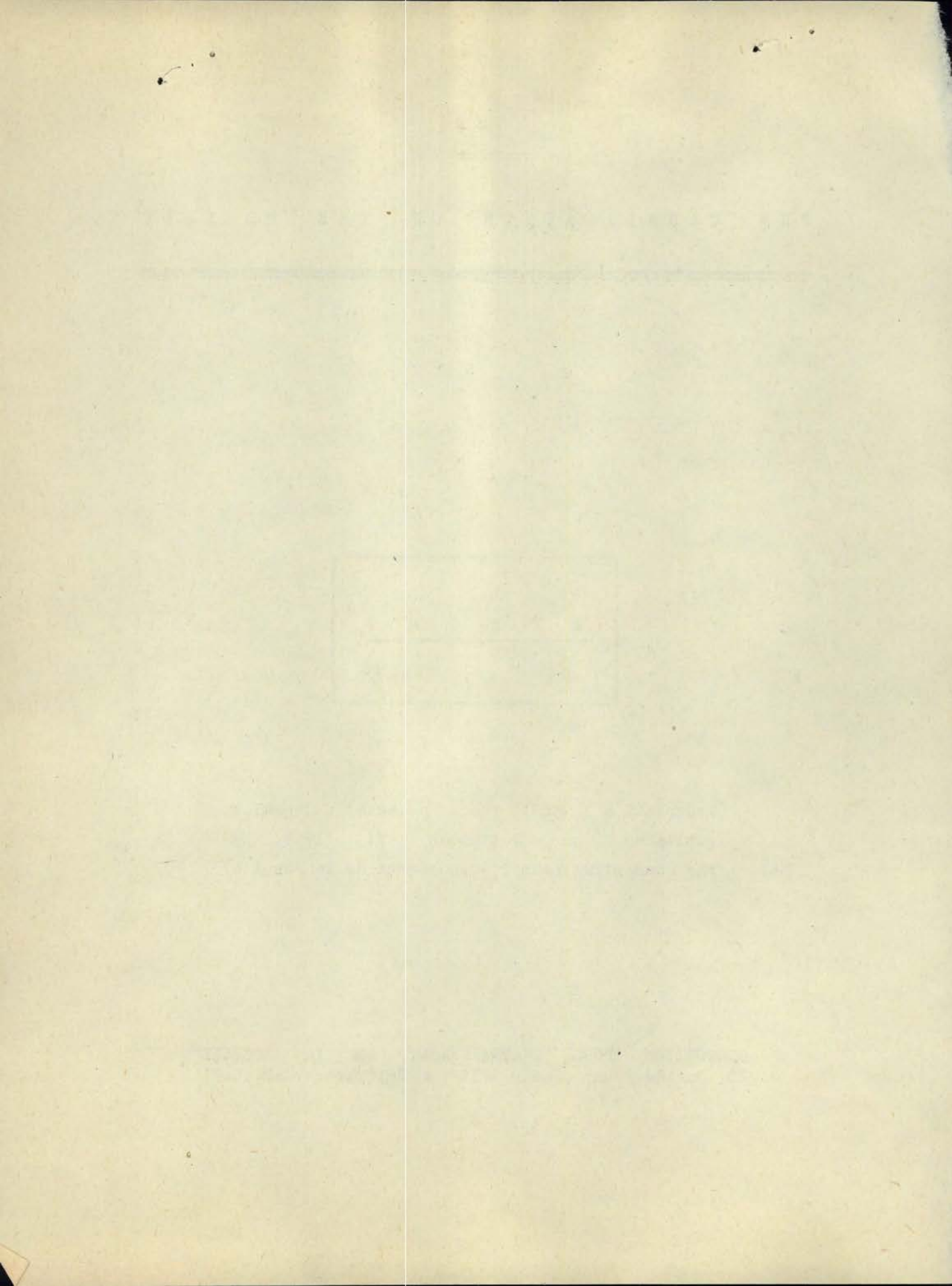
THE JEFFERSON

THE CANALIZATION OF THE MOSELLE

R E P O R T

(Translation of the attached booklet
published on September 7, 1953, by
the Consortium pour l'Aménagement de la Moselle)

CONSORTIUM POUR L'AMENAGEMENT DE LA MOSELLE
20, Rue de Prony - Paris XVII^e • Téléphone: CAR.15-01



P R É F A C E

La présente étude a pour but d'intéresser un public très large au projet de la Canalisation de la Moselle et de lui fournir les éléments essentiels de ce problème actuellement controversé. Rédigée par des Français, elle ne se départit à aucun moment de l'impartialité nécessaire ; elle ne dissimule ni les difficultés ni les objections possibles. C'est sur le plan international que la solution interviendra et c'est à des lecteurs étrangers autant qu'aux Français qu'en dernière analyse les conclusions de cet exposé sont destinées.

Un projet de cette envergure ne se justifie que si les fonds qu'exigerait son exécution ne sont pas disproportionnés au résultat préconisé et si, d'autre part d'autres travaux plus urgents et plus utiles ne s'imposent pas plus impérieusement. Le mémoire nous fournit la réponse. Il est tout d'abord souligné que la Canalisation de la Moselle constitue un investissement exceptionnellement bon marché, si on fait la comparaison avec d'autres entreprises similaires en voie d'achèvement. Elle n'entraîne aucun suréquipement inutile ou antiéconomique, malgré la juxtaposition, dans une région promise à un essor exceptionnel, des trois voies d'accès habituelles : eau, rail et route.



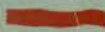

D'autre part, l'entrée en fonction de la Communauté du Charbon et de l'Acier confère à ce projet un caractère d'actualité particulièrement marqué, puisqu'il a pour objet de relier plus économiquement deux bassins, dont les ressources sont désormais mises en commun, de rattacher la Moselle, principal affluent du Rhin, à la plus vaste artère fluviale européenne et de parachever ainsi, sur un point essentiel, l'équipement de la Communauté.

Il s'agit, dans ces conditions, d'un exemple-type de politique économique européenne. Le projet ne pouvait guère se concevoir en dehors d'une communauté unissant, par-dessus les frontières nationales, les intérêts de la sidérurgie et de l'industrie houillère des pays d'Europe Occidentale ; d'autre part, cette communauté serait gravement défectueuse et compromise, si elle négligeait l'importance et l'urgence d'un tel projet qui est — on peut l'affirmer sans exagération — un test de l'esprit européen.

Ce serait aller à l'encontre de cet esprit, si on voulait juger le projet d'après les avantages spéciaux qu'en tirerait l'un ou l'autre des partenaires. Il est exact que dans l'immédiat la France serait la première à profiter des facilités nouvelles. Mais, il est non moins certain que d'autres pays de la Communauté y trouveront largement leur compte ; il me suffit de renvoyer aux précisions qui sont fournies par les auteurs de l'étude, notamment au sujet de l'approvisionnement en minerai lorrain, de l'acheminement de matériel lourd allemand, de la production d'énergie électrique supplémentaire, du développement de la navigation rhénane consécutif à l'ouverture d'une nouvelle voie d'eau latérale.



LEGEND

-  Waterways for barges of over 600 tons
-  Waterways for barges of under 600 tons
-  Section of the Moselle to be canalized for barges of 1500 tons
-  Industrial and mining basins

THE PROPOSED CANALIZATION OF THE MOSELLE BETWEEN METZ AND COBLENCE

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P R E F A C E

The aim of the present survey is to interest the public at large in the canalization of the Moselle project, and to make known the essential factors of this controversial problem. This report was drawn up by the French, but is nevertheless presented impartially ; it does not attempt to cover up the difficulties nor any possible objections. The eventual solution to the problem must be an international one, and therefore the final conclusions of this study are addressed to foreign readers as well as to the French.

Any such large-scale project is justifiable only if the result to be obtained is in proportion to the funds necessary for its realization, and unless other more urgent and more useful projects take priority.

The answer will be found in this booklet. First of all, it must be pointed out that the canalization of the Moselle represents quite an inexpensive investment, if comparison is made with other similar undertakings that are currently in progress. No excessive equipment nor uneconomical measures are involved, despite the juxtaposition, in an area of exceptional possibilities, of the three ordinary modes of transportation : water, rail and highway.

Moreover, the new Coal and Steel Community makes this project a most timely one, for (1) it will link in a more economical manner two areas whose respective resources will thus be merged into a unified whole ; (2) it will connect the Moselle, principal tributary of the Rhine, with this greatest of European inland waterways, and thus complete the expedients at the disposal of the Community.

It is therefore a question of an exemplary European economic policy. Such a project could only be conceived within a community which unites, over and above national borders, the interests of Western Europe's steel and coal industries. What is more, this community would find itself in a sorely compromising position if it were to neglect the importance and urgency of such a project, which is, beyond any doubt, a test of the European spirit.

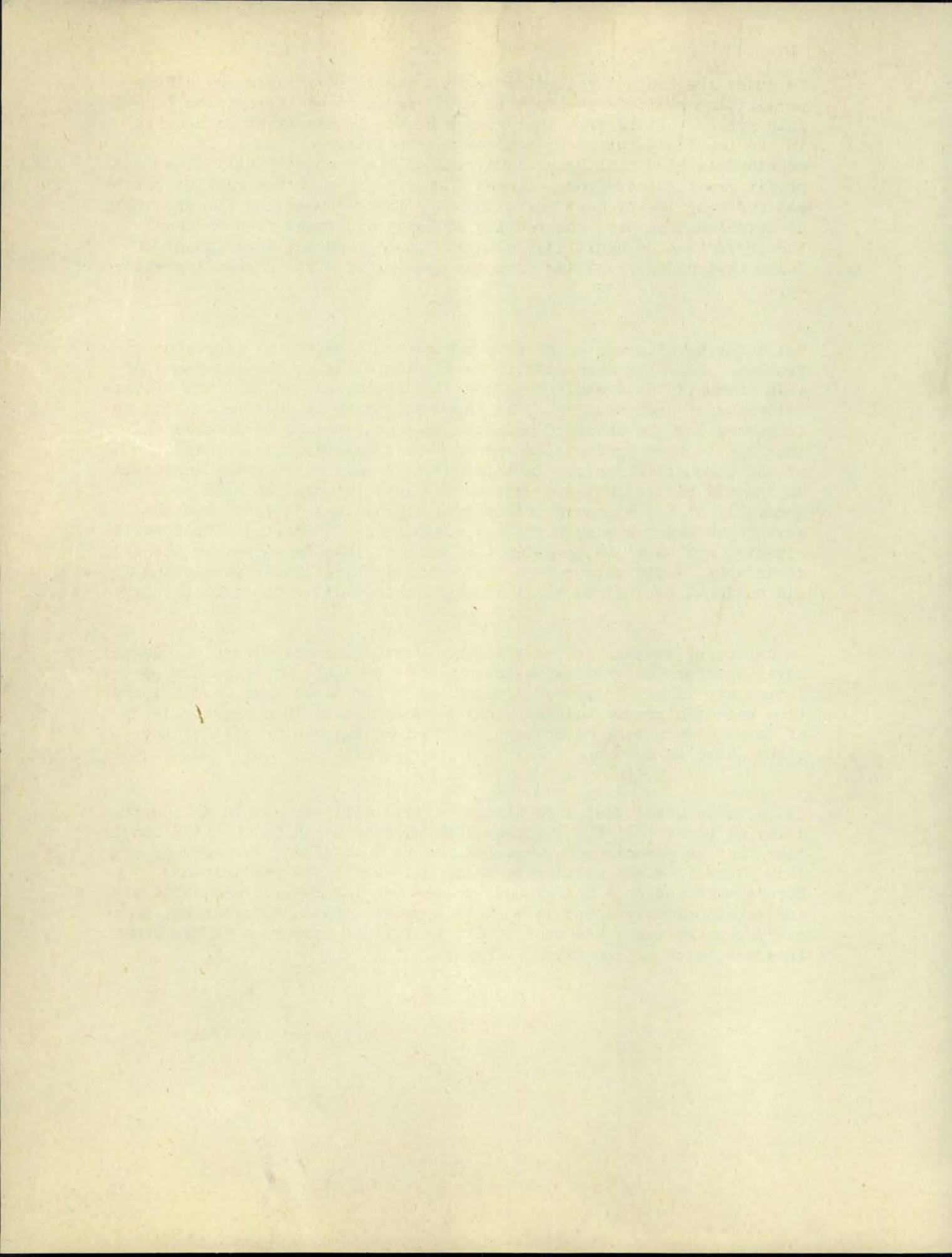
To judge the project according to the special advantages any single participant would derive from it would be in direct opposition to this spirit. It is true that France stands as the first to benefit in the immediate future from these new facilities. But it is nonetheless true that other countries of the Community will also profit greatly therefrom; I need only refer you to the various points set forth by the present survey notably those concerning the procuring of Lorraine iron ore, the routing of heavy equipment from Germany, the production of additional electric power, and the development of Rhine navigation resulting from the opening of a new connecting waterway.

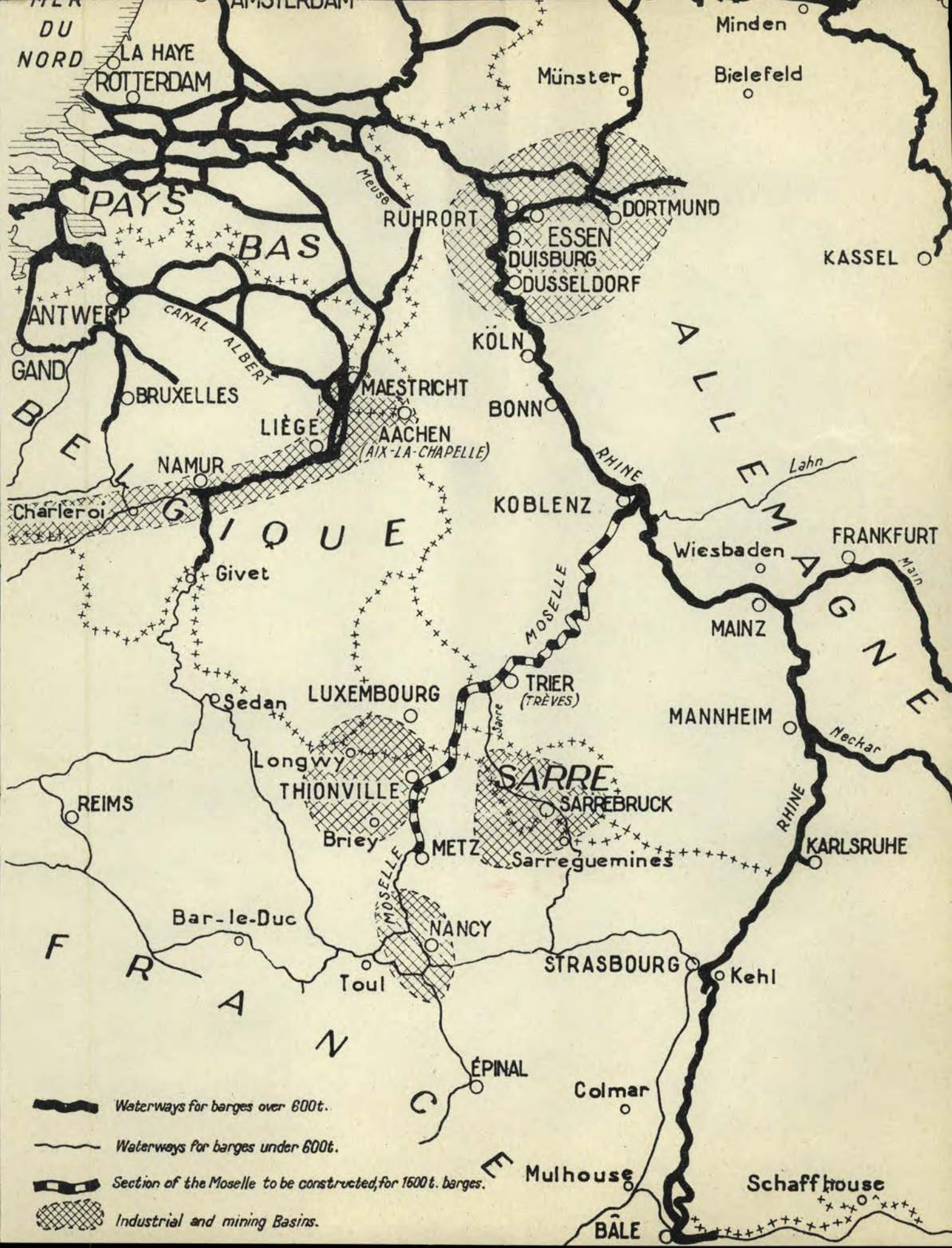
But a further discussion of this nature would be to misrepresent the problem. Once the community is in existence, it is the interests of this community as a whole that must be considered, and not the private interests of each country. The important thing is that production be increased for the entire Community, that cost prices be lowered and that the flow of products be smoothed out, as stipulated by Article 54 of the Community Treaty. In this way, the interests of the consumers in the six participating countries are kept in view, as well as a generally higher standard of living. Any attempt to enumerate the advantages which a single project would bring to its individual participants, and make its acceptance by each of them dependent on these advantages, would only refute the communal spirit while persisting in old national prejudices ; all wide-scale initiative would be paralyzed.

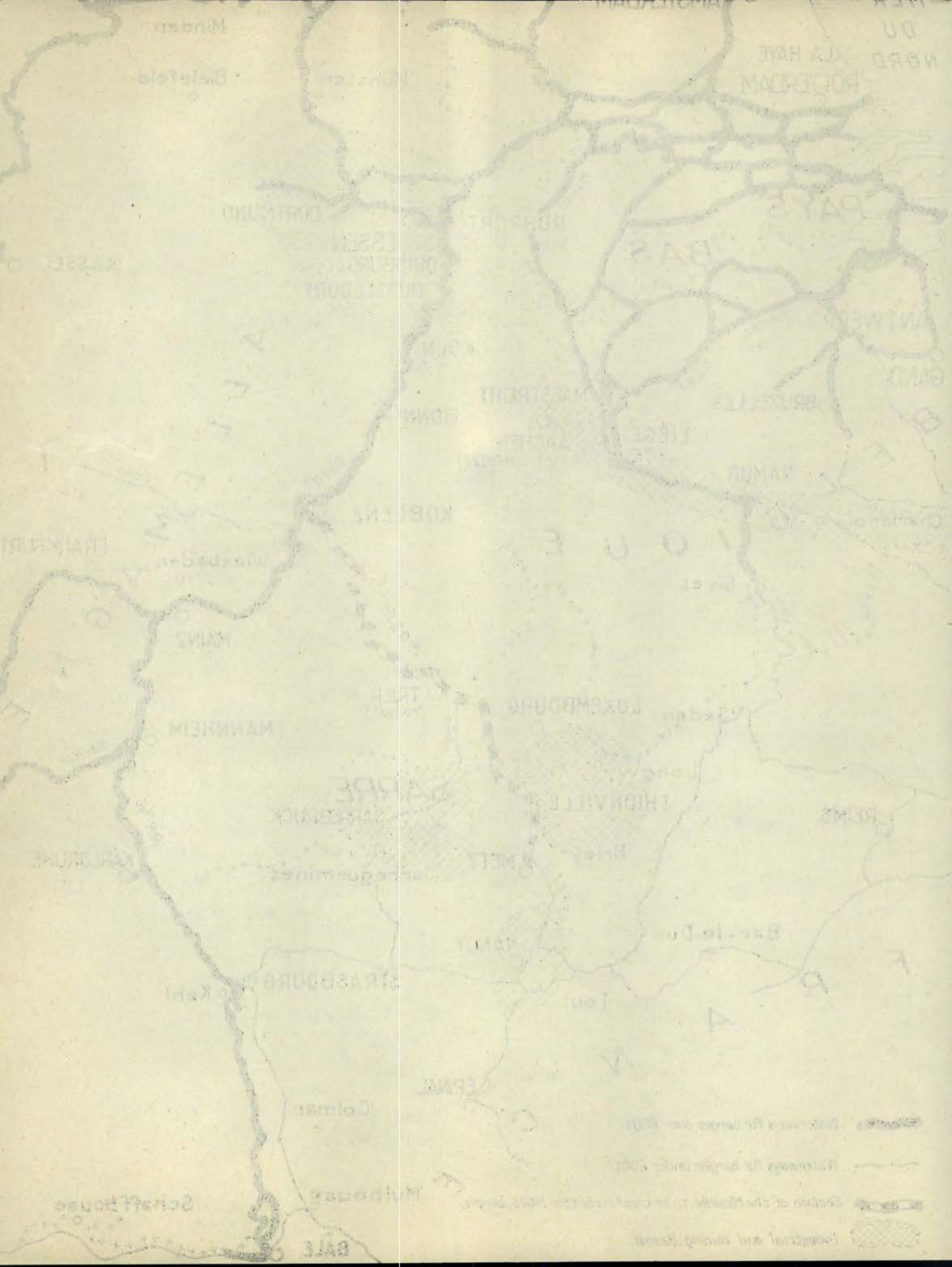
In any case, whereas projects taken individually are always of unequal advantage for the various partners, other projects or proposals of the future are likely to provide compensation for those less favored, and thus effect a proper balance. Any association is in a sense made up of these alternating advantages, which form the counterpart of the risks taken in common.

It is to be hoped that this kind of spirit will win out in as short a delay as possible. The European idea must be based on the firm conviction that an advantage for one can not be a detriment for another ; this stems from the solidarity which unites all the participants. Europe must not be a fairground, where each lot is assigned jealously and parsimoniously ; but it must be a great, common undertaking, where every country makes the most of its individual resources in the common interest, with no one taking offense.

Robert SCHUMAN.







BRUXELLES
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PARIS
LUXEMBOURG

- Riviere
- Chemin de fer
- Route
- Forêt

THE FRENCH LAW OF APRIL 10, 1952

The law of April 10, 1952 authorized the President of the French Republic to ratify the treaty which instituted a European Community of Coal and Steel. Article 2 of this law directed the French government to " enter into negotiations with the governments concerned, before establishing the common market, in order to achieve without delay the canalization of the Moselle between Thionville and Coblenz ".

In this way the French Parliament has shown the vital correlation between the conception of the Schuman Plan, and the natural interdependence of the Saar-Lorraine Basin with the Rhineland economic territories. The position thus taken was all the more significant in that it marked the end of a policy which had been in force since 1918, and which advocated the linking of the Lorraine exclusively with the French waterways system. By showing a desire to link closely the Saar-Lorraine Basin with the Rhine, the French Parliament has indicated that not only would this constitute a great benefit for French economy, but that at the same time it adds a new stepping-stone to the eventual realization of a European economic community.

In conjunction with the representatives of all public and private organizations concerned, including the railroads, a special commission which met in France at the Commissariat General of the Plan under the auspices of the Présidence du Conseil, made a detailed study of the basic technical and economic factors of the canalization project. This commission made known its favorable conclusions in the latter part of January 1953, and in March 1953 the French government opened the negotiations which had been provided for by the law.

At the same time, boards of German, French and Luxemburg experts working together drew up an outline of the technical characteristics of the new waterway, and pointed out, from an international point of view, the main economic aspects of the project.

The present study was established by utilizing the efforts of these various groups and their reports.

An attempt is made to group together the various aspects of this project, which has as its economic goal the linking by waterway of the Saar-Lorraine-Luxemburg Basin with the Rhine, with the Ruhr, and with the great shipping ports of the North Sea, and at the same time to provide an important source of hydro-electric power.

THE RHINE

The Rhine is the principal artery of European shipping. It serves three of the largest ports on the continent -- Antwerp, Rotterdam, and Amsterdam -- and crosses the industrial Ruhr Basin. Three thousand ton barges can go up as far as Basel, more than 500 miles from the mouth of the river.

A rather complete system of canals and canalized rivers, connected with the Rhine and accessible to large barges of 1,350 tons, has greatly increased the field of action and the economic importance of Rhine navigation.

- In the Ruhr, the Rhine-Herne canal, which was constructed between 1908 and 1914 and shortly thereafter doubled about 12 miles to the north by the Wesel-Datteln canal, connects the Rhine with the mines and factories of the Ruhr ; a similar connection is assured with the German ports of the North Sea by the Mittellandkanal, which was finished in 1938.

- The Neckar is in the process of being canalized, and is expected to serve the city of Stuttgart by 1957.

- The Main has already been canalized along a course of 168 miles as far as Wurzburg. Work on this is being continued. Nuremberg, and then the Danube, will eventually thus be connected with the Rhine.

- In the Netherlands, the Amsterdam-Rhine canal, which will carry barges up to 4,000 tons, was inaugurated in 1952.

Paradoxically, only the Moselle, the principal tributary of the Rhine, is still not adapted for navigation, although technically and economically such an adaptation is a very feasible project.

The Rhine is open to navigation for vessels of all countries. The Rhine fleet is divided principally among German, Belgian, French, Netherland and Swiss boats ; English and Luxemburg flags may also be seen, however.

(See picture page 10 of the booklet)

At the present time this fleet consists of more than 5,000,000 tons of barges, and more than 1,000,000 tons of self-propelled vessels. This totals more than the tonnage of the French maritime fleet, which consists of 3,500,000 cargo tons.

Rhine traffic, favored by the low cost price that water transportation affords, enjoys a place of priority in the European transportation economy.

The liberal organization of Rhine navigation with its international status, has contributed largely to the development of this traffic.

(See chart of Rhine traffic from 1901 to 1951 page 11 of
the booklet)

In order to have an idea of the importance of Rhine traffic, the figures of the chart shown above may be compared to (1) those of the traffic in the Suez canal -- 83,400,000 tons in 1952 ; and (2) to the figures of the traffic in all French maritime ports. -- 65,000,000 tons for the same year.

The most important part of Rhine traffic is the shipments either coming from or going to the Ruhr. In 1951, for example, the port of Duisburg (picture page 12 of the booklet) carried a traffic of 15,800,000 tons ; and the Rhine-Herne canal, which empties into the Rhine at Duisburg, showed a Rhine traffic of 13,000,000 tons. This total of 28.8 million tons is a figure considerably higher than that for the same year at Marseilles (18.3 million) or at Le Havre (16 million). These high figures are a straightforward indication of the fundamental importance to the mining and steel industries of shipping heavy material -- such as coal, coke, ores, steel, iron work and by-products, -- by water, a mode of transportation which is particularly well suited to their needs.

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THE SAAR - LORRAINE - LUXEMBURG BASIN

If the Ruhr constitutes the most important industrial basin of Western Europe, second place is held by the Saar-Lorraine-Luxemburg Basin, through which flows the Moselle, the principal tributary of the Rhine.

In that small territory made up of the Saar, Northern Lorraine and Southern Luxemburg, important natural resources have given birth to a powerful mining and steel industry. (See picture page 14 of the booklet).

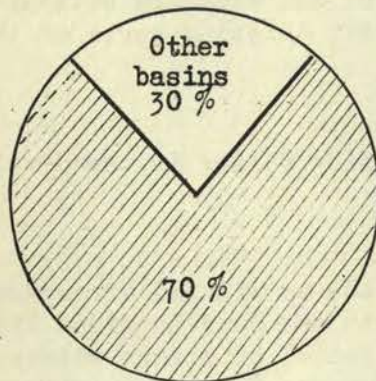
Alongside the coal deposits which are grouped to the East of this basin, there is to be found in the West one of the most extensive deposits of iron ore in the world — that of the Lorraine. The chart below shows the importance of these deposits and of the steel industry whose birth and development they have assured :

	Coal	Steel	Iron Ore
Saar . . .	16,235,000	2,823,000	-
Lorraine .	12,210,000	7,124,000	37,745,000
Luxemburg.	-	3,001,000	7,245,000
Total :	28,445,000	12,948,000	44,990,000

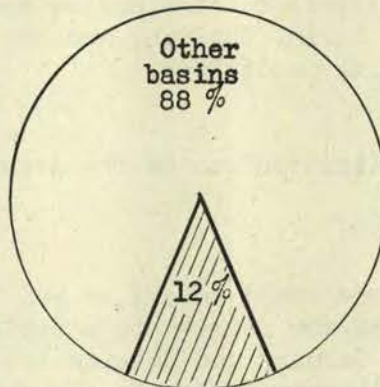
PRINCIPAL PRODUCTIONS IN THE SAAR-LORRAINE-LUXEMBURG BASIN IN 1952 (Metric tons)

These figures may be compared to the production for the same year in France, Germany and the rest of the countries which make up the European Coal and Steel Community :

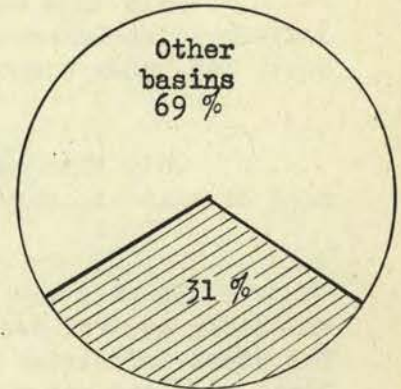
	Coal (metric tons)	Steel (metric tons)	Iron ore (metric tons)
France . .	53,360,000	10,870,000	40,710,000
Germany. .	123,280,000	15,810,000	15,400,000
European Community	238,880,000	41,810,000	64,340,000



Iron ore



Coal



Steel ingots

**IMPORTANCE OF THE SAAR - LORRAINE - LUXEMBURG BASIN
production in the European Coal and Steel Community in 1952**

The Saar-Lorraine-Luxemburg Basin produces a great deal of ore and not enough coking coal. Coke and coking coal (more than 6 million tons in 1952) must be brought in from the Ruhr. A large part of the steel production in the Saar-Lorraine-Luxemburg Basin (more than 4,000,000 tons for 1952) is exported. Because of its location 240 miles from the Ruhr, and 190 miles from the nearest port on the North Sea, the transportation problems are obviously of a capital importance.

The greatest part of this exchange is carried out at the present time by rail, and the high railroad rates constitute a heavy burden for the mining and steel industry. The Saar Basin and the Lorraine Basin are only connected with the general network of French canals and the Rhine in the South.

Except for the Canal des Mines de Fer de la Moselle (1), which was finished in 1932 and which connects Thionville with Metz, these canals are in a bad state of repair ; they contain numerous locks, and are only accessible for canal boats of not more than 280 tons. The low cost of shipping on the Rhine is such, however, that important quantities of products coming from or going to the Saar-Lorraine Basin are routed through Strasbourg, despite the necessary detour of 125 miles. The trans-shipments as well as the longer distance to be covered make this waterway clearly less advantageous than would be the Moselle if it were canalized.

Only such a canalization would bring about a distinct improvement in these transportation conditions.

Only this canalization could assure most of the exchange between the Saar-Lorraine-Luxemburg Basin, the Ruhr and the great shipping ports of the North Sea under economical conditions.

Only this canalization can be the determining factor in the development of this exchange.

In this way alone could an end be put to the artificial arrangement which for several decades now represents a burden to the Saar-Lorraine Basin. The steel industries of Germany and Belgium are situated on modern waterways. Since equality without discrimination is the very basis of the treaty which gave rise to the European Coal and Steel Community, it therefore becomes imperative that the Moselle, a natural waterway connecting the Lorraine with the Rhine, be made accessible to shipping on a large scale.

(1) Moselle iron mines canal.

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HISTORY OF THE PROJECT

Downstream from Thionville, the Moselle, which was once the backbone of an important river traffic, is practically no longer navigable. Toward the middle of the past century, work was started to increase its navigability between the Franco-German border and the Rhine. However, navigation conditions were still difficult, especially when the river was at a low level. Only a complete canalization of the river, as was carried out at that time with the Seine, could deepen the river where needed and make the development of traffic possible.

The cost of such a canalization was quite high 75 years ago, because only dams of limited height could be constructed at that time. For this reason many such dams would have been necessary, and the use of hydro-electric power from the river had not yet been contemplated.

Canalization projects established after 1870 included nearly 40 dams, and proved to be very costly. Hence, these projects could not be realized. Not until technical progress and the development of the consumption of electric power came along could the canalization of the Moselle be envisaged on a satisfactory economic basis. For one thing, technical progress now permits the realization of dams with metallic flood-gates of great height; on the other hand, production of electric power has necessitated a complete revision of the economic factors of the project, by reducing considerably the amount of investments required from navigation.

Consequently, in 1918, a German plan for the adaptation of the Moselle included 20 dams, and an annual production of 400,000,000 kwh. This of course indicated that progress was being made, but the German effort was restricted to the adaptation of purely German waterways. As a result of this, the canalization of the Main and the Neckar were undertaken, and the Mittellandkanal came into being.

However, it became difficult to exclude the Moselle systematically from such adaptation projects, and in 1938, after the last work had been finished on the Mittellandkanal, the German Minister of Transportation undertook to formulate plans for a new Moselle project from Coblenz to the border. The annexation of the Lorraine and of Luxemburg to the German economic territory

after June 1940 heightened considerably the interest and the urgency of this adaptation program, and the project which was outlined in 1938 was extended as far as Thionville. It provided for the creation of a single dam at Coblenz in the downstream section of the Moselle, in order to do away with rapids which were particularly unsuitable. Upstream from this dam and as far as Trier, it was planned to deepen the shallow parts by dredging ; and upstream from Trier, where the flow of the Moselle is too weak for simple dredgings to produce satisfactory results, a series of dams was to be constructed.

This project was immediately approved and work was begun. Some of the troublesome sections were improved, and in 1942 work was begun on the Coblenz Dam. But the work as a whole could not be carried out because of the military situation. Construction of the Coblenz Dam was interrupted in 1944, and was not resumed until after the war.

The French Government has requested the continuation of this project on the basis of technical and economic improvements that have since been brought to light.

(See Photos of the Coblenz Dam page 20 of the booklet).

(Caption : The Coblenz Dam is situated about a mile upstream from the junction of the Moselle and the Rhine. It is closed by three cylindrical floodgates, 20 feet high and 130 feet wide. The lock situated on the left bank is 40 feet wide and 402 feet long. The electrical power plant consists of four 95 cu. meters/sec. Kaplan turbines. The installed electric capacity is 16,000 kwh., and the average annual production is 60,000,000 kwh.)

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TECHNICAL CHARACTERISTICS AND COST OF THE ADAPTATION OF THE MOSELLE

In the present project, the use of dredgings alone to improve the Moselle's navigability has been abandoned. But in order to produce electricity and provide the necessary depths for all year round navigation for the big Rhine barges of 1,500 tons, it has been decided to canalize the river completely by the construction of dams.

Thus the canalization of the Moselle is a project comparable to that for canalizing the Neckar and the Main.

German, French and Luxemburg experts have agreed on the essential features of the Moselle project as they are summed up in the chart shown here below.

The project is usually considered under two separate sections : The section Thionville-Trier, and the section Trier-Coblenz. These sections are determined by the junctions of the Saar and the Sure rivers. Upstream from these junctions, the production of electricity is limited by the weak flow of the river and the limited height of the dams. The Thionville-Trier section is also divided into two sub-sections, which are determined by the Franco-Saar-Luxemburg border at Apach. It is worth noting here that the navigable waterway always follows the bed of the river (except for one detour of less than a mile).

Chart showing the essential characteristics of the Canalization
of the Moselle

Section	Thionville Apach	Apach - Trier	Trier-Coblentz	Total of Section
Country	France	Lux-Saar-Germany	Germany	
Length (miles)	19	28	120	167
Important tributaries ...	Orne	Sure, Saar		
Average annual flow Cubic ft./sec.	4,768	5,121	8,480 to 9,607	
Natural slope in inches/mile	20	17	19	19
Number of proposed dams..	2	2	9	13
Difference in total height after canaliza- tion (ft)	26.5	33.6	214	274
Average height of dams(ft)	13.3	16.7	24	54
Average distance between dams (miles)	8.4	9.4	13.4	12
Number of proposed elec- tric power plants	-	1	9	10
Flow capacity of power plants in cubic ft./sec.	-	6,887	13,422	-
Total annual gross produc- tion of power plants in millions of kwh (1)..		34	717	751
Installed electric capa- city (Kw)		10,000	144,000	154,000

(1) These two last figures do not include the already existing Coblentz power plant.

Common characteristics of the three sectors

Maximum tonnage for barges	1,500 tons
Minimum width of channel	164 ft.
Minimum depth of channel	8.2 ft.
Clearance space above highest navigable water	20 ft.
Normal minimum radius of curvature	1,640 ft.
Planned dimensions for locks	607ft. x 39.4ft.(1st stage)
Average towing power	1 hp. for 6 tons

SEE CHART IN ANNEX OF THE BOOKLET FOR SITES AND CHARACTERISTICS OF EACH DAM

The Mines de Fer de la Moselle Canal, upstream from Thionville, is presently accessible only to canal boats of 280 tons, but will be adapted for the navigation of big Rhine barges of 1,500 tons in order to provide access to the industrial centers situated upstream from Thionville. The bridges on the canal, moreover, have been constructed so as to permit the passage of such large-scale transports. (See pictures page 25 and 26 of the booklet).

The navigation of 1,500 ton barges will be assured all year round.

The dams to be constructed on the Moselle will be small units which can be built by public works firms of average size within two to three years.

There is no particular technical problem to overcome, and no record to be set. It is nothing more than a question of assembly-line constructions on solid rock, which can be carried out by standardizing the equipment as much as possible. Taking into account the time necessary to draw up final plans, it is probably safe to say that by 1958, navigation will be possible on the Moselle from Coblenz to Metz.

Total Costs

The estimates for the work were made in Germany and in Luxemburg by the Wasserstrassendirektion of Mainz, and in France by the Service de la Navigation of Nancy.

The total costs in millions of dollars are as follows :							
Section	Dredgings	Locks	Dams	Anchorage ports	Indemnities	Water power plants	TOTAL
Coblenz-Trier ...	9.5	16.3	15.3	2.1	7.3	37.5	88.0
Trier-Apach	2.6	3.8	1.6		1.5	2.5	12.0
Apach-Thionville:	1.2	2.9	2.3		0.3		6.7
Total	13.3	23	19.2	2.1	9.1	40.0	106.7

These figures do not include running interest, estimated at \$8.6 million

These estimates have been made on the strength of the basic plans of the project. The figures established by the experts allow for a reasonable margin of error, in view of the nature of the work, as well as for research costs and supervision of the work.

It is striking to note what an inexpensive investment the canalization of the Moselle represents.

It represents only 1/3 the cost of the Donzère-Mondragon Dam on the Rhône, but will produce more than 1/3 the electricity this dam produces.

It represents only 1/3 the cost for completing the Rhine-Main-Danube Canal as far as the Danube, with electric power plants excluded.

It represents, per kilometer, less than the cost for electrifying the railroad line between Paris and Lyon.

It represents only half the installation costs for the Société Lorraine de Laminage Continu (SOLLAC).

THE MOSELLE AS A SOURCE OF HYDRO-ELECTRIC POWER

It is a unanimously recognized fact that the consumption of electric power in any country increases regularly every year (7 % on the average), which means doubling the consumption every ten years.

This statement is equally valid for countries which consume a large amount of electricity per inhabitant, (Norway, Switzerland, U.S.A., Sweden) as for countries where consumption is lower (England, Germany, France).

(See graph page 29 of the booklet)

No limit for the demand for electricity can be foreseen, and countries with very high productions like Norway, Sweden and the U.S.A. are therefore planning to double their production between the years 1950-1960. Low tension consumption, which is principally used for domestic purposes, reaches only 180 kwh per inhabitant in Germany, 150 in France, 100 in Luxemburg ; these figures are far from that of the U.S.A., where it is more than 600 kwh per inhabitant and continues to develop regularly.

Minister von Raumer, President of the Central Association for the German Electro-Technical Industry, has stated that he considers the demand for electric current unlimited, and that the big problem is to produce electric current at an acceptable price.

Mr. Schult, President of STEAG, an important German power Company, considers problems of finance as relatively secondary ones alongside those of finding power sources capable of furnishing electricity. If the amount of hydro-electric power were to remain constant, Mr. Schult considers the amounts of coal necessary for the future in German steam generating stations (in order to satisfy the demand for electricity) to be as follows :

In 1960	32 million tons
In 1970	63 million tons
In 1980	125 million tons
In 1990	250 million tons

This would exceed by a large extent the total production of coal and lignite in Germany, which is only 150 million tons a year. The lignite deposits in Germany are exploited under the open sky. But the layers become progressively deeper, and the best deposits are very nearly exhausted. Whereas now, 0.6 cubic meters of useless dirt must be removed before a ton of lignite can be extracted from the earth, in 1960 it will be necessary to remove 2.5 cubic meters of such dirt, or 4 times as much, in order to extract the same ton of lignite.

As Director General Doctor Kost has pointed out, the coal deposits also are not inexhaustible; he added that the foremost duty of German economy is to be as sparing as possible with its natural wealth of fuel sources.

In the future, can nuclear energy be utilized to produce electrical power economically? It is possible, but the use of uranium for producing electricity economically involves numerous problems that have not as yet been solved. Therefore, according to Dr. Schult, electrical power by nuclear means is not a thing to be counted on in the near future.

In order to satisfy as much as possible the increasing demand for electricity, the reasonable exploitation of natural inexhaustible resources is also an imperative economic necessity. Hydraulic energy is the most important of these resources. When the harnessing of this energy becomes feasible under favorable technical and economic conditions, as is the case with the Moselle, we can be certain that such a project will be realized sooner or later for the production of electric power alone, aside from the question of navigation.

This harnessing is all the more important in view of the fact that the Moselle crosses the Rhine Palatinate State, which in 1951 had to import 73 % of its electric power.

In winter, when electric power is at a premium, the Moselle will produce 60 % of the total power, and 40 % in summer. With the Coblenz plant already in existence, the total annual production will reach 810 million kwh, which is as much as is produced at Jochenstein on the Danube and Kembs on the Rhine, and more than a third of that produced by the Donzère-Mondragon Dam on the Rhone. The economic importance of this power is considerable. If the Moselle were entirely in France, the production of electricity would almost cover the total investments.

Even taking into account the low value of electric power in Germany, French experts have estimated that the production of 750 million kwh (without Coblenz) would cover at least an investment of \$79 million, thus leaving a remaining investment of \$36.3 million to be borne by navigation.

If this power were to be sold in France under the plan for the exchange of electricity as recommended by the O.E.E.C., the share for navigation could be reduced even more.

Whereas the equipment for the hydro-electric sources of the Rhine Basin and its tributaries reaches 61 % in Germany, the percentage of equipment for the Moselle alone is only 13 %. Most of the tributaries of the Rhine -- the Main, the Neckar -- are well on the way towards being completely equipped, while the Moselle, where technical and economic conditions are more favorable, is not yet equipped.

One of the essential reasons for this delay lies in the fact that the construction of electrical stations on the Moselle means the construction of locks, and up to the present time, as a result of the strict economic

barriers, no plan has been established conjointly by the governments concerned for the harnessing of the Moselle.

The request of the French government to canalize the Moselle serves as an answer to the German need for utilizing her natural hydro-electric resources. It is rare to find such a harmonious example of mutual interest. This existing irregularity -- the fact that the Moselle has not been harnessed -- is something that should be corrected as soon as possible.

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THE MOSELLE : A CHEAP MEANS OF TRANSPORTATION

Transportation Rates

The primary thought that comes to mind when one speaks of the canalization of the Moselle is not only the new source of electric energy that will result, but, and more important, the new means of transportation which it will provide. This transportation route has a special significance if one considers the fact that it passes through the very heart of, or in close proximity to, the coal, iron and steel basins of the Lorraine, the Saar and Luxemburg, and that these basins will thus be connected with the Ruhr and with the great shipping ports of the North Sea.

In order to realize this more fully, the importance of the question of transportation for these industries must be borne in mind. At the present time the transportation cost for iron ore is often higher than the price of the merchandise itself when it leaves the mine. As for coke from the Ruhr, the price when it leaves the mine is around 4,400 francs (\$ 12.25) ; the cost of transportation to the Lorraine is about 2,400 francs (\$ 6.80), or 35 % of the final selling price. In the case of flat-rolled steel, the general report of the High Authority points out that "in a ton delivered to the consumer, the added transportation cost currently represents 20 to 25 % of the original sale price". It is for this reason that the location of a steel mill is so important and that, for example in Germany, the Mannesmann mill is located in Huckingen, on the bank of the Rhine ; in the United States the Fairless mill of the United Steel Co. is located at Morrisville on the very shores of the Atlantic, and in England the location of Birmingham, which is about 90 miles from the sea, is considered to be too far inland for a center of heavy industry. (See picture page 33 of the booklet).

Even though it is obvious that the opening up of a waterway the size of the Moselle will reduce transportation costs by a substantial degree, it is nevertheless necessary to analyze the factors involved and to examine minutely the resultant economy.

A complete study should include every shipper and every receiver, as well as all transports that might be effected. This important research has been carried out, but its details would be too cumbersome to include in this report.

In Appendix II will be found the detailed compilations made for evaluating transportation costs on the Moselle. The freight charges have been

calculated very freely so as not to be too optimistic, and the case example chosen was the Lorraine factory ROMBAS, because of its typical location with regard to the waterway.

The following results show the comparison of the three types of freight considered to be the most important :

Shipping costs
(per metric ton)

	Present railroad rates	Proposed Moselle-Rhine rates	Amount and percentage saved
Coking coal from the Ruhr to Rombas	\$ 6.95	\$ 3.75	\$ 3.19 46 %
Iron ore from the Lorraine mine Angevillers to the Ruhr factory Gelsenkir- chen	\$ 3.24	\$ 1.61	\$ 1.63 50 %
Flat-rolled steel from Rombas to Rotterdam or Antwerp	\$ 6.31	\$ 2.18	\$ 4.13 65 %

It can readily be seen that the advantage is enormous, but will it be a durable one ? This is the problem we should like to examine now.

The European Coal and Steel Community is designed to fulfill several purposes : (1) it would do away with discriminations in shipping arrangements ; (2) it would establish direct international tariffs and (3) it would advocate a satisfactory over-all system of tariffs. There is no question but what reductions in certain current rates will result.

However, we feel sure that these modifications will not mean a general reduction of shipping rates insofar as they affect the steel industry. In Luxemburg, every time there is a question of diminishing a given rate, certain arguments are always raised. When the first discriminations were suppressed, part of the new rates obtained resulted from the fact that the balance of total receipts for the railroads had to be kept about the same ; this simply means that certain rates were raised while others were lowered. This first experience makes it evident that shipping rates within the Community will not always be directed downward during the future discussions in Luxemburg.

The comparative table below shows that if the railroads wish to bring their rates in line with those of the Moselle, it will mean a substantial reduction, sometimes to more than half of the present rate. The treaty of the European Coal and Steel Community states that "shipping rates for coal and steel should provide comparable prices for the consumers who find themselves in comparable conditions". In view of this an important lowering of rates on the competitive relations incurred by the Moselle could not fail to have an important influence on all railroad rates for coal and steel as a whole. For example, the preceding table shows that the ROMBAS plant currently pays \$6.31 to ship a ton of flat-rolled stock by rail to Antwerp ; if the Moselle were canalized, this same shipment would cost \$2.18. It hardly seems conceivable that the railroads could compete with this new rate to the extent of reducing their present rates by 65 % without having shipping rates for other steel products feel a very sharp repercussion. There are those who even feel that these reductions will have to be extended to the rates for products other than coal and steel. It is thus evident that such an alignment towards reduction on the basis of future Moselle rates will gradually make its way into other sectors of economy. A situation of this nature would result in chaos, and such a policy of general reductions would deal a heavy blow to inland navigation as well as that of the Rhine, by eliminating the greatest part of their traffic. It hardly seems possible that the six governments of the Community would agree to such rates. Such an agreement would have a much greater effect in general on the financial situation of the railroad network than the losses that would be incurred for them by the canalization of the Moselle.

It is therefore reasonable to assume that the wide gap between the railroad rates and the Moselle rates cannot be breached, and that the Moselle will remain incontestably the most economic route.

We feel duty bound to mention an objection that was raised by representatives of the railroads. Some of these representatives have criticized the Moselle canalization project as "superfluous". According to them, the railroads have the advantage of already being in existence. They feel that the railroads themselves can be modernized and consequently take care of all the traffic. Their contention is that with the question of investing capital one which should be considered very carefully at the present time, the creation of a new shipping route is unnecessary.

But there is no dearth of examples to show that several different routes may serve successfully the same itineraries. For example, on each bank of the Rhine, there is a railroad track as well as a highway ; all five of these transportation routes are constantly bustling with activity. The same thing is true between Paris and the ports of Rouen and Le Havre. Not only is there a railroad line, a waterway and the highway, all running along together, but there is also a new pipeline which has just been constructed to carry fuel oil between the two regions. This seems sufficient proof that when several routes exist side by side, a transportation system is established which does not constitute a waste, but on the contrary, provides a guarantee of security and efficiency which enables the consumer to be better served. (See picture of the Rhine page 36 of the booklet).

There is another point to consider. As far as shipping rates are concerned, the railroads can offer only limited possibilities in a very

complex pattern, a solution that is necessarily derived from governmental control. One of the very basic principles of the European Community for Coal and Steel is to favor liberal solutions which, as is the case with the Moselle, would offer rates that are more directly and more easily modeled after the cost price.

It will not only be a question of sharing the traffic but also of an increase in the volume of the traffic, as has already been proved many times when important waterways have been opened up for navigation.

Any reasoning which maintains that any new transportation routes are superfluous, is an absolute contradiction to the maxims of economic progress.

Naturally this does not mean that needless extravagance should be condoned for the sake of carrying out any and all investments. As far as the canalization of the Moselle is concerned, we have seen that out of a total cost of \$115 million at least \$ 79 million represents a productive investment for electricity, a project which will eventually have to be realized one way or another ; the remaining \$36 million represents an investment for shipping facilities. Can this then be considered needless extravagance, to spend \$ 36 million to connect the Rhine with a territory as important as the Saar-Lorraine-Luxemburg Basin by a waterway which, as will be seen later, creates additional wealth ?

In a comparison of economic factors, it is not without interest to compare the amount of power and labor incurred by Moselle and Rhine shipping with similar figures for shipping by rail. These studies have shown the considerable saving realized by the former routes. Comparison has also been made of the marginal cost price by rail with the total cost price for the same traffic on the Moselle. This latter cost price figure includes all the costs of infrastructure, interest and amortization. This study was carried out by French administrative authorities, and proves that from this point of view as well, the Moselle is perfectly capable of undergoing such a comparison.

Would any other waterway in Europe, on which such a project might possibly be carried out, be able to hold its own in this same way ?

The electrification of certain railroad lines affecting coal and steel shipments is either being carried out at the present time, or is planned for the future ; it has been suggested that such an electrification is the only modern solution for shipping heavy goods.

Of course, the railroads can be technically perfected, just as any thing else, but this does not necessarily mean that therefore they can replace the new possibilities that a large-sized waterway like the Moselle offers. These possibilities are of course entirely dependent on the question of shipping rates as a whole, and experience has shown that the electrification of a railroad line does not have any great bearing on the already established rates. The French railroads, for example, have announced that by dint of electrifying the line between Thionville and Dunkirk, a reduction of 10 % on the shipping of steel could be effected. Even if this proposal were accepted by the French government, it is obvious that little change in the economic factors would

result, since the canalization of the Moselle would mean a reduction of more than 60%. Moreover, electrifying the line between Thionville and Coblenz would mean a technical improvement only between these two points ; on the other hand, boats using the canalized Moselle as far as Coblenz can transfer to the Rhine there, and furnish the same cheap transport rates to various other points, including most particularly the North Sea and the Ruhr Basin.

Thus, no matter how one looks at it, the fact remains that the Moselle is a mode of transportation that offers more advantages than any other method currently in existence.

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THE MOSELLE : ITS ECONOMIC SIGNIFICANCE

There seems to be no doubt that the Moselle, serving as it will a region as important as the Saar-Lorraine-Luxemburg Basin, will be able to handle a very heavy traffic. The scrupulously detailed studies that have been made in France have arrived at the following conclusions concerning this eventual traffic, based on the hypothesis of an annual production of 16.7 million tons of Franco-Saar steel (which corresponds to a 20 % increase on the annual production, a more moderate estimate than that forecast by the High Authority) ;

<u>UPSTREAM TRAFFIC</u>	<u>Metric Tons</u>
Coke for the Lorraine	2,560,000
Coking coal for the Lorraine . .	1,930,000
Ore For the Lorraine	500,000
Other items (dolomite, fire-bricks, construction materials, cereals, wood, etc...)	350,000
Transit	100,000
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Total	5,440,000
 <u>DOWNSTREAM TRAFFIC</u>	
Ore for the Ruhr	1,000,000
Saar-Lorraine steel products towards North Sea ports . . .	1,900,000
Half-finished products of steel industry	100,000
By-products (Thomas slag, cement, cinders, etc...)	550,000
Transit Traffic	300,000
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Total	3,850,000

Local traffic has been estimated by the Chambers of Commerce of Coblenz and Trier at 1,400,000 tons. (See picture page 43 of the booklet).

Thus we arrive at the grand total for annual traffic of about ten million tons.

A glance at the present traffic on the Main (7 million tons per year) and the Neckar (4 million tons per year) shows that the Moselle estimate is a reasonable one, for the other two rivers do not serve a heavy industrial region as does the Moselle.

The canalization of the Moselle will permit a thorough exploitation of the Lorraine Basin by connecting it with the Rhine. The Lorraine will be able to utilize more easily the Ruhr products instead of continuing to be handicapped by the lack of coke. This provision of combustible materials from the Ruhr under economic conditions eliminates any eventual necessity for Western Europe to import coking coal from overseas.

Downstream traffic on the Moselle will assure the shipping of steel products and by-products to the great ports of the North Sea at far more advantageous rates. Steel exports from the Lorraine-Saar-Luxembourg region are most essential ; more than 50 % of the steel exported overseas by the European Community comes from this region, and the cost price of a ton of Lorraine steel FOB Antwerp would be decreased by about 9 %, which represents a considerable reduction.

Another very important economic consequence of the Moselle project will be the renewal of Lorraine iron ore shipments to the Ruhr. The use of Lorraine ore in the Thomas blast furnaces of the Ruhr has always been considered by German steel experts to be an excellent method from a technical point of view. It would replace the limestone flux, Swedish ore, or ferruginous limestone with its low iron content which is extracted from the local mines. Detailed studies have shown that the use of Lorraine ore transported by waterway to the German factories either on the Rhine or near it (by means of the Rhine-Herne canal) would definitely be advantageous. Depending on the methods used and the mines chosen to furnish the ore, the cost would be reduced by as much as 3.5 DM to 9.5 DM (\$.83 to \$ 2.26) per ton of cast iron. Only the canalization of the Moselle could transform this estimate into a workable practice ; if, on the other hand, rail routes were used to ship the ore, the generally higher shipping costs would make most operations not worthwhile.

These shipments, which amounted to more than 3,000,000 tons per year in the past, and which are quite logical geographically speaking, could be resumed by means of the Moselle much more economically ; such an action falls directly in line with the objectives of the European Coal and Steel Community Treaty. The German factories, long since accustomed to using Lorraine iron ore, could once again receive this ore in substantial quantities by way of the Moselle. The minimum figure of 1,000,000 tons cited above was estimated by German experts in the early stages of the surveys ; however, it seems highly probable that the increased demand for iron ore in Germany (10,000,000 tons were imported in 1952) will lead to shipments of Lorraine ore amounting to about 3,000,000 tons per year.

Thus, it is evident that the Ruhr Basin will also receive tangible advantages from this less expensive means of transportation.

The High Authority of the European Community for Coal and Steel which is now being formed, and which is already engaged in a widespread activity, endeavors to help its participating members to profit as much as possible from the natural resources which they possess.

Basic goals of the Community consist, among others, of (1) reducing cost prices, (2) facilitating exchange, (3) increasing exports and (4) encouraging the general economic expansion that will come about as a direct result of the canalization of the Moselle.

Once the cost price of steel is reduced, the purchasing power will finally be increased.

The Moselle will also provide German manufacturers of heavy equipment with access to a prosperous region that will provide new outlets. It will be a boon to the steel industries at Coblenz and Siegerland, and it will also play an important role in the future of the German territory through which it flows. The tremendous importance of the coal and steel industries themselves, as well as the vital sense of timeliness given to these basic factors of the economy as a whole by the existence of a High European Authority, tend to put the regional advantages of this canalization in the shade.

In Germany, for a distance of about 125 miles, the Moselle flows through a region of which little is said. This is the region of two important cities -- Trier and Coblenz -- which are being currently reconstructed ; it is the region of charming small towns with tourist appeal, of a very famous wine, and of many picturesque sites of historic fame.

The shipping facilities as well as the hydro-electric power plants resulting from the canalization of the Moselle will contribute greatly to the development of this economically backward territory.

Although the Moselle passes through the very heart of the steel industry regions of the Fentsch and of the Orne in Lorraine (see map), it is still about 25 miles from the Longwy Basin and from Luxemburg and the Saar. Solutions must still be found for improving terminal shippings for these latter regions. The canalization of the sector between Thionville and Coblenz will however provide a guarantee for better rates as regards most of the shipping in these centers. It also gives these Basins access to the Rhine and to the sea, just as Switzerland, isolated in the same way, finally obtained when the navigable part of the Rhine reached as far as Basel. The total shipping in Basel in 1938 was 1,800,000 tons ; and in 1951 it amounted to 4,600,000 tons. (Picture page 47 of booklet).

On the other end of the Rhine network of waterways -- at the mouth of the Rhine, as it is customarily called -- are to be found the Belgium shipping port of Antwerp and the two Dutch ports of Rotterdam and Amsterdam. The total shipping traffic for these three ports in 1951 was 75,000,000 tons. (Pictures pages 44 - 45 of booklet). These ports would have a great advantage in developing their industrial "hinterland", especially in relation with countries abroad. They have also much to gain by establishing connections with this industrial region by means of the Rhine as well as by rail. The canalization of the Moselle is certain to increase the traffic to these ports without interfering with the already established traffic at Dunkirk.

The canalization of the Moselle falls directly in line with "work projects which will contribute directly to an increased production, to a lowering of cost prices and to facilitating the flow of products that fall under its jurisdiction" (Article 54 of the European Coal and Steel Community Treaty).

The Moselle project will also establish a balance in another aspect of the over-all economy. The question arises as to the future of international Rhine navigation. The capacity of the Rhine fleet has been fully re-established, and new possibilities must now be opened to it.

In the same way that the Rhine-Main-Danube network is a vital factor in trade with the East, the Moselle project offers the same possibilities for trade with the West. Rhine navigation will have a new field of activity opened up for it because of the Moselle's situation in important industrial regions, and also because there is no need for the construction of a new fleet.

These new facilities that the Moselle will bring to Rhine navigation should be met with favor by those who feel that besides the monopoly currently exercised by the railroads, a more liberal solution should exist which would guarantee future rates more directly in line with the actual cost price.

Navigation on the Rhine has been a joint European enterprise for a long time. The entire French fleet represents about 10 % of the total Rhine fleet. Continued failure to include the Moselle in these inland waterways constitutes a real mutilation of the Rhine network : a resolution adopted in Rotterdam on June 24, 1953 by the International Union for River Navigation proposed that the European Conference of Transportation Ministers give foremost consideration to the canalization of the Moselle over all construction projects for European waterways. (Picture page 48 of booklet).

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THE EUROPEAN MOSELLE COMPANY

From its source in the Vosges to its junction with the Rhine, the Moselle either crosses or flows along three frontiers. Its canalization therefore poses an international problem.

We feel that the time is definitely past when each State should be asked to undertake the canalization of that section of the river which flows within its borders, and we have tried to find a method which would respect from every point of view the unification of the project, and which would place it in the proper framework : the framework of Europe.

On March 22, 1953 the French Premier Mr. René Mayer made a statement which first suggested the idea of a European Moselle Company. The occasion was the laying of the cornerstone for the new dam at Rochemaure, part of the program carried out by the Compagnie Nationale du Rhône. Mr. Mayer said :

" We hope to see an International Company of the Moselle created...

" This would form a strong bond between the countries which, through the European Coal and Steel Community, are already participating in the European construction movement, in which shipping and the exchange of electric power have a definite place in the formation of an economic federation of Western Europe ".

The question arises as to whether or not the canalization of the Moselle would be the first example of a new legal formula, or would it be formed under the statutes already in existence for international enterprises ? This problem is currently undergoing careful study. In any case, it seems desirable for this company to be as "European" as possible, allowing other countries to be brought in, such as the Netherlands and Belgium, for example.

The company would receive from each State the concessions necessary for the river's adaptation ; the countries would sign simultaneously an agreement, the terms of which would establish the proper conditions for making the company itself responsible for the respective interests in connection with the river project. This company would bring about the realization of the project, and would assure its management.

The new waterway should receive a liberal planning, with no discriminations. In general, it should adopt the same principles which are in effect for the management of the Rhine, and the relations between the two should be set up in an efficacious manner. (See pictures pages 50 and 51 of the booklet).

One of the most important tasks of the company would be to collect the 40 billion francs necessary for the realization of the project.

This sum is relatively modest, in view of the fact that the High Authority's report indicates that the probable investments for the steel and coal industries will amount to the equivalent of 1 billion and 1,300 million dollars per year. The canalization of the Moselle (including the hydro-electric installations) will cost 120 million dollars over a period of four years, or 30 million dollars per year ; this represents less than 3 percent of the figure quoted above.

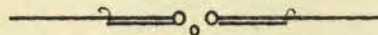
The Moselle company will be unique as a waterway company, since it will be financially balanced. It will reimburse the loans, pay the interests and the amortization of the materials required ; investments of this type usually fall under the heading of a public investment. We have stated above that at least \$ 79 million would come under the heading of an electricity investment, and that \$ 36.3 billion at most would be assumed by navigation. This latter sum would eventually be liquidated by the establishment of a toll of 12 to 23 cents per ton of shipping.

Thus, it is not unreasonable to assume that the Moselle company will be in a favorable position as concerns its financing. The financial plan compares very favorably with that of other similar projects⁽¹⁾. Not only should it receive the financial support of the Governments in question but, inasmuch as it is in complete accordance with the principles of European integration, it should be the object of an international financing plan. Studies have already shown that this project is likely to gain the support of all those who firmly believe in European integration.

By its geographical position, the Moselle serves as a main artery for the European Coal and Steel Community, with its seat of executive power located in Luxemburg, 12 miles from the banks of the river.

An additional mine in the Ruhr or an extra rolling mill in the Lorraine can certainly be considered desirable investments which would increase the economic potential and the European standard of living. But indispensable as they might be, these projects do not have the same psychological import as the canalization of the Moselle, for this latter represents an undisputed victory for European solidarity, as well as a new source of wealth.

The Rhine is a good example of the cooperation of European peoples ; not only has it stepped up the economy of the countries through which it flows, but it has also done a great deal to unite these various peoples in their ways of thinking. The Moselle remains the only important Rhine tributary in this powerful industrial region which has not been utilized. Should not this gap be filled ? Should not this strong bond be established between Europeans, and most particularly between the Germans and the French ?



(1) See Appendix I

- APPENDIX I -

COMPARISON WITH SIMILAR PROJECTS CURRENTLY UNDER WAY IN EUROPE

Companies have been created in Germany for the adaptation of the main tributaries of the Rhine. The Rhein-Main-Donau A.G. handles the adaptation of the Main upstream from ASCHAFFENBURG to BAMBERG ; and (2) the preparation of a canal between BAMBERG on the Main and KEHLHEIM on the Danube, passing through NUREMBERG ; and (3) the adaptation of the Danube downstream from KEHLHEIM as far as the Austro-German border. At the present time, navigation is possible for 1,350 ton barges as far as WURZBURG -- the plan is for this to be extended as far as NUREMBERG by 1965. The locks will measure 984 ft. x 39 ft. as far as BAMBERG, and between Bamberg and Kehlheim they will measure 738 ft. x 39 ft. As a general rule, each dam has its own hydro-electric plant.

Another company, the Neckar A. G. takes care of the adaptation of the Neckar upstream from MANNHEIM. This river is presently navigable as far as HEILBRONN, and it is planned for Stuttgart to be connected with the new waterway by 1957. Eventually navigation possibilities will be opened up as far as PLOCHINGEN, and beyond that a second connection between the Rhine and the Danube will be provided by means of a canal, which will be difficult to construct, reaching as far as ULM on the Danube. The locks measure 361 ft. x 39 ft., and once again, each dam is to have its own hydro-electric plant.

These two adaptation projects of the Main and the Neckar are being carried out with the double aim of producing hydro-electric power and of providing full-scale navigation. However, they are far from presenting the same technical and economic interest as the Moselle project, as can be seen from the following chart, which is limited to the adaptation projects of the Main and the Neckar as such, omitting the costly extensions toward the Danube.

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CHARACTERISTICS	MAIN Aschaffenburg- Bamberg	NECKAR Mannheim- Plochingen	MOSELLE Thionville- Coblentz
Total length (miles)	178	126	168
Difference in contour level(meters)	132.5	156	83
Average slope (cm/Km)	46	74	30
No. of dams	28	27	14
Average length of reservoir in miles	6.2	5	12
No. of electric plants	29	27	10
Plant flow in cu. m./sec.	90-145	35-130	380
Average fall per dam (ft)	15.5	19.7	21.3
Total electricity produced (millions of kwh.)	471.7	472.4	751
Electric production per plant (millions kwh)	16	18	75
Estimated traffic (millions of tons).	7	5	10
Estimate for project (millions of dollars) without running interest	143	128.2	106.7
Estimate of navigation share (millions of dollars)	100	86	33.5
Estimate of project cost for navi- gation per ton of shipping (dollars)	14.28	17.2	3.35

- APPENDIX II -

SHIPPING PRICES QUOTED ON THE CHART ON PAGE 21 ARE MADE UP OF THE
FOLLOWING :

I - <u>Coking Coal from the Ruhr to Rombas</u>	<u>per ton :</u>
- By rail :	
From Wanne-Eickel to Palzem-(border)	
307 Kms, A.T.6B1 : DM 20.50 =	\$ 4.94
From Nennig-(border) to Rombas	
51 Kms, Tarif 7, chap. 1, Bar.68: Frs 657 =	1.87
Saar tax : Frs 15 =04
Terminal costs at factory, Frs 34 =10
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	6.95
- By the Rhine and the Moselle :	
Initial costs in the Ruhr	\$ 1.03
Cartage Ruhrort-Richemont	2.20
Insurance and other costs .....	.07
Unloading (private dock) .....	.22
Transfer costs (private tracks) .....	.14
Depreciation and loss .....	.10
	<hr/>
	3.76
	<hr/>

APPENDIX II (Cont.)

2.- Iron ore from the Angevillers mine to the Gelsenkirchen factory (Ruhr)

By rail :	<u>per ton</u>
From Thionville to Nennig (border)	
33 Kms, Tarif 13, chap. 2, § 1, Bar. 305= Frs 461	
minus : Tarif 103, 1.000 t.- train Frs <u>80</u>	
Frs 381 =	\$ 1.09
Saar tax Frs 15 = .....	.04
From Palzem (border) to Gelsenkirchen - Bismarck	
306 Kms, A.T.7G.3 = DM 8.80 =	2.11
	3.24
By the Moselle and the Rhine :	
Initial costs and loading (private track)	\$.26
Cartage Thionville-Ruhrort .....	.85
Transfer Ruhrort-Grimberg (freight rate and canal toll)	.23
Unloading and terminal costs at factory .....	.20
Insurance and other costs .....	.07
	1.61

3.- Rolled steel from Rombas to Antwerp or Rotterdam (400 t.- lots)

By rail :	
From Rombas to Zoufftgen (border)	
34 Kms, Tarif 14, chap. 1, Bar. 65 : Frs 577 =	\$ 1.65
From Bettembourg (border) to Antwerp - exportation	
285 Kms - Special rate 3.4113 : 232 B. Frs = ...	4.66
	6.31
By the Moselle and the Rhine :	
Initial costs (private track)	\$.20
Loading .....	.36
Cartage Rlichemont-Antwerp or Rotterdam	1.55
Insurance and other costs .....	.07
	2.18

