

THE CHANNEL TUNNEL
IMPLICATIONS FOR REGIONAL DEVELOPMENT
IN GREAT BRITAIN

by

CHARLES HUGH ALEXANDER MacCALLUM

B. Arch., Strathclyde University

(1967)

Submitted in partial fulfillment of
the requirements for the degree of
Master in City Planning

at the

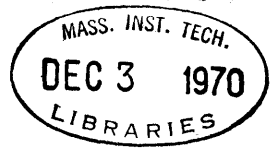
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

(June 1969)

Signature of author- _____
Department of Urban Studies and Planning, May 23, 1969

Certified by _____
Thesis Supervisor

Accepted by _____
Archives Chairman, Departmental Committee on Graduate Students





Room 14-0551
77 Massachusetts Avenue
Cambridge, MA 02139
Ph: 617.253.2800
Email: docs@mit.edu
<http://libraries.mit.edu/docs>

DISCLAIMER OF QUALITY

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available. If you are dissatisfied with this product and find it unusable, please contact Document Services as soon as possible.

Thank you.

Both the Library and Archives version of this thesis has pages that contain poor, but legible text quality. This is the best available copy.

THE CHANNEL TUNNEL:
IMPLICATIONS FOR REGIONAL DEVELOPMENT
IN GREAT BRITAIN

by

Charles Hugh Alexander MacCallum

Submitted in partial fulfillment of the
requirements for the degree of
Master in City Planning

at the

Massachusetts Institute of Technology

June 1969

The 1960s have seen a resurgence of interest in the idea of connecting Britain to the European mainland by means of a tunnel under the English Channel, and the British and French Governments have agreed that one should be built, subject to the negotiation of satisfactory financing arrangements.

Discussion has centered on how to build a Tunnel, rather than why, and although such a reduction of a major friction in the system of physical relationships between Britain and the rest of Europe is bound to cause some redistribution of locational advantage, there has been little study - at least in Britain - of the consequences of the decision to proceed.

This thesis considers the likely impact of a Tunnel in the context of the main aims of current British planning policy as it applies to regional development, and concludes that they are at variance. At the same time, however, the Channel Tunnel situation underlines some of the basic contradictions inherent in present regional policy, and the thesis concludes by discussing some recent indications of impending change in that policy.

Thesis Supervisor : Professor John T. Howard

Head of the Department of
Urban Studies and Planning

THE CHANNEL TUNNEL: IMPLICATIONS FOR REGIONAL DEVELOPMENT IN GREAT BRITAIN

Acknowledgments.

In addition to Professor John T. Howard, for whose kindness I am indebted, not only in the matter of this thesis, but throughout my stay at M. I. T., I should like to thank the following people for their assistance:

Mr. Michael Baily,

Mr. Max Boisot,

Mr. Noël Carrere,

Miss Nadine Claquin,

Professor Aaron Fleisher,

Professor Matthew Edel,

Mr. Stephen Osgood,

Mr. A. G. Powell,

Professor Lloyd Rodwin,

Mrs. Renee Short, M.P.,

Mr. Robin Webster.

SUMMARY

The thesis compares the probable consequences of building a tunnel under the English Channel with the current aims of regional development policy in Britain.

A description of the geographical context of the Tunnel's proposed location at the Straits of Dover is followed by a brief account of the background to the current proposals. These are for a rail link with vehicle ferrying facilities both as a cross-Channel shuttle and as part of a system of direct links between centres in Britain and in Europe.

The general effect of improved communications with Europe in this region, particularly in the event of British entry into the Common market, would be to enhance the SouthEast's relative attractiveness to industry, and to encourage the generation of new employment and population growth in the region.

Regional development policy in Britain, however, is primarily aimed at the alleviation of unemployment in areas where it is relatively high, and at the relief of congestion in the more crowded parts of the country.

The Tunnel proposal seems therefore to run completely counter to national planning policy, as the South East is in fact the most prosperous and densely populated region in Britain, but in doing so it also underlines some of the contradictions in current policy.

In comparing the probable impact of the Tunnel with the aims of present policy, the problems of continued implementation of that policy and some indications of possible change in attitudes toward regional development are discussed.

INTRODUCTION

Although there have been a great many studies, and one or two false starts, since the French engineer Mathieu suggested to Napoleon in 1802 that a tunnel from France to Britain might be a good idea, circumstances have never combined for a sufficiently long time for one to be built. Since 1961, however, both French and British governments have displayed greatly renewed interest in the subject, and matters have progressed to the point where, on November 18, 1968, Her Majesty's Minister of Transport told a meeting of the Channel Tunnel Parliamentary Group: "The critical factor at the moment in the choice of a private group to arrange for the financing and construction." Indeed, true to the pattern of the Tunnel's history, digging has been under way for some time on the French side, though the British have not quite decided on the location of their end.

Debate on the Channel Tunnel has, in recent years, been limited for the most part to the question of whether it should be a tunnel - and if so, what kind - or a bridge, or a combination of the two. With attention thus focussed on technical issues, some quite fundamental questions about the advisability of a fixed link of any sort have received scant attention, and assessment of the consequences of providing one, in terms of national regional impact, has been conspicuously absent. In a report prepared jointly by British and French officials in 1963, the likelihood of economic repercussions, particularly of a localised nature, within the Channel area countries was acknowledged, but it was felt that they were impossible to assess.

Since then, there seem to have been second thoughts and some resignations, at least among some of these responsible for planning policy in South East England, and studies are in progress on the question of the Tunnel's

probable impact on that region. The first results of this work, however, are not expected to be completed before April, 1970.

Purpose and Extent of this Thesis

It is the purpose of this thesis to consider the probable consequences of building a Channel Tunnel, on the lines of present proposals, for planning policy in Britain. Clearly, a reduction in the friction which the English Channel represents in the system of communications between Britain and the rest of Europe will result not only in a redistribution of traffic, but, to some extent, of locational advantage also, with all that that implies for the movement of people and industry. Although many of the Tunnel's most direct effects would likely be felt in the Channel region itself, it is in the wider context of national planning considerations that its implications will be considered here.

The primary concerns of British regional and economic planning policy are described more fully in Part II, but its broad aim has been to stimulate development - with particular emphasis on the problems of unemployment - in the economically lagging regions of the country. The emphasis of this thesis is on the broad issue of the compatibility of the Tunnel proposals with national policy, rather than on the detailed consequences of their implementation. This is not to imply that the details are unimportant, but that their consideration should not precede consideration of the basic question of whether the tunnel makes sense in the context of national planning aims. As it happens, the reverse has been the case, and it is with that fundamental omission that the thesis is concerned.

PART I: THE CHANNEL TUNNEL

GEOGRAPHICAL CONTEXT OF THE TUNNEL

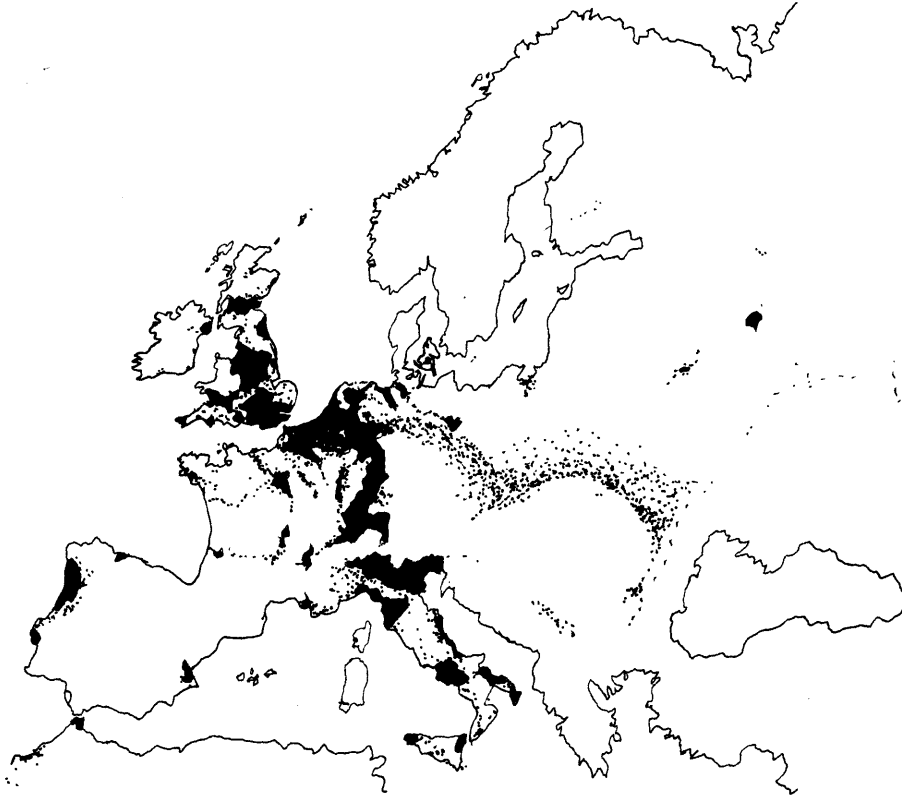


FIGURE 1. POPULATION DENSITY IN EUROPE. (Areas shown solid black have over 200 persons/square kilometre.)

Source: Der Regierungsbericht über die Raumordnung in den Niederlanden,
Mitteilungen aus dem Institut für Raumordnung, Bad Godesberg, 1961.

From the map in figure 1 it may clearly be seen that the most densely populated parts of Europe form an almost continuous swathe of development running from the base of the Alps, broadening to encompass the Benelux countries, and continuing through South East England to the Midlands and South Wales. The English Channel thus not only separates Britain from Continental Europe, it also constitutes the only major break in the densest part of this highly urbanised region.

The interactions of the Industrial Revolution with existing transportation routes and the location of natural resources has resulted in the concentration of most of Europe's heavy industry within this corridor, and has had a profound effect on the distribution of population. For a variety of reasons, the declining labour demand in many of the older, heavy industries has not been matched everywhere by a compensating metamorphosis in the structure of the local economy, nor perhaps by sufficient population mobility, and there now exist several sizeable areas within this urban corridor which have severe economic problems deriving from the advanced obsolescence of their base activities. The Pasde-Calais, near the French end of the proposed tunnel, is one such area, with wages 20 per cent lower, and mortality 20 per cent higher, than in the Paris region.

Finally, the geographical role of the Channel has changed. In addition to providing much of Britain's overseas trade with access to the Port of London, the English Channel constituted a significant element in Britain's defences as recently as World War II. Traditionally, this had been the argument - perhaps not a very good one - against the Tunnel, but with the disappearance of the question of security, increasing emphasis on European unity has tended

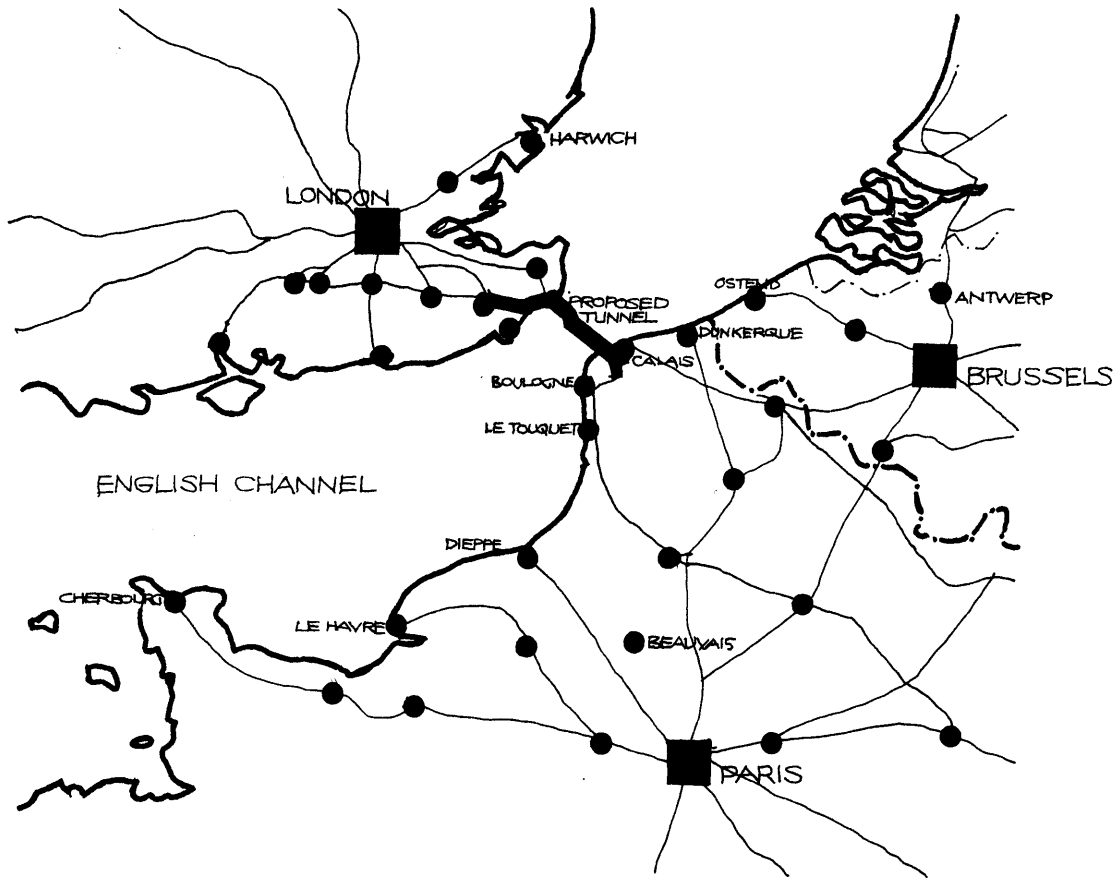


FIGURE 2. CHANNEL TUNNEL ALIGNMENTS AND CONNECTING RAILWAYS.

to focus attention on the Channel's role as an impediment to the movement of people and goods between Britain and the rest of Europe.

THE PRESENT PROPOSALS:

Background.

Why build a Fixed Link?

Construction and Location.

Types and Capacity of Service Proposed.

Colorful and interesting though the Tunnel's history is, a detailed presentation would be inappropriate here. A chronology is provided in Appendix I, and those interested in a fuller treatment are referred to the bibliography, and particularly to the study by Slater and Barnett. The following section is therefore confined to an outline of the main events since the establishment of the Channel Tunnel Study Group, on 26 July 1957. The Group was set up on the initiative of the dispossessed Compagnie Financière de Suez, and comprised the following:

1. The Channel Tunnel Company Limited, (in which the British Transport Commission is a shareholder.)
2. The Société Concessionnaire du Chemin de Fer Sous-Marin Entre la France et l'Angleterre, (in which the Société Nationale des Chemins de Fer is the main shareholder, constituting, with its associate The International Road Federation (Paris), the French Group.)
3. The Compagnie Financière de Suez.
4. Technical Studies Incorporated, of New York.

The members of the Group contributed equally towards joint studies which included the following:

- A. A Traffic Survey (1) examining basic operational factors for the separate assumptions of a road or rail tunnel, analysing present traffic between England and the Continent, its rate of growth, and of the traffic which would be diverted or created by the new route, and a study of charges and revenue.

- (1) The Economist Intelligence Unit, London. Societe d'Etudes Techniques et Economiques, Paris. De Leuw, Cather and Company, Chicago.

B. Technical Studies comprising:

- a. Geological studies. (2)
- b. Study of engineering methods, i.e. bored tunnel, immersed tube, bridge, and composite construction.
- c. Design for a bored tunnel, consisting of a rail tunnel and/or a road tunnel, separate but adjacent.
- d. Scheme for an immersed tube. (3)
- e. Bridge study. (4)
- f. Estimated costs and revenues for different types of construction.

C. Financial study of the implications of the traffic and engineering studies.

D. Legal study of the problems involved in creating a public service common to two countries, assuming financing and organisation by an international, privately-owned company.

The group's subsequent report, published on 28th March 1960, favoured, "in the first stage at least, a railway tunnel, bored or immersed" with facilities for the transportation of road vehicles by rail.

In December 1960, the Société d'Étude du Pont sur la Manche undertook further studies culminating, in October 1961, in a proposal for a 21 mile road and rail bridge linking Cap Blanc Nez to South Foreland.

- (2) J. M. Bruckshaw, Imperial College, London; J. Goguel, Ecole des Mines, Paris; W. O. Smith, U. S. Geological Survey.
- (3) Sir William Halcrow and Partners; Messrs. Livesey and Henderson; Messrs. Rendel, Palmer and Tritton, London; Société Générale d'Exploitations Industrielles, Paris.
- (4) Messrs. Parsons, Brinckerhoff, Quade and Douglas, New York.

On 17th November 1961, the British and French Ministers of Transport decided to set up a working group to look into and report on these two sets of proposals. Having considered the traffic, technical, legal, economic, and financing problems, the group concluded (1) that of the proposals they had studied, a tunnel would be preferable both to a bridge and "to the continuous use and development of established means of transport."

In 1966 the British and French governments agreed that the Channel Tunnel should be built provided that satisfactory financial arrangements could be agreed. Discussions on the choice of a group to arrange financing and construction continue. When a group has been decided upon, it will carry out a financial and technical feasibility study before approval is given for them to finance construction. The operation of the tunnel will be by a public authority comprising French and British officials.

Why Build a Fixed Link?

As remarked in the Introduction, one of the more curious aspects of the present chapter in the Tunnel's long history is the concentration of debate on how to build a link, rather than why. As The Times has observed; "..... the extraordinary thing is that no official case has ever been made for it: not the kind of case, that is, that ought to have been made for a project of such

(1) Proposals for a Fixed Channel Link, Cmnd. 2137. HMSO, September 1963, London.

magnitude, with important repercussions on regional and economic planning, and on our physical and political links with Europe." (1)

The Franco-British group who prepared the report presented to Parliament by the Minister of Transport in September 1963 did not, ~~however~~, consider that the repercussions would be significant, but also stated, in the same breath, that they thought them impossible to assess. The group's economic assessment of each system was "limited to the costs and benefits of its operators and users". (2) Even this, however, they acknowledged to contain a number of uncertainties, such as current developments in transportation technology, and unquantifiable elements such as amenity, which it was agreed would result in a difference in traffic generating power of a tunnel compared to that of a bridge.

Beyond this, the services which a fixed link would offer were summarised as increased cross-Channel traffic capacity, and a reduction in surface travel time, which would, for example, make the journey between London and Paris almost as quick by rail as by air.

There have been isolated cries of dissent in the correspondence columns of the usual newspapers, accusing the Government of, among other things, "a conspiracy of silence", and of plotting the destruction of a large part of

(1) Article by Michael Baily; The Times, April 3, 1968.

(2) P. 32, Proposals for a Fixed Channel Link. op.cit.

"what has always been known as the Garden of England". (1) Generally, however, the mass of the British public seems to have assumed - and its Government has indeed left it guessing - that the decision to build a Channel Tunnel is only natural in view of Britain's new-found interest in her affairs with Europe.

Construction and Location.

As present proposals stand, the Channel Tunnel would consist of two parallel single-track railway tunnels, each 21'4" in diameter, with a smaller service tunnel, 12'6" diameter, between and slightly below them. The Tunnel, which would probably be bored through the Lower Chalk, would rise to a peak in mid-channel, draining to coastal pumping stations. It would be located at approximately the narrowest part of the Straits of Dover, and its total length would be 32 miles, of which 23 miles would be under the sea. The two terminals, 44 miles apart, would be at Sangatte, four miles southwest of Calais, and at a still undetermined location between Ashford and Folkstone on the British side. (2) It is estimated that the tunnel could be in operation by 1976.

- (1) Lt. Col. R. L. Murray Lawes: Letter to The Times, April 8, 1968.
- (2) In a paper dated November 19, 1968, the Ministry of Transport considers Cheriton and Sellindge to be the options. (The Channel Tunnel: A Discussion of Terminal Requirements on the British Side and of Possible Locations for Terminal Facilities in Kent. Kent County Council, December, 1968.)

Types and Capacity of Service Proposed.

The Tunnel would have 25KV overhead electrification, and would be used by the following types of service :

- (a) Through rail freight services (including freightliner trains) between centres in Britain and on the Continent;
- (b) Fast inter-city passenger and car-carrying trains between centres in Britain (not only London) and on the Continent (not only Paris)
- (c) A fast and frequent shuttle service of specially designed "ferry-trains" running between terminals near the Tunnel portals and carrying up to 300 road vehicles (cars, caravans, lorries,coaches,;) per train. This ferry service would have a peak hour capacity of 12 trains, or 3,600 vehicles, per hour in each direction, over an eighteen-hour day. Transit time would be about 35 minutes, plus 30 minutes for waiting, loading, unloading, and customs inspection.
- (d) Possibly additional passenger trains of standard continental rolling stock and freight trains handled by continental locomotives. Because of loading gauge restrictions, such trains could run in the U.K. only as far as terminals near the Tunnel portal.

PART II : GREAT BRITAIN

TRANSPORTATION.

(a) Without the Tunnel.

This section describes the main lines of the national transportation network, including Britain's links with continental Europe, as it is now and, where sufficient information is available, as it seems likely to develop. The description is organized by mode, and each section includes a more detailed treatment of the present and predicted position in South East England, where the impact of a tunnel will be more directly felt. Throughout the section, extensive use has been made of maps. In the vicinity of the London-Paris-Brussels triangle however, the patterns of activity are so extremely complex and overlapping that, in the interests of clarity, the information has been repeated, this time by mode.

The National Network.

From the map in figure 3, showing the main arteries in Britain's transportation system, two facts are immediately apparent. First, national and internal communications are focussed on and dominated by London. Second, the system is predominantly north-south oriented, the two main land routes flanking the central spine of mountains and running sufficiently far inland to avoid being obstructed by the several estuaries which cut deeply into the main land mass, a pattern which differs little from that established by the Romans.

Cross-Channel Traffic.

The passenger and vehicular sectors of cross-Channel traffic are highly seasonal. Twenty-five per cent of the annual total is handled in August

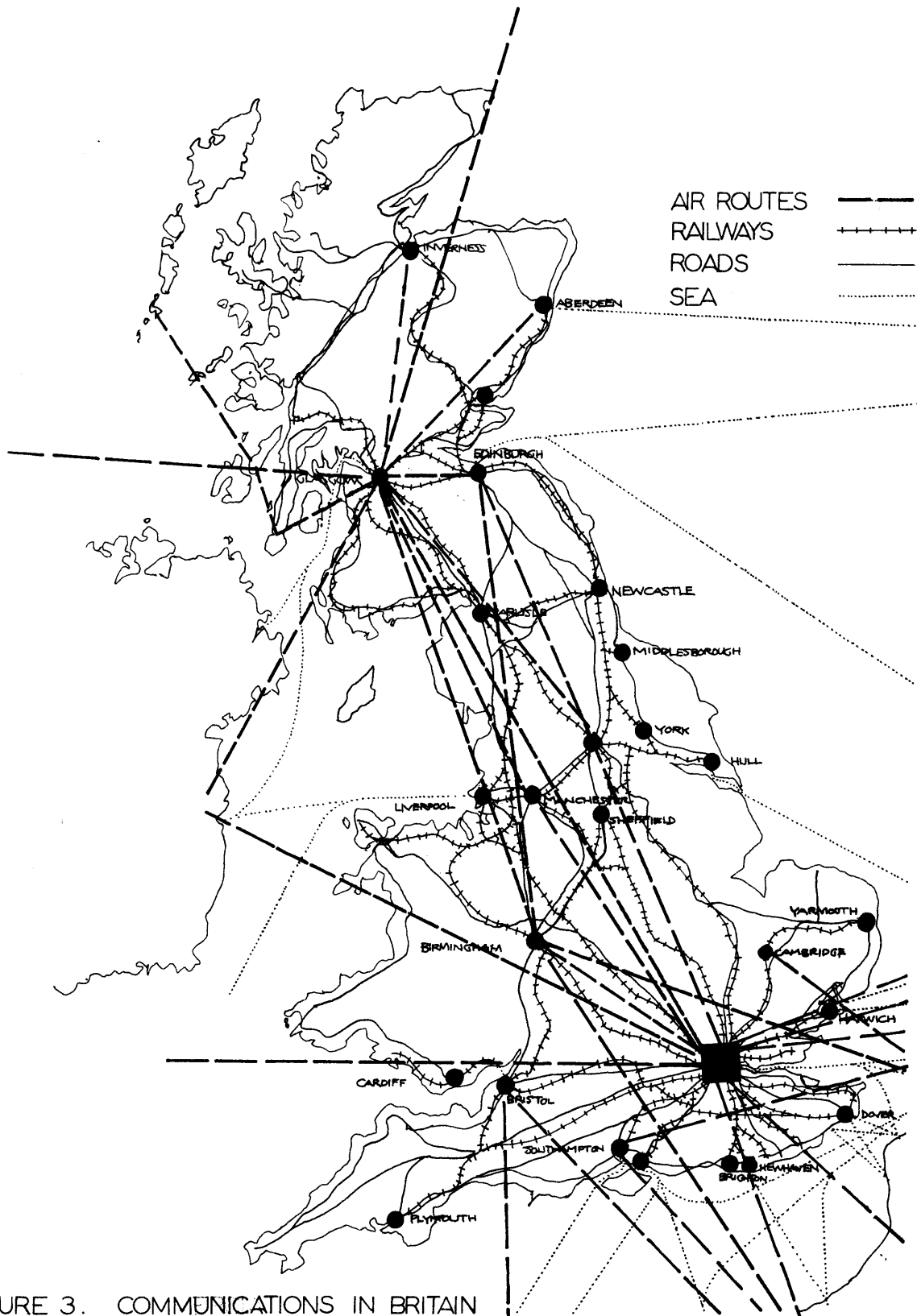
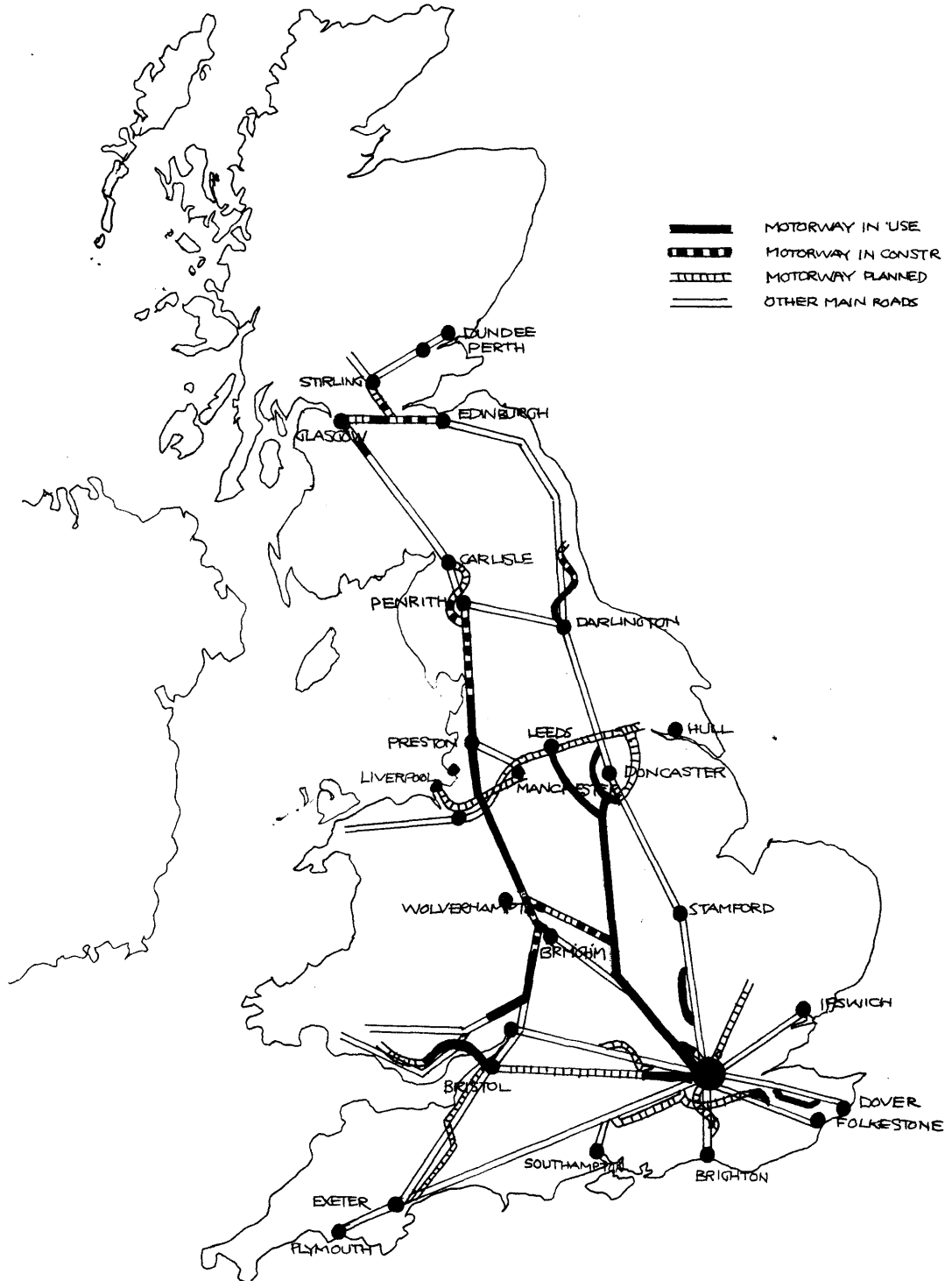


FIGURE 3. COMMUNICATIONS IN BRITAIN

alone, and 70 per cent within the four month period from June to September. Within this seasonal concentration, there is particularly heavy traffic at week-ends. Although the sea routes still carry the bulk of cross-Channel passenger traffic, the proportion going by air is increasing, particularly between Britain and the Low Countries.

FIGURE 4 MAJOR ROADS IN BRITAIN (1968)



SOURCE: BRITISH ROAD FEDERATION

Roads in Great Britain.

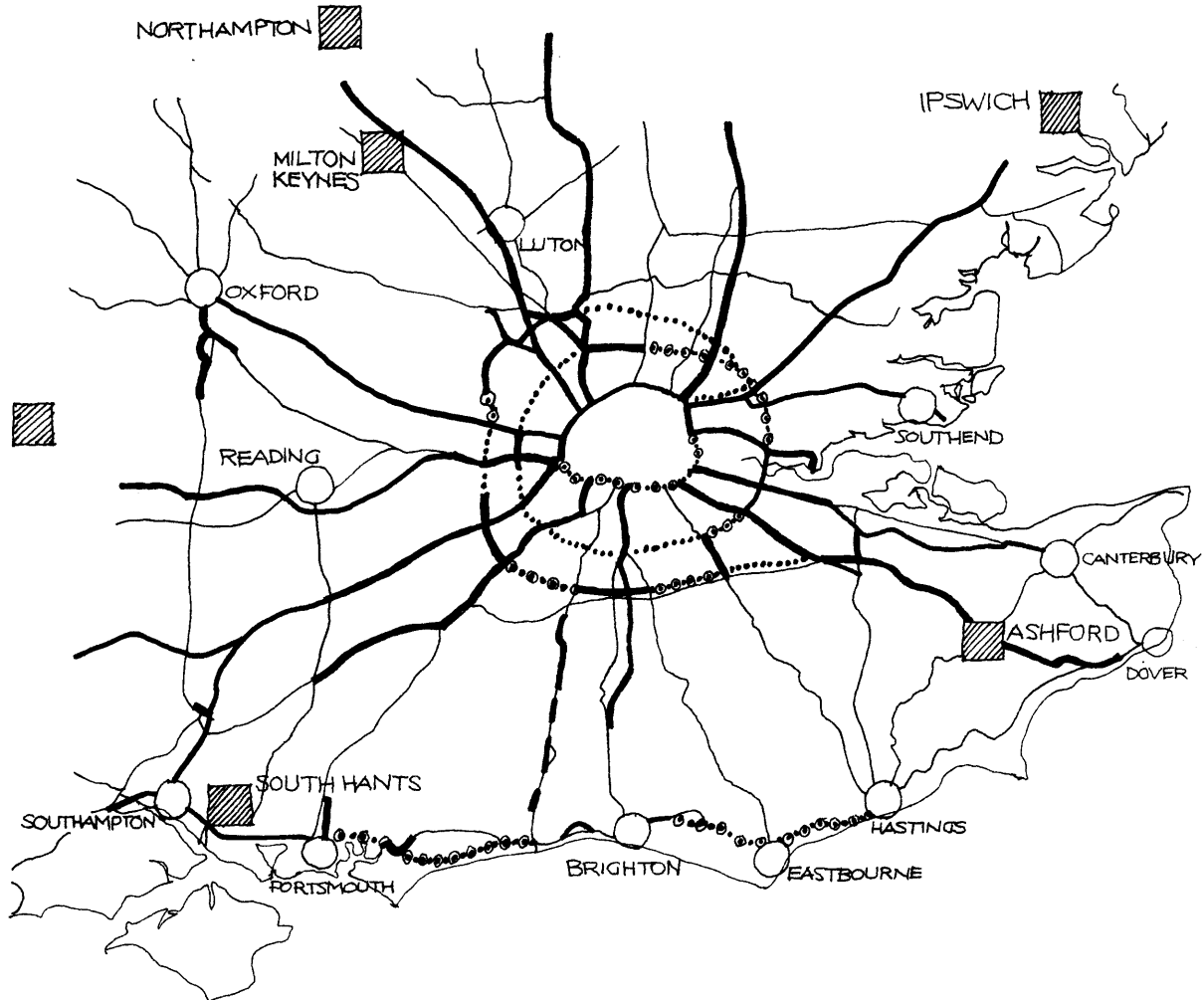
The form of Britain's public road system is derived from the interaction of the Roman system, conceived from a military standpoint, and the later Anglo-Saxon network, designed to meet the needs of an agricultural society.

The accompanying map, figure 4, shows the main lines of the motorway (similar to U.S. freeways) system presently under construction, as it now exists and as it is proposed. As with communications generally, the overall pattern is one of north-south orientation with radial development around London. The system, as can be seen from the map, is by no means without interruption at present. Further, because of delays and lack of money, the Government's target of 1000 miles of motorway by 1973 is certain not to be met, and even if it were, it would be quite insufficient to provide an adequate system between the South-East and the lagging regions of Wales and the North.

Roads in the Southeast

Although the South East Economic Planning Council reported (1) that the location of existing route network in the region was well suited to anticipate development, it stressed that its capacity was not. It pointed to a 'very fast' increase in the amount of traffic, and in view of the expected importance of the passenger sector in total tunnel traffic, it is worth noting that while the number of all

(1) Strategy for the South East. A first report by the South East Economic Planning Council. HMSO 1967.



Roads to be completed to high standard by 1975
already in existence: —————

Other important roads: —————

Road proposals after 1975:
priorities:

-o-o-o-o-

FIGURE 5. ROADS IN THE SOUTH EAST.

vehicles in the South East doubled between 1951 and 1964, private cars increased almost threefold, and their number is expected to have doubled again, to approximately six million, by the late 1970's.

The council frankly recognised that the investment resources available were incapable of meeting the predicted demands for new construction, but established certain 'strategic priorities'. The map in figure 5 summarises these recommendations. Finally, the long standing economic plight of the United Kingdom has caused highway construction programmes to fall behind schedule, and it is by no means clear that even these 'strategic priorities' will be met. Special importance is given to ring road construction, with the intention of keeping as much traffic as possible - 'e.g. from the Channel Tunnel' - out of the London area, and the urgency is also stressed of substantially improving the south coast route linking eastwards with the developments in Kent and the Channel Tunnel, and westwards to South Hampshire.

Railways in Britain.

Rail communications (see figure 6) in Britain, like roads, focus on London, with relatively poor east-west communication between the main lines to the north.

Railways in the South East

A map of the main rail routes in South East England is given in figure 7.

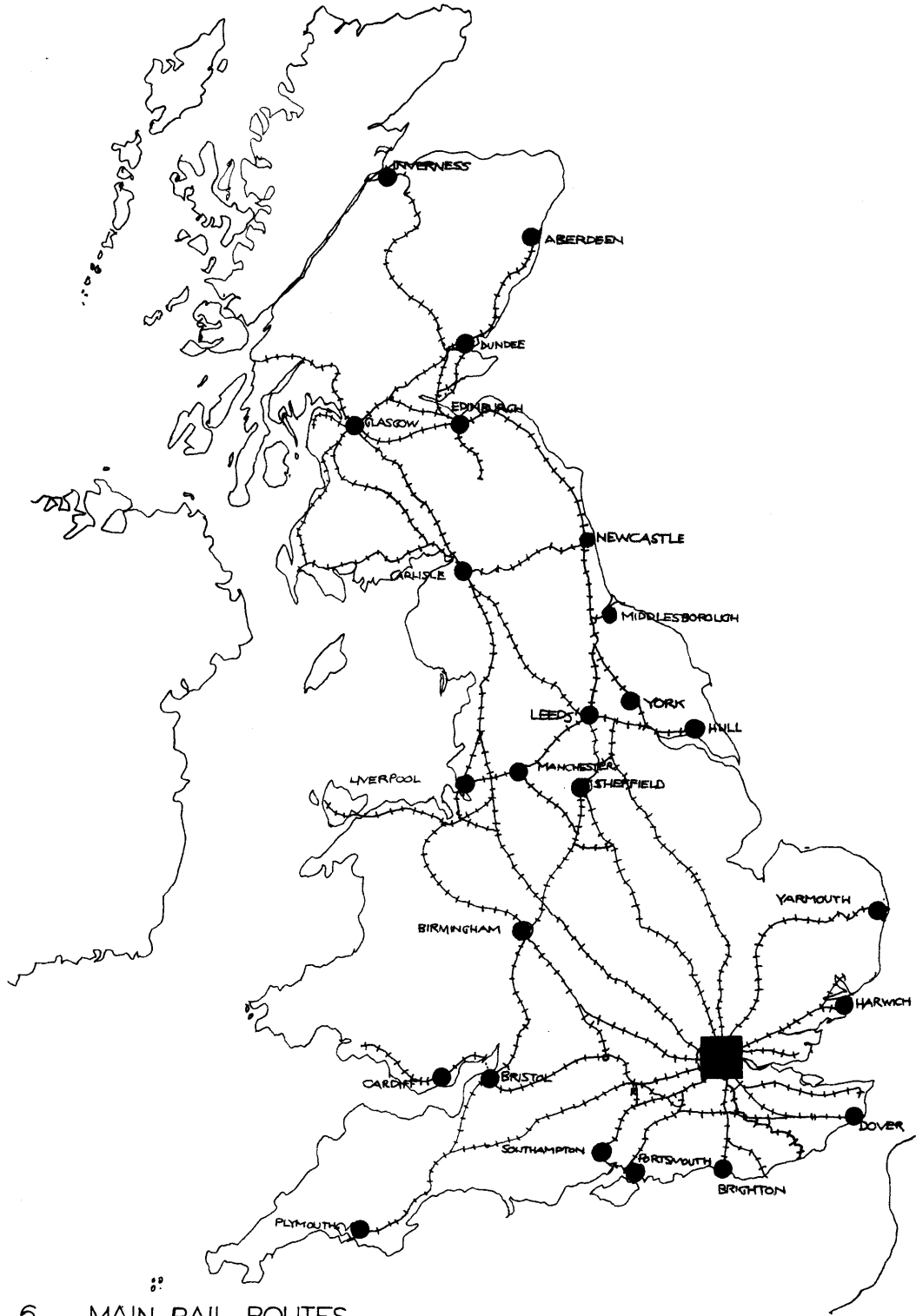
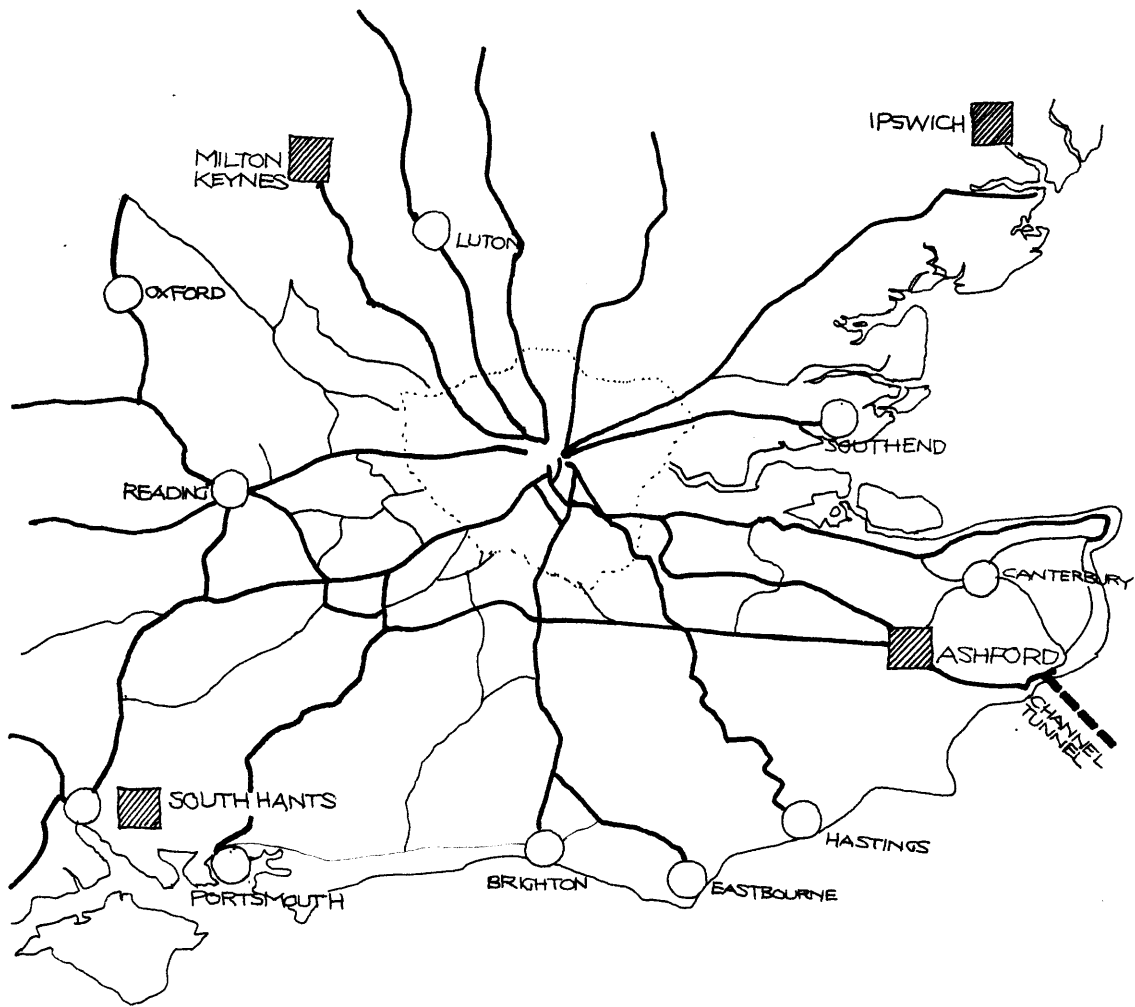


FIGURE 6 MAIN RAIL ROUTES



Main lines **————**
Other routes **————**

FIGURE 7. RAILWAYS IN THE SOUTH EAST. (Source: A Strategy for the S.E.)

The lines radiating to the south and to Essex are heavily used, (1) but there is considerable unused capacity on trunk lines to the north and north west. Although improvements and further electrification of existing lines are proposed, no new routes - other than the Tunnel - or major increases in capacity are considered necessary. Official studies on the probable effect of both the Channel Tunnel and the third London airport have not, however, been completed, although naturally both factors are expected to make an impact.

Shipping.

Although there is some sea traffic between continental Europe and the more northerly east coast ports, such as Hull and Leith, the great bulk of sea trade with Europe is handled by the ports between Southampton and Harwich. The ports in the south east handle more than 35 per cent of Britain's total freight traffic, mostly on the Thames and Medway, but also through Southampton. Although the remaining ports account for only five per cent of the region's freight traffic, the short sea routes are heavily used, and expanding fast.

By far most of the region's passenger traffic is cross-Channel, but the deep sea passenger traffic in and out of Southampton accounts for 65 percent of the national total.

(1) Of the 1.2 million people entering central London each morning rush hour, 40 per cent travel by British Rail, and a further 50 per cent by London Transport.

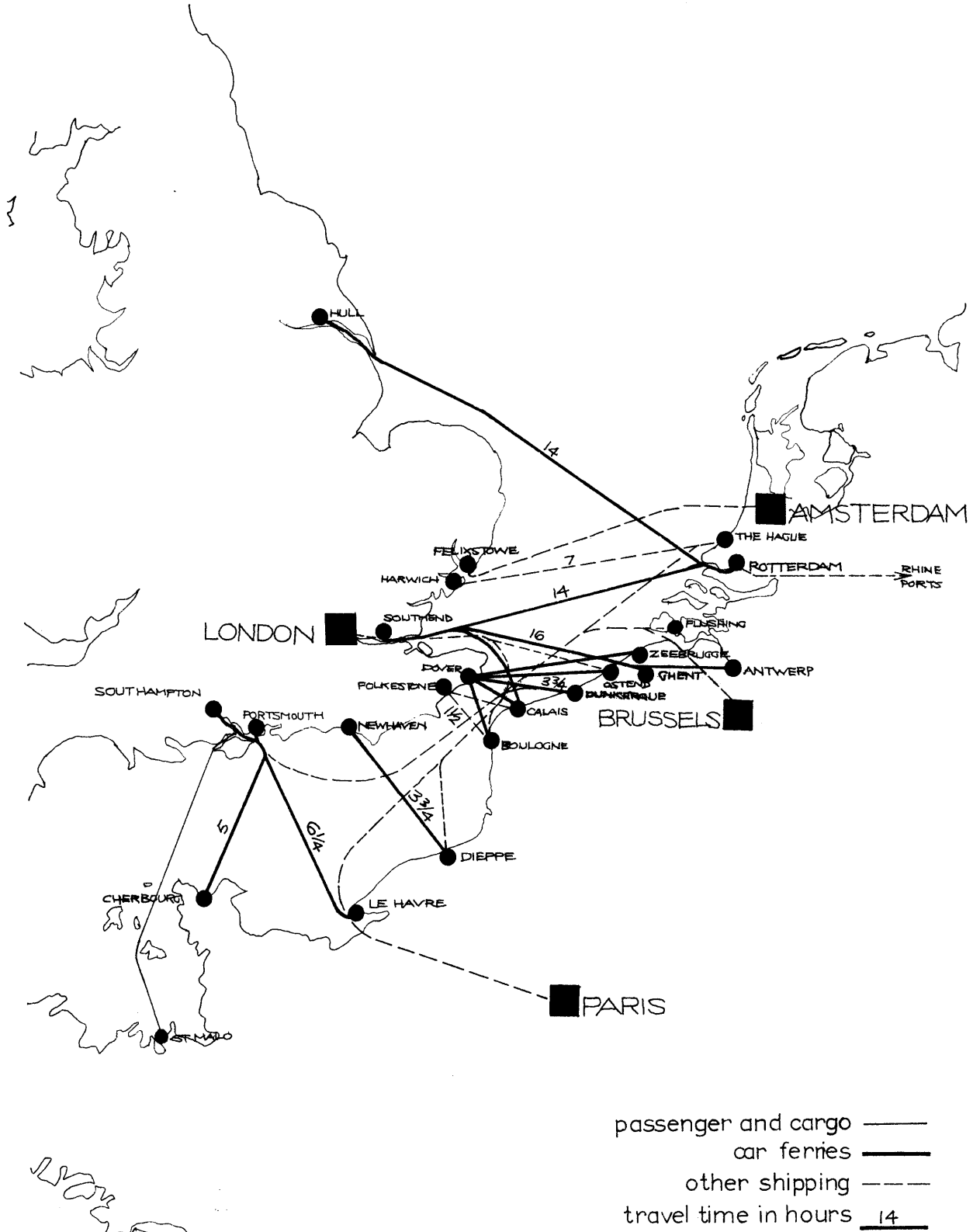


FIGURE 8

MAP OF CHANNEL SHIPPING LANES

In the future there is likely to be continued expansion of the London docks in a down river direction, and further expansion of facilities for handling container traffic.

Main Channel shipping lanes are shown, with typical travel times, on the map in figure 8.

Finally, developments in 'ro-ro' (roll on, roll off) ships and containerization have caused sea freight rates to fall by as much as 40 per cent, and high capital investments have been made in the container field, with British Rail undercutting their rivals to gain the high utilization required.

Air Transport

Although there are several direct flights from the provinces, most air services between centres in Britain and those in Europe go through London, utilising the capital's 64 routes to the continent, a factor which has contributed to the intensity of traffic on certain internal lines. The Glasgow-London service, for example, with 700,000 passengers in 1968, is the busiest in Europe.

In 1966, London's two international airports handled 13.5 million passengers, which is 13 per cent more than the previous year. Freight traffic is increasing by about 20 per cent annually. A third major airport, to handle all types of traffic, long medium, and short haul, is proposed, although its location remains undecided.

Several smaller airports in the South East ferry cars, passengers, and limited amounts of freight across channel. Until the recent advent of hovercraft services, these provided the only alternative to the traditional ferries for

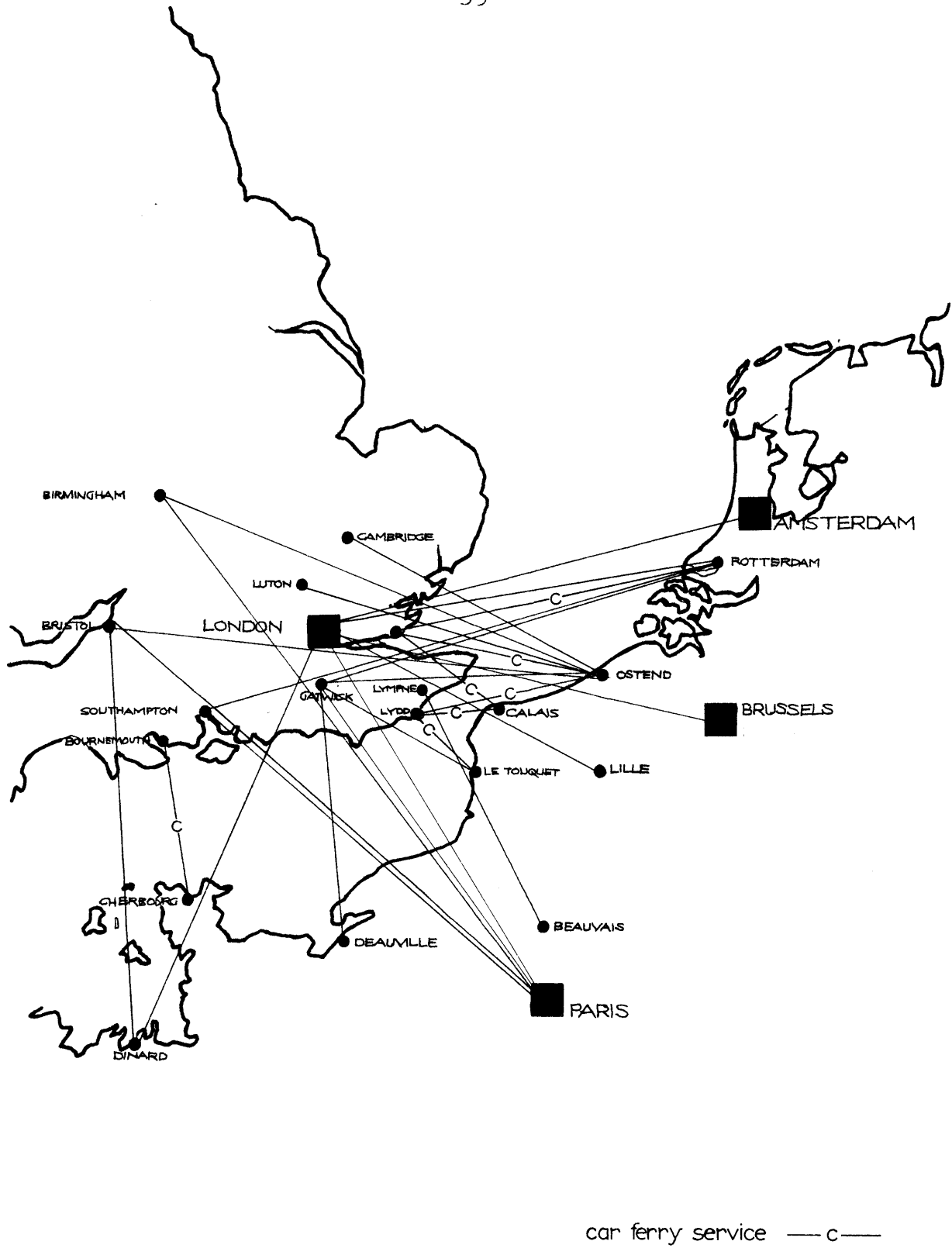


FIGURE 9

MAP OF CROSS-CHANNEL AIR SERVICES

motorists, and are well patronised, although delays during peak season often cancel out any time advantage over other modes.

Hovercraft

The first regular cross-Channel hovercraft service was inaugurated in the summer of 1968 by British Rail's Seaspeed organization, operating a \$4,200,000 SRN "Mountbatten" craft between Dover and Boulogne. As a commercial proving exercise, the operation was generally successful, and a second craft of the same type will be added in 1969. Each craft can carry 254 passengers and 30 cars, and takes 40 minutes to complete the crossing. A new service will also be opened this year between Calais and the newly constructed terminal at Ramsgate. Operated by Hoverlloyd, Ltd. this service, the most ambitious commercial application of hovercraft yet, will make up to 26 crossings daily, with a journey time of 40 minutes.

The outlook for passenger hovercraft on Channel routes is by ^{no} means certain, but it would appear to be promising. The outlook for freight traffic is less so. The amount of time saved is of less value than it is to passengers, and the cost is higher. For high value cargo, air freighters may prove faster and cheaper. (1)

The map in figure 10 shows the existing routes.

(1) The Times, (Business News), April 2, 1969

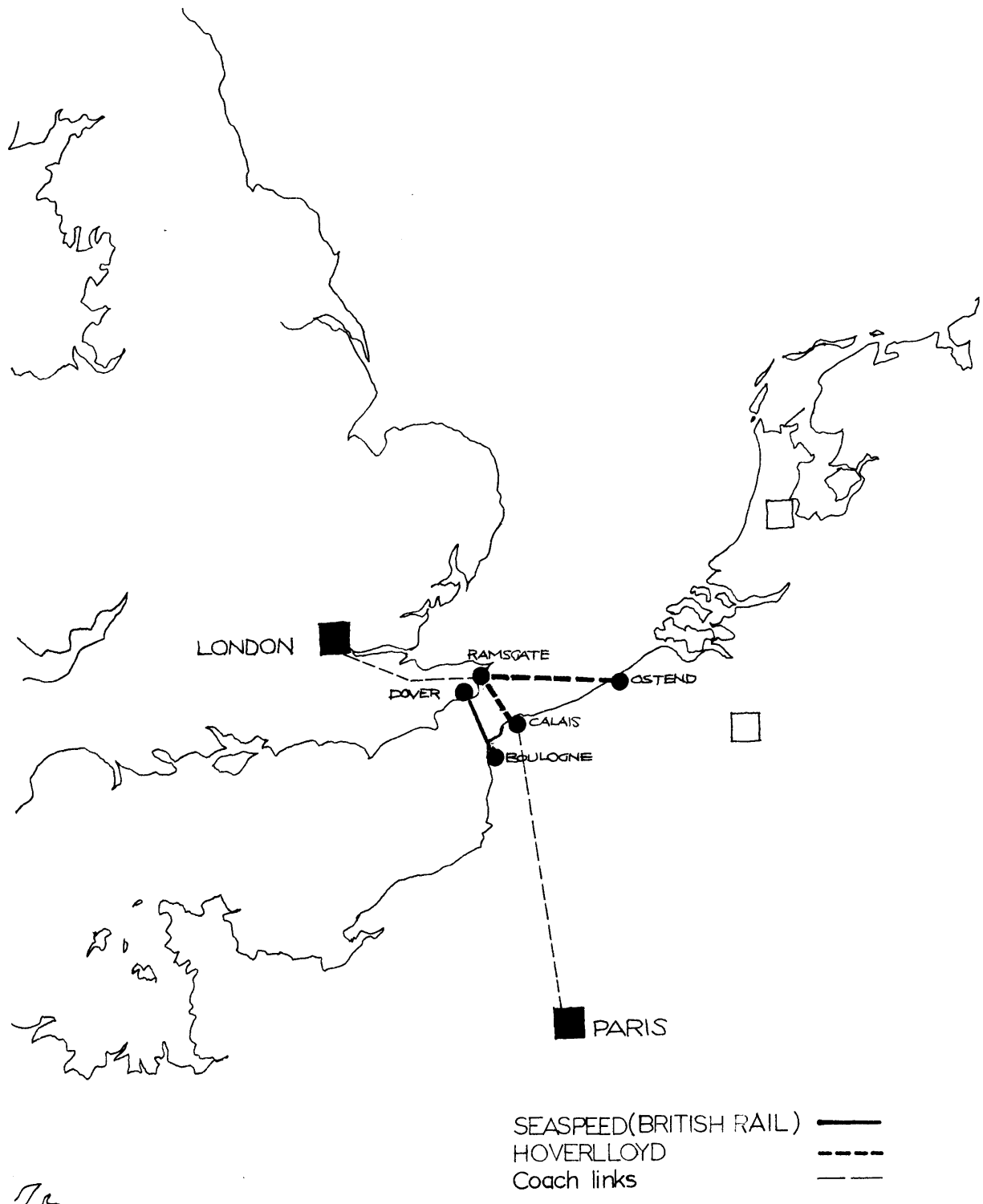


FIGURE 10: HOVERCRAFT ROUTES OPERATIONAL IN 1969,

TRANSPORTATION :

(b) With the Tunnel.

This section deals with the effects of the tunnel's completion upon existing patterns of passenger, vehicular and freight traffic. The facilities typically provided by existing mode of cross channel transportation are compared in terms of time, cost and convenience with the sort of service envisaged by the current tunnel proposals outlined in the previous section.

The investigations carried out on behalf of the Channel Tunnel Study Group represent the most up-to-date comprehensive source available, but the consultants' report (1) was published in 1960, on the basis of data collected in 1958, so that the last full year for which information was obtained was 1957. There have been developments since then which ought to be taken into consideration. Apart from technological advances, such as hovercraft development and the growth of containerization, the estimated cost of the tunnel has gone up considerably. From the \$338.4 million of the 1963 proposal (2), the estimate has risen to \$720 million, and another \$24 million is added with every year that passes.

1. Channel Tunnel Traffic and Revenue Summary . op. cit.
2. **After** subtracting a credit of \$57.6 million which the sponsors allowed themselves for the sale of ships and aircraft put out of business by the Tunnel.

Rail/Sea Passenger Traffic.

At present, the "Golden Arrow" train-ferry-train service via Dover and Calais takes eight hours. The "Night-Ferry" which operates via Dunkerque, and has through sleeping cars, takes eleven hours. Overall trip time between London and Paris rail terminals via the Channel Tunnel would be about four and a half hours, offering a saving of about three and a half hours over a fast, rail service. The introduction of direct services between provincial British cities and Europe would offer even greater savings.

It is proposed that the Tunnel charges would be similar to those on the present Dover-Calais ferries, so no change in overall rail fares is anticipated.

Obviously, a tunnel route would avoid the present inconvenience of intermediate changes from train to boat and back again. There has been some discussion of the problem of the stress involved in such a long tunnel trip, but from the precedents of the London tube and the Paris Metro, it seems unlikely that this will pose serious problems to many people, and will probably be seen as fair exchange by those prone to seasickness.

Of the eleven main cross-channel sea routes (excluding hovercraft routes) presently operating, the Channel Tunnel Study Group's consultants were instructed to assume that six now operated by the British and French Railways would be discontinued on the opening of the tunnel. This would

represent approximately half of all passengers by sea in 1957. (see table below).

Sea Passengers by Route in 1957 (excluding those in vehicles)

Route	Carried by Sea in 1957	Percent of Total
To be discontinued		
Dover-Boulogne	35,000	1.1
Dover-Dunkerque	88,000	2.8
Dover-Calais	387,000	12.1
Newhaven-Dieppe	322,000	10.1
Folkestone-Boulogne	320,000	10.0
Folkestone-Calais	377,000	11.8
Total to be discontinued	<u>1,529,000</u>	<u>47.9</u>
To remain		
Dover-Ostend	868,000	27.2
Harwich-Hook	478,000	14.9
Southampton-Le Havre	57,000	1.8
Harwich-Esbjerg	56,000	1.8
Southampton-St.Malo	35,000	1.1
Other Routes	168,000	5.3
Total to remain	<u>1,662,000</u>	<u>52.1</u>
Total carried by sea	3,191,000	100.0

Source: Channel Tunnel Traffic and Revenue Summary, Section 1. op.cit.

Air Passenger Traffic

Between city centres, the London-Paris journey by air takes approximately four hours (less than one of which is actually flying time). The projected rail route via the tunnel would thus still be slower, but only marginally so, at four and a half hours. It would be cheaper, at \$11.20 second class, compared to \$22 tourist by air.

The coach-air-coach service between London and Paris via Lympne and Beauvais, with a journey time of six hours and a single fare of \$11.80 would appear unable to compete with the four and a half hours and \$11.20 offered by the tunnel route, on which intermediate changes would be unnecessary.

Passenger Survey

During peak and off seasons in 1958, origin-destination surveys were carried out on all main cross-Channel passenger routes to determine travel patterns and the reasons for choice of route and travel mode. Analysis of the data indicated a direct relationship between the cost of using a route and the number of passengers who used it. Allocation curves were derived to assign passengers to the Channel Tunnel. The number of passengers estimated to be divertible increased with the relative saving offered by the Tunnel. Approximately 68 per cent of the passenger traffic estimated to be diverted to the Channel Tunnel will come from the discontinuation of the six sea routes mentioned. The remainder were reckoned to come from continuing sea routes and

some of the existing short haul air routes.

Existing and Estimated Diverted Passenger Traffic (1)

Passengers	1957 Actual	1965 Estimated Without Tunnel	1965 Estimated Diverted to Tunnel
Sea- Discontinued routes	1,529,000	2,170,000	2,170,000
Retained routes	1,662,000	2,358,000	428,000
Sub-Total	3,191,000	4,528,000	2,598,000
Air- Regular Route			
London-Paris			
London-Belgium	1,032,000	2,837,000	532,000
London-Netherlands			
Other Routes	1,527,000	4,043,000	50,000
Sub-Total	2,559,000	6,880,000	582,000
TOTAL	5,750,000	11,408,000	3,180,000

1. Source: Channel Tunnel Traffic and Revenue Summary, Section 1, opcit.

Projected train times between city centres on routes between London and Paris, London and the Netherlands, London and Belgium, compare quite favourably with air travel times, and it was estimated that 70 per cent of these constituted potential passengers, 25 per cent of which would be directed to the Tunnel.

Future Growth of passenger traffic

The consultants estimated that passenger traffic would increase approximately in proportion to the increase of national income in the countries served by the Tunnel, resulting in a projected increase in the number of passengers carried, from 3,180,000 in 1965 to 5,092,000 in 1985.

Vehicular Traffic :. General

In 1957, 81.6 per cent of 285,000 accompanied vehicles crossed the Channel by sea, and 18.4 per cent by air. The average vehicle occupancy was just over three persons. Services were fully booked during the peak months - particularly August - with a great deal of unused capacity during the rest of the year.

Of the 233,254 accompanied vehicles which crossed the Channel on six main routes, 165,789 were carried on four routes which would be discontinued on the opening of the Tunnel.

Substantial numbers of vehicles are ferried across the Channel by air.

In 1951, 52,600 (of which 44,600 were passenger vehicles) did so ,

compared with 2,700 in 1949.

The tunnel charge of \$20 for a private car with three passengers would be half that of the cheapest air ferry. Origin-destination surveys of accompanied vehicles showed a direct relationship between the cost of a particular route and the number of motorists using it. Time, distance and fares were assigned monetary values, and allocation curves derived to assign motorists to the Channel Tunnel. Two-thirds of those divertible were estimated to come from discontinued sea routes, the remainder from air and other sea routes.

Induced Increase in Vehicular Traffic

In the years immediately following the replacement of a ship or ferry service by a form of fixed link, additional traffic is generated, partly because of improved service, but also because of lower travel costs and changes in travel (vacation and business) habits. Relating the percentage of generated traffic to the fare charged, the consultants estimate that generated traffic would be approximately 60 per cent of diverted traffic.

Finally, relating growth in accompanied vehicular traffic to increased vehicle registration, and that in turn to rise in per capita GNP, the 1965-85 traffic estimates were as follows :

Year	Number of Vehicles
<hr/>	<hr/>
1965	676,000
1970	833,000
1975	990,000
1980	1,127,000
1985	1,196,000

(Source : Channel Tunnel Traffic and Revenue Summary . op.cit.)

Since the preparation of the consultants' report, the general sensitive economic situation in Europe, and particularly in Britain, has put a brake on the growth of tourism, and also on the increase in numbers of motor vehicles registered. In this connection, it should be noted that 75 per cent of cross-Channel vehicular traffic is registered in Britain.

Freight

Of Britain's 5,700,000 tons of imports and 4,800,000 tons of exports in 1957, two-thirds were in bulk form and were carried at rates so low that the Tunnel charge of \$5 per ton could not compete. Of the bulk imports, 70 per cent were fertilizers, grain, ores and scrap, and 20 per cent coal and coke. Bulk exports were mainly coal and coke. Of the remaining 3,500,000 tons not in bulk form, it was estimated that one third would be diverted to the tunnel. Nearly 500,000 tons of freight a year, or 15 per cent of the Tunnel's potential total is at present carried by the two rail ferries and the Tilbury-Antwerp vehicular ferry as follows :

Dover-Dunkerque	240.000 tons	(1957)
Harwich-Zeebrugge	225.000 tons	
Tilbury-Antwerp	7.000 tons	(20.000 in 1958)

Hovercraft

Since the Channel Tunnel Study Group's consultants prepared their estimates, hovercraft services have begun to operate on a commercial basis between Dover and Boulogne, and from Ramsgate to Calais or Ostend. Crossing times are similar to the projected rail time via the Tunnel, and the cost is highly competitive. Dover-Boulogne by British Rail's Seaspeed service costs \$7.20 single for passengers, compared to the Tunnel's projected fare of \$6.85. Even more interesting is this year's \$9.60 single fare for the bus-hovercraft-bus service from London to Paris or \$9.30 to Ostend.

These prices would appear to be thoroughly competitive on ferry shuttle traffic, although about 90 minutes slower on, for instance, the London-Paris trip. The Ministry of Transport has asked that additional work be done on the competitiveness of these services, and also on the matter of containerization, to ascertain their effect on the economic viability of the Tunnel.

For freight transportation, as remarked earlier, there is no indication yet that hovercraft will be sufficiently competitive to upset existing trends.

REGIONAL DEVELOPMENT POLICY IN BRITAIN

FIGURE 12



STANDARD REGIONS OF GREAT BRITAIN.

This section deals with regional development policy in Great Britain - so far as one may be said to exist on a national scale. Its main concerns will be identified, the present situation and trends in these areas described, and current policy summarised. A later section will look at how these factors are likely to be affected by the sorts of changes in the transportation network which would result from the construction of a Channel Tunnel.

In view of the relatively widespread and long-standing acceptance of planning, not to say Government intervention, in Britain, it is surprising to reflect that the first comprehensive regional plan (for Central Scotland) did not appear till 1964. Others have followed hard on its heels, but so far no mechanism seems to have emerged to ensure the matching of these individually constructed pieces to form a coherent whole.

Although no truly comprehensive national plan exists, there is, however, national policy on certain issues such as regional economic development. Since its beginnings in the late 1920s, Government policy in this field has been primarily an employment policy - or, rather, an unemployment policy - aimed at reducing the level of unemployment in those places where it has been markedly higher than the national average.

While the aim has remained the same, the strategies adopted over the years have varied. Initially, the emphasis was on the movement of labour,

first in mining, later in other industries, from areas of high unemployment to more prosperous regions, and it is ironic to reflect that grants were actually available to enable people to migrate south and east. Although this policy was coupled with a retraining scheme, without an accompanying increase in the aggregate demand for labour, the net effect was to redistribute unemployment, rather than to reduce it in any real sense. As one Lanarkshire M.P. put it, some thirty years later, there were unemployed men teaching other unemployed men a new skill, which would leave them unemployed. (1) The relevance of this to present policy is, quite simply, that public dislike of policies involving transference of labour, and scepticism about training schemes, was greatly strengthened by the failure of these early efforts.

Having rendered the policy of moving people to jobs politically unacceptable by failing to couple it with real economic growth, successive Governments since the late 1930s have concentrated instead on trying to move jobs to people. It may be argued that this is not really very different, that in economic terms the second approach may be more disastrous than the first, and that to treat unemployment as the problem rather than a symptom of one is altogether the wrong approach. In any case the uneven distribution of unemployment has not only persisted, but has changed little in form, although levels of unemployment are generally lower than before World War II. The areas most affected are Scotland, Wales, the North of England, certain parts

(1) Tom Fraser, M.P. for Hamilton. Hansard, April 8, 1963.

of Lancashire, and parts of Cornwall and Devon. Some of these regions are of course agricultural, but of the others, many were among the first in Britain to industrialise, and became increasingly specialised in and dependent upon activities such as coal and steel production, shipbuilding, textile manufacture, and heavy engineering. The demand for labour in these industries has, however, been declining since the 1920s, and the newer consumer-oriented industries which began to be established, particularly after World War I, tended to locate near to the rich markets of the Midlands and the South.

Various frictions within the situation have inhibited the development of market solutions. Wages have been downwardly inelastic, and no wage differential emerged, even under conditions of widely varying levels of unemployment, sufficient to cause business to move of its own free will. Finally, any tendency there might have been for people to follow jobs, or such wage differentials as did develop, has been greatly hampered by the severe housing shortage, particularly in the more prosperous areas, where the price of land has risen sharply.

With no market solution forthcoming, and with policies involving the fostering of migration discredited, governmental intervention, since the Special Areas Act of 1934, has focussed on the creation of jobs in areas of high unemployment by inducements to industry to go there, and the discouragement or prevention of development in areas where unemployment levels are low.

The principal means of implementation have been in the form of loans and grants available to firms prepared to set up in Development Areas, and a system of Industrial Development Certificates which applies to all industrial buildings over 5000 square feet in area. I.D.C.s are automatically granted if a firm wants to build in a Development Area, but are refused in more prosperous areas (generally south and east of Stoke-on-Trent) unless the Board of Trade can be convinced that such a development is incapable of being carried out reasonably successfully in a Development Area.

This has not always had the desired effect. Some firms which have been refused permission to develop in the location of their choice have simply decided not to expand at all; others have made more intense use of existing premises, and last - but not least - some have responded to Government interference by going outside Britain altogether.⁽¹⁾

These policies have, to their considerable detriment, been subject to a " stop-go " form of implementation as the country's financial crises wax and wane; the prompt de-listing of development areas as soon as unemployment drops below the critical level does not produce a climate conducive to sound industrial planning. Finally there has been a drastic lack of coordination among the various Government departments involved. The Board of Trade, however, is quite explicit

1. The Economist , July 22, 1961 .

about the independence of its decisions on employment policy from national economic considerations, a point of view not shared by the Treasury, If the Board of Trade were advised that a firm would be viable in Durham or Fife, the Board would not consider whether the national economy would be better served by the firm's being placed in the South of England. (1) In a statement to the Select Committee, a Board of Trade official stated that " in one sense one could say that it (expenditure on local employment policy) was all of a social service nature". (2)

A detailed critique of regional policy is not relevant here (3); what it is ~~important~~ important to make clear is that, in spite of the lack of coordination among the Board of Trade, the Treasury, the Ministry of Transport and the other departments concerned, the first objective of regional development policy in Britain emerges quite clearly as the alleviation of regional differentials in unemployment levels, irrespective of whether the measures necessary to achieve this end are of benefit to the nation's economy as a whole.

1. Seventh Report from the Estimates Committee, Session 1962-63, Administration of the Local Employment Act, minutes of evidence, question 264.
2. Ditto, question 1323.
3. A good short one exists, by Allan J. Odber, in " Area Redevelopment Policies in Britain and the Countries of the Common Market ", prepared by the Institute of Industrial Relations, UCLA, and published by the U.S Department of Commerce . January 1965

The unemployment situation in the various regions in recent years is given in the table below, and the map in figure 12 shows the extent of the designated Development areas.

Unemployment Rates, by Region 1959-62 Monthly Averages

Regions	1959	1960	1961	1962	Average 1949-62
London and South Eastern	1.3	0.9	1.0	1.3	1.1
Southern	1.5	1.2	1.1	1.4	1.2
South Western	2.2	1.7	1.4	1.8	1.6
Midland	1.5	1.0	1.4	1.8	1.0
North Midland	1.5	1.1	1.0	1.4	.9
East and West Ridings of Yorkshire	1.9	1.2	1.0	1.6	1.2
North Western	2.8	1.9	1.6	2.6	2.0
Northern	3.3	2.8	2.5	3.8	2.5
Scotland	4.4	3.6	3.1	3.8	3.1
Wales	3.8	2.7	2.6	3.8	3.0
Great Britain	2.2	1.6	1.6	2.1	1.6

The second major concern of regional policy in Britain, related to the first, is the matter of population distribution, and particularly of congestion in large urban areas. The effect of migration is to aggravate not only the problems of areas which the government sees as already congested, but also those of the declining areas. The selective nature of voluntary migration has caused the age distribution in these areas to become steadily more lop-sided, with the labor force deteriorating into a pool of obsolete skills.

In 1937, the Royal Commission on the Distribution of the Industrial Population (Barlow Commission) was formed " To inquire into the causes which have influenced the present geographical distribution

of the industrial population of Great Britain and the probable direction of any change in that distribution in the future; to consider what social, economic or strategical disadvantages arise from the concentration of industries or of the industrial population in large towns or in particular areas of the country; and to report what remedial measures if any should be taken in the national interest."

This was the first time an official body was implicitly asked to examine facts and trends in the related problems of urban congestion and regional stagnation. The Commission stated: " The disadvantages in many, if not in most of the great industrial concentrations do constitute serious handicaps and even in some respects dangers to the nation's life and development and we are of the opinion that definite action should be taken by the Government toward remedying them. ". It is unfortunate that they were not asked to, and did not, consider the advantages as well as the disadvantages of concentration.

The commissioners were not unanimous in their recommendations. The majority report advocated a ban on the establishment of new industry in London and the Home Counties, and the " creation of more favourable conditions of life and work in other parts of the country " to counteract the attraction of London.

A minority of three proposed the formation of a new Ministry, to be responsible for a continuous review and a general control over the

ever changing industrial and social environment. Neither report was accepted, and responsibility for the various components of what might have been a national planning policy was dispersed among several Government departments. None the less, congestion has remained a major concern, and considerable progress has been made in the overspilling of population from centres such as London and Glasgow to New Towns and other areas.

National Population Growth and Density.

In mid-1968, the estimated population of the 94,214 square miles which make up the United Kingdom of Great Britain and Northern Ireland was 55,459,000. Current projections by the Government Actuary's Department in conjunction with the Registrars General suggest an increase of rather more than two million people by 1975, taking into consideration factors such as the Commonwealth Immigration Act of 1962, a net loss by migration, and a downward trend in the nation's birth rate. The total population for the year 2000 is presently estimated at 70,339,000, or an increase of just over 20 per cent on the figure for 1969.(1).

The present overall factor of 588 persons/square mile places Britain among the more crowded countries in the world, although in a purely European context the Netherlands, Belgium, and West Germany all have higher densities. Of these, however, only the Netherlands with 969 persons/square mile surpasses the figure for England alone, of 897 persons/square mile.(2)

(1) Annual Abstract of Statistics. HMSO, 1968.

(2) Rad McNally World Atlas. Rand McNally and Co., 1968.

Regional Distribution.

It can be seen from the preceding passage that the distribution of population among the regions is uneven. With just over half the land area, England has over 80 per cent of the total United Kingdom population. Furthermore, distribution within England itself is uneven, the great majority of people being concentrated in the urban areas of the Midlands and the South. The South East region alone contains over 35 per cent of the United Kingdom total, with Greater London, dominating the administrative, cultural, and commercial life of the country, accounting for some eight million.

To a considerable extent, the general picture of national population distribution reflects patterns of activity which evolved during the Industrial Revolution. Although the industries of that period have in many cases been replaced in significance by other, newer industries, often in different locations, the former pattern of population distribution has tended to linger on. Despite a distinct sluggishness in the redistribution of population to fit 20th century patterns of industrial location, the general trend since World War II has none the less been one of movement particularly of young skilled people from areas of high unemployment to those where it has been lower. The steady outflow from Scotland, Wales, and the North of England, with a consequent depopulation of the northern and upland areas of Britain,

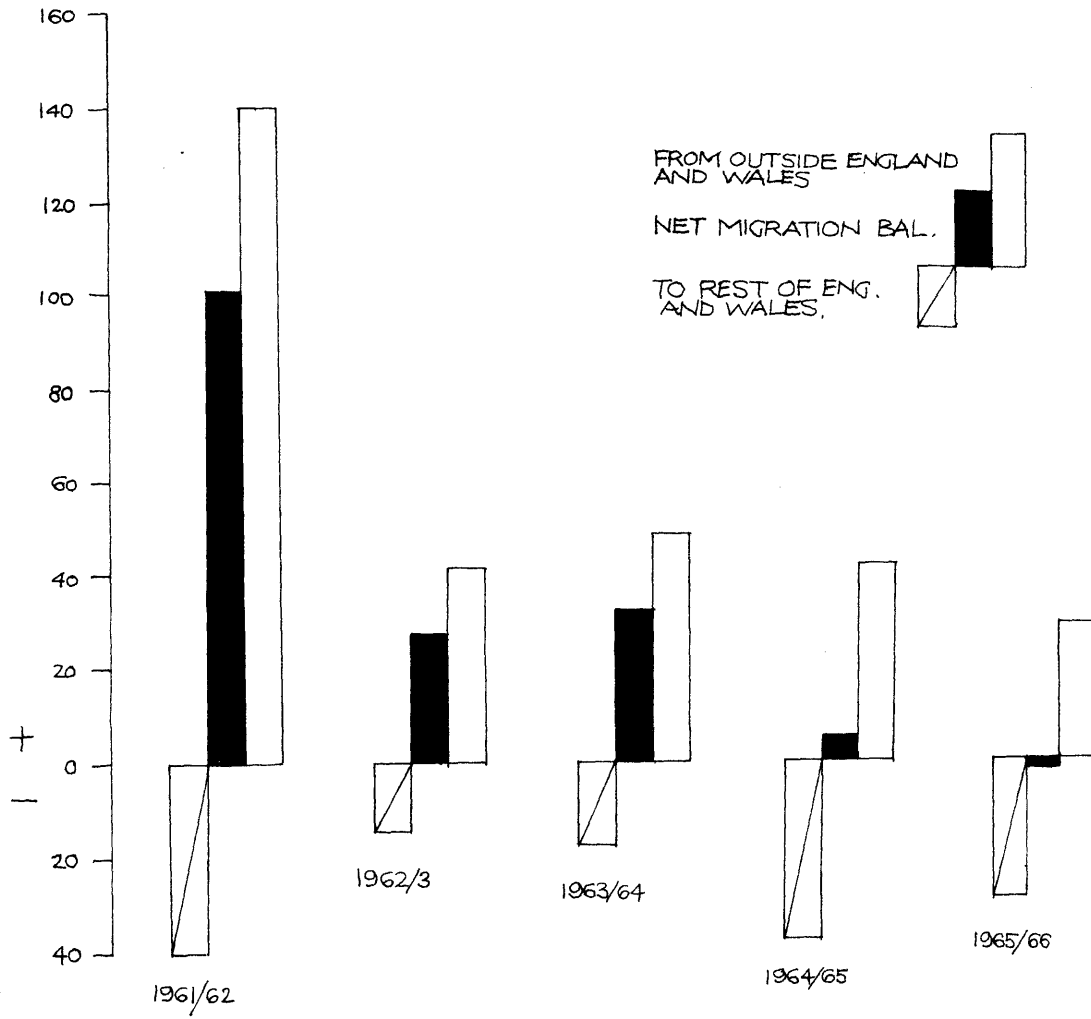


FIGURE 13. NET CIVILIAN MIGRATION (S.E. REGION)

has brought some net movement, particularly into the London area.

As figure 13 shows, the "drift to the South East" is no longer the significant element in interregional movement that it was previously, nor has its rate of natural increase been as high as those of Scotland, the North of England, or the Midlands. Nevertheless, the percentage of the national population already living in the South East is so high that even a modest rate of growth involves absolute numbers which are very large indeed.(1)

<u>Home population</u>	<u>Million</u>				
	1951	1961	1964	1965	1966
South East Region.	15.2	16.4	16.8	17.0	17.1
England and Wales.	43.8	46.2	47.4	47.8	48.1
United Kingdom.	50.3	52.8	54.1	54.4	54.7

The additional demands generated by the continuing overspill of population from London further complicate the problems of coping with growth and conserving amenity in the country's most densely populated region.

1. A Strategy for the South East. HMSO, 1967.

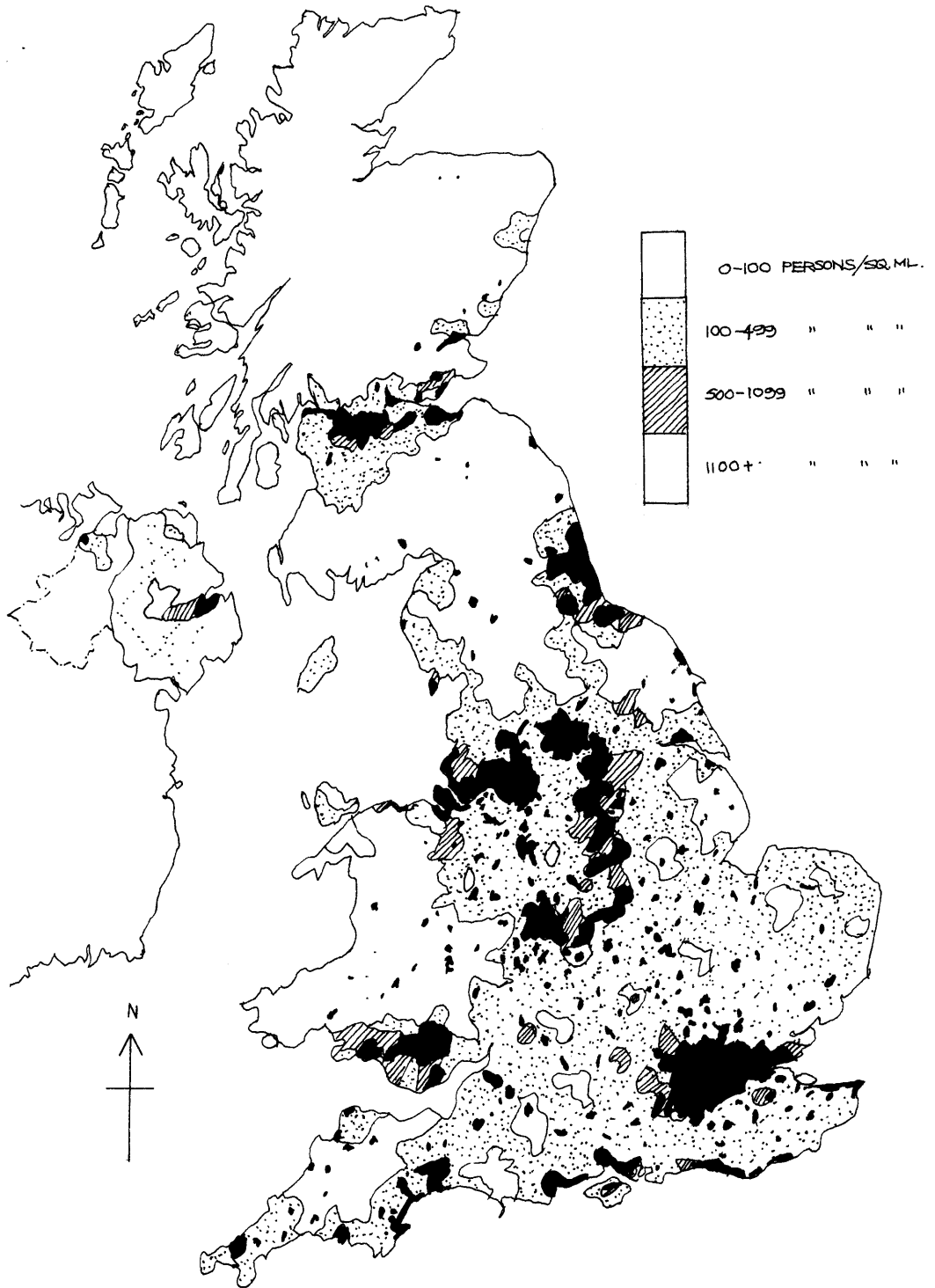
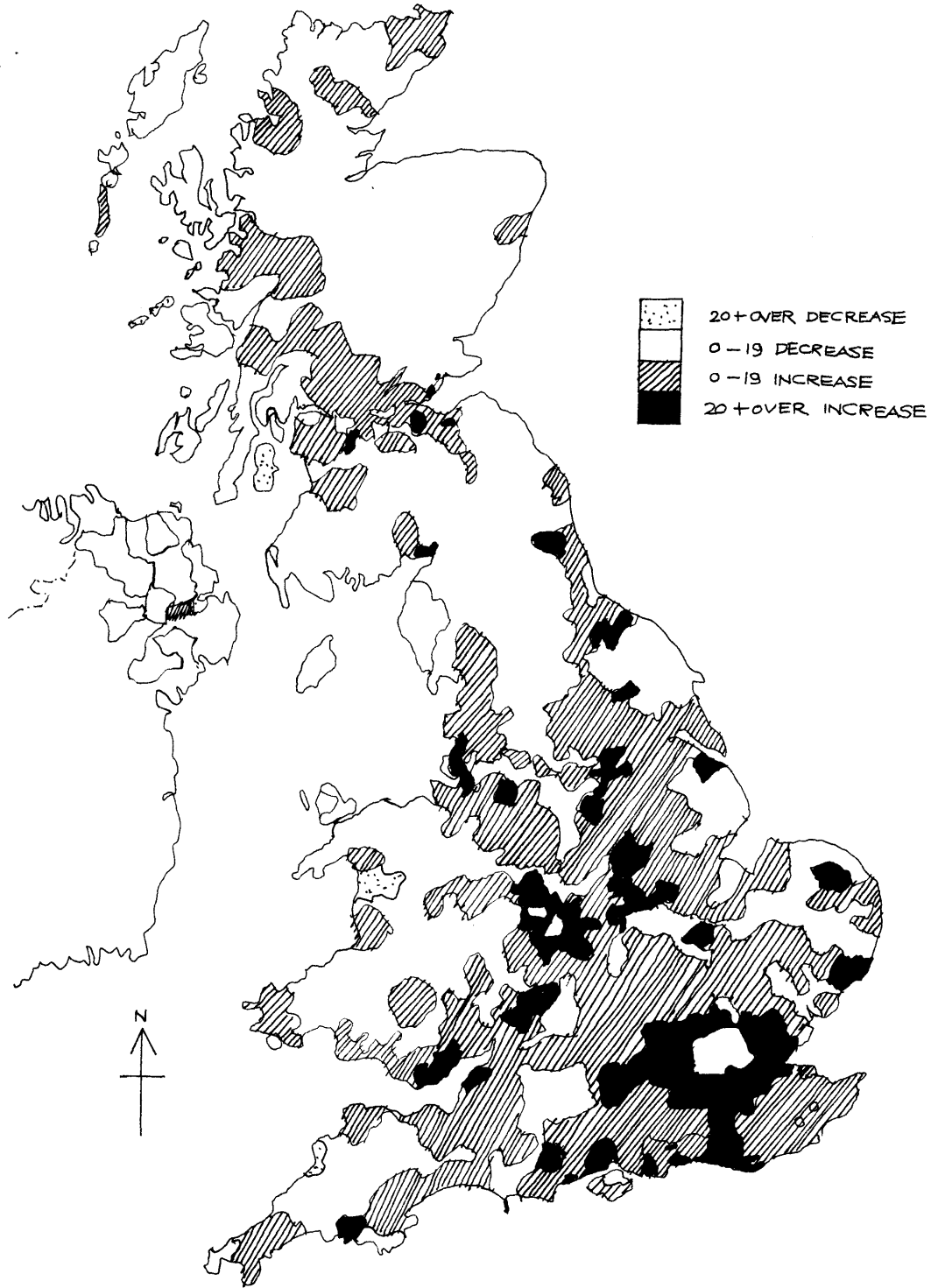


FIGURE 14 DENSITY OF POPULATION 1961

FIGURE 15

PERCENTAGE CHANGE IN POPULATION
1951-61



SOURCE: BRITAIN; AN OFFICIAL HANDBOOK.

Redistribution of Locational Advantage

The preceding section described how traffic distribution might be affected by the Tunnel. These changes would alter the balance of locational advantage within the South East region, in Britain as a whole, and to some extent in a wider context also.

Although the appearance of the hovercraft and the container ships as competitors complicates matters, the immediate effect of the Tunnel in Britain would certainly be ^{to} concentrate much of the cross-Channel traffic, presently dispersed among the seaports and airfields of the south and east coasts, upon Ashford, with a corresponding decline initially, at least, in the economies of the coast ports. More important in a national sense, though, is the fact that whatever the environmental consequences of catering, in this densely populated region, for the increased and concentrated traffic which will result, improved access to Europe (by whatever means) can only make the South East a more attractive location for industry than it is now. Any additional development resulting from this increased attractiveness to industry would impose, of course, its own traffic demands upon the confessedly inadequate road system of the region. (1)

A corollary of the South East's increased attractiveness to industry is a decrease in the relative attractiveness of other regions of Britain

(1) Strategy for the South East op. cit.

particularly those without direct access to the Tunnel, or too inconveniently located, because of distance or poor communications, for it to make any favourable difference.

On the other side of the Channel the repercussions of improved transportation would be felt in a very different context. In the relatively impoverished North East of France, unlike the prosperous and densely developed South East of England, land and labour are comparatively cheap, and the area is actually conveniently located to more major European centres than is its British counterpart. The diversion of traffic at present flowing directly between Britain, Belgium, the Netherlands and other European countries to the Tunnel, and therefore through France, would place the Calais region in a highly strategic position at the crossroads of the revised regional communication pattern.

It should be noted that this locational advantage is not without cost to France's neighbours. For example, Ostend with its interdependent base activities of tourism and transportation would lose heavily, to the considerable gain of Calais. Reference has already been made to the improved position in which the Calais region will find itself, relative to the South East of England. Finally the abandonment of modes of transportation which have great route flexibility in favour of a fixed link would greatly increase the vulnerability of British trade with Europe to such risks as French

strike action, economic sanctions, or other harassments.

The effects of constructing the Channel will certainly not be confined to the countries at each end of it. Not only will neighbouring countries such as Belgium and the Netherlands also be affected, but there will be at least some consequences extending beyond Europe. With the provision of a land link to the rest of the continent's most intensely developed area, Britain's position in a transatlantic context will undergo some change. Britain is, isochronously, as near to the U.S as it is to large parts of Europe. A reduction in flying time, though slight, makes additional payload possible, and the straits of Dover might make a great deal of sense as a transportation centre. There are indications of interest among the French planners in the possibility of siting a major international airport near Calais.

Finally, the impact of a tunnel must inevitably be heightened by British entry into the Common Market. Much of the increased traffic between Britain and Europe would naturally use the Tunnel, and would presumably include a considerable amount of bulk freight at present the subject of seaborne traffic between the Commonwealth and various ports in Britain. Even in the absence of more knowledge of the revised patterns of trade it seems certain that the attractiveness of the South East as a distribution centre would be enhanced at the expense of such centres elsewhere in the United Kingdom.

Employment and Population Movement.

Within South East England, the first trend will most probably be towards growth in the Ashford region, and a decline, at least initially, in employment within those areas presently dependent upon the ferry services. Some compensatory employment will be generated in Dover and Ramsgate by the hovercraft services if they continue to prosper, but their operations are still confined to the summer season. With the demand for land in the South East at its present level, however, new industry will almost certainly replace the port-based activities, although the degree of change may cause transitional difficulties.

Over the longer term, however, the effect of the Tunnel must be to encourage the development of economic activity, and therefore the supply of jobs, in the South East. Despite the housing shortage, the scarcity of building land, high land costs, and the other frictions already referred to which make population distribution in Britain slow to reflect the movements of industry, the net result must be further movement of population to South East England.

Finally, given the juxtaposition of high unemployment in the Calais region and labour shortage in prosperous South East England, British membership of the Common Market and the lifting

70a

of existing obstacles to the mobility of labour must further
increase this likelihood.

PART III : CONCLUSIONS

Comparison of Expected Impact
of the Channel Tunnel with the
Aims of Present Planning Policy.

Comparison of the probable impact of the Channel Tunnel with the aims of planning policy at a national level in Britain is interesting, because in a sense the situation characterises the basic dilemma of current policy. The basic objectives of that policy, it will be recalled, are (a) the reduction of unemployment in those areas where it is markedly above the national average, and (b) the relief of congestion in densely populated urban areas. The approach towards the problem of unemployment has not been one of infrastructural improvement, or of special treatment at selected points with particularly good growth prospects. Instead, it has been a policy of sending jobs to people by treating problem areas preferentially until unemployment has dropped to tolerable levels, whereupon the special treatment is promptly withdrawn. As has been pointed out, these intermittent bursts of governmental attention have not resulted in any real change in the national pattern of unemployment distribution, although absolute levels of unemployment have been lower than before World War II. The overall effect has been to bolster up the economies of areas which are in decline, at the expense of foregoing economic expansion in areas which have the potential for it.

And so to the case of the Channel Tunnel. One might argue that a tunnel is not the best way of improving communications with Europe because of cost, or vulnerability, or because other evolving technologies offer better solutions. There seems to be little disagreement, however, that improved communications with Europe can do little harm and may do a

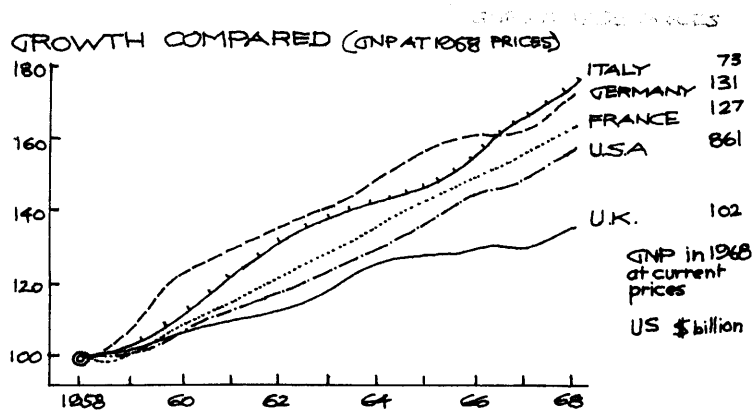
great deal of good to the national economy, and the Channel Tunnel would represent an enormous investment towards the achievement of that end. It has however been argued that, with reference to the two main concerns of regional planning policy in Britain defined earlier, the construction of a Tunnel is likely (a) to increase the attractiveness of the South East to development, and (b) to encourage population growth in the region. With a third of the nation living there already, a record of high employment, and the chairman of the British Airport Authority rather tactlessly proclaiming that (1) the proposed third London Airport would become the "largest employment magnet in the region", the South East must be the last place in Britain, from the standpoint of current policy, in which to encourage development.

The Tunnel proposal and current regional development policy in Britain seem therefore to be at odds. As explained in the section on current planning policy, however, the Board of Trade has made it amply clear that, in implementing the Government's distribution of industry policy, the national interest is, quite simply, not its concern, but if the restrictive aspect of current policy is pursued, then Britain will not only forego much of the potential benefit to be derived from the redistribution of locational advantage, but may lose investment

(1) The airport is expected to provide 50,000 jobs, representing an additional 150,000 population in the region.

altogether. It seems quite conceivable that frustrated development may find the North West of France a more attractive proposition than the lagging regions of Britain. (1) The possibility of such a confrontation between present policy and economic reality raises questions of whether and how development policy might respond. It is not proposed to pursue this in depth here, but mention should be made of trends which may presage policy changes, in which case a tunnel (or some comparable development) might make rather more sense.

First is Britain's continuing economic plight. As the accompanying graph shows, growth has lagged behind that of other European countries, and it seems at least possible that the continuing seriousness of the situation may force the Government to take a second look at policies which seek a measure of regional equality at the expense of development potential elsewhere.



(1) See The Economist, July 22, 1961.

The recently published Hunt Report (2) tends to confirm this. Although primarily concerned with the so-called "grey areas", the report raises issues of fundamental importance to development policy in general, and makes a strong plea for a shift of emphasis from the evening out of unemployment differentials in favour of a policy of infrastructural investment in selected "points of opportunity".

Whether or not the recommendations of the Hunt Committee are adopted - and it is by no means certain that they will be - the report represents a considerable shift in opinion at the policy-making level. Indeed, an extension of the principle is conceivable whereby, instead of trying to create jobs - any jobs, even temporary ones - in the lagging regions, specific relationships might be developed between the economies of such areas and expanding activities in more prosperous areas. If this were to happen, and the diversion of development gave way to the inducement of favourable spin-off effects, then major development in relatively prosperous regions like South East England - such as a Channel Tunnel - might be seen not as something inconsistent with regional policy, but as an opportunity to be exploited, and an economic fact of life to which regional

(1) The Intermediate Areas. Report of a committee under the chairmanship of Sir Joseph Hunt; HMSO, April 1969.

development policy might be advantageously related. The present incompatibility between Tunnel and planning policy might then be seen more clearly as lying less with the provision of a link than with the policy it does not fit.

APPENDIX I : The Hunt Report.

The Hunt Report.

As this thesis was in the course of preparation, a committee headed by Sir Joseph Hunt was completing an eighteen month study (1) of the economic anatomy of Britain (excluding Northern Ireland), focussed particularly on the "grey areas". Economically speaking, these lie between the depressed regions, or development areas, and what Hunt calls "the economic seedbeds " of South East England and the West Midlands, and are areas whose economic growth gives cause for concern.. On April 24, 1969, the Hunt Committee published its report. As the Times editorial observed next morning; "... the mass of detail, the limited pragmatic recommendations and the Government's yet more limited reaction conceal the fact that the Hunt Committee want a major change in the concept of regional policy. They have said that there is no reason British industry in future should be tied to the geographical patterns of the Industrial Revolution."

In the same issue, Hunt's own article, headlined " the Geography of Opportunity ", set out the main points of the report. He stated categorically, and in direct contradiction of earlier official attitudes already mentioned in this thesis, that the need is not for a rapid creation of new jobs, but rather for investment " in those more permanent assets which will help to make good the industrial fabric and facilitate structural change." It would be quite

(1) The Intermediate Areas. Report of a committee under the chairmanship of Sir Joseph Hunt : HMSO, April 1969.

misguided, he observed, to attempt to persuade industry to move to unsuitable areas (which is precisely what has been done, witness the spreading of the automobile industry's production lines over the length and breadth of Britain). " Far better", Hunt went on, " to invest in carefully selected points of opportunity where conditions are favourable and by good communications to help people to travel and perhaps eventually to move." This would appear to be much more than the traditional change of nomenclature whereby " depressed areas " become " growth points", and goes so far as to violate the hallowed principle of moving the jobs to the people. Furthermore it acknowledges that the provision of an artificial boost to an industry does not necessarily guarantee the maintenance of economic momentum when the preferential treatment has been withdrawn.

The absence of prompt, decisive reaction from the Wilson Government is scarcely surprising in view of the feelings which the Hunt report is bound to provoke in the regions at present receiving preferential treatment as " development areas ". (1) The political situation is in fact very complex, not to say paradoxical. By 1967 it had begun to be clear that the Government's regional employment policies were taking effect, and some perceptive commentators had pointed out that a critical number of Labour votes might be lost unless something was done to combat rising unemployment in the " grey areas ". At the same

(1) The Hunt Report does not advocate the withdrawal of aid from development areas, but rather the removal of restrictions in other areas, which has in the past had somewhat the same effect on the former.

time, development areas such as Scotland, traditionally a Labour stronghold, have been increasingly restive, and significant inroads on the political scene have been made by the Nationalists, almost entirely at the expense of Labour support. The present Government, therefore, is in the position of being "damned if it does and damned if it doesn't".

APPENDIX II: Chronology of the Main Events
in the History of the
Channel Tunnel Proposals.

- 1802 Proposal to Napoleon by Albert Mathieu, a French engineer, that a bored tunnel be constructed beneath the English Channel, via the Ridge known as the Varne Bank, on which he envisaged an island city.
- 1803 English proposal (by Mottray) for a steel tube resting on the seabed. Start of the tunnel v. tube controversy.
- 1833-56 Geological and Hydrographic research, and various proposals, by Thomé de Gamond, for bridges and a tube.
- 1856 Detailed proposal by Thomé de Gamond for a twin-track rail tunnel, incorporating a harbour and ventilation shaft on the Varne Bank. First scheme to be considered at Government level. French enthusiastic; British less so.
- 1867 De Gamond in conjunction with two British engineers, Low and Brunlees, presented a scheme for twin rail tunnels to the Grosvenor Committee and Napoleon III. Approval halted by the Franco-Prussian War of 1870-71.
- 1872 Formation of the Channel Tunnel Company.
- 1875 Anglo-French Submarine Railway Company formed, proposing twin single -track tunnels.

- 1874 Sir John Hawkshaw's 1869 scheme for a single tunnel officially adopted by the English Channel Tunnel Company.
- 1875 Both companies, English and French, receive permission to begin digging.
- 1878 Start of digging on the French side, at Sangatte.
- 1881 British begin two pilot diggings at Dover.
- 1882 Growing public, political, and military opposition brought British operations to a halt. French continued.
- 1883-4 Joint Select Committee investigation terminates operations.
- 1904-07 Revision of Low's proposals by Albert Sartiaux and Sir Francis Fox, to incorporate electric traction. Military opposition prevented further progress.
- 1913 Discussions were resumed, but were quickly terminated by the advent of World War I.
- 1918-24 Miscellaneous proposals, still against a background of military opposition.

- 1929 Royal Commission appointed to re-examine the question.
- 1930 Royal Commission's report presented to the Channel Tunnel Parliamentary Committee.
- 1938 Proposal to French Chamber for a road tunnel, based on a design by Basdevant.
- 1939 World War II. In contrast to earlier military attitudes, the Supreme Allied War Council queried whether a tunnel could be built quickly enough to aid the war effort.
- 1947 Presentation by Basdevant of a scheme for a single tunnel, to carry both road and rail traffic. Deficient, from the British point of view, geologically and in the provision for ventilation.
- 1953 British Minister of Defence acknowledges that the strategic argument against the Tunnel is no longer significant.
- 1957 Formation of the Channel Tunnel Study Group, involving French, British, and American interests. Marine, geological, economic, traffic, revenue, and engineering studies carried out.
- 1958 Basdevant's revised scheme for a single road-rail tunnel.
- 1960 Report by the Channel Tunnel Study Group.

- 1961 Proposal by the Societe d'Etude du Pont sur la Manche.
- 1963 Report by working group set up by both Governments to study the proposals submitted by the Channel Tunnel Study Group and the Channel Bridge Group.
- 1966 British and French Governments agree that a Tunnel should be built, subject to the agreement of satisfactory financial arrangements.

APPENDIX III: The St. Gotthard Tunnel.

Impact of the St. Gotthard Tunnel.

There appears to be no situation sufficiently analogous to the Channel Tunnel case to justify the drawing of any hard and fast conclusions. A certain similarity has, however, been suggested in the case of the St. Gotthard Tunnel in Switzerland, between Chiasso and Altdorf, linking Italy by rail to central and northern Europe. (1) Prior to the tunnel's completion, the only alternative connection between the canton of Ticino and the rest of Switzerland was the road through the St. Gotthard Pass, which reaches an altitude of over 6,000 feet above sea level. The rail tunnel remains a major transportation link in the region, and carries some 160 trains daily.

Werczberger cites two main effects on population growth and distribution as a result of the tunnel. The first, and more obvious, was the temporary growth of population during construction. The second was the result of improved access created by the tunnel, which seems to have been a factor in the accelerated growth of Lugano, Bellinzona, and especially Chiasso, the customs control point.

Werczberger concludes that the major impact of the tunnel was not at the actual entrances, but at those points in the vicinity which had industrial and population growth potential which was activated by the construction of the Tunnel.

(1) Elia Werczberger; The Impact of the St. Gotthard Tunnel in Switzerland. Chapter 2, of Appendix II, in Channel Tunnel, a group paper by Messrs. Osgood, Ostrower, Grosfils, and Werczberger, Dept. of City and Regional Planning, HGSD, 1965.

The range of impact, not surprisingly, varied according to the state of communications on either side of the Tunnel, and was more far reaching on the Ticino side - which lacked any alternative connection with the rest of Europe - than on the North.

Apart from the time interval (The St. Gotthard Tunnel was built between 1872 and 1882) comparison between the two schemes is difficult. When the St. Gotthard Tunnel was built, the only way of transporting large quantities of goods overland was by rail, and in this respect the context of the Channel Tunnel proposals is rather different. Although car ferry facilities similar to those proposed for the Channel Tunnel operate through the St. Gotthard Tunnel, their introduction is recent and useful information about any resultant impact has not yet become available.

BIBLIOGRAPHY

BIBLIOGRAPHY.

Note: References which were found particularly helpful are marked thus, 'X'.

D. Abel, Channel Underground, Pall Mall Press, London, 1961.

P. H. Gain, La Question du Tunnel sous la Manche, 1932.

X H. Slater, C. Barnett, and R.H.Geneau, The Channel Tunnel, Wingate, 1958.

A. S. Travis, Channel Tunnel (1802-1967), London, 1967.

Groupement d'Etudes du Tunnel sous la Manche, Tunnel sous la Manche. Pourquoi ? Comment ? Paris, 1961.

T. Whiteside, The Tunnel under the Channel, Simon and Schuster, New York, 1964.

X Annual Abstract of Statistics, 1968, HMSO, London 1969.

X Britain, An Official Handbook, HMSO 1968 (and earlier).

Atlas of the National Geographic Magazine, New York.

X The South East Study, Ministry of Housing and Local Government, HMSO, London 1964.

X A Strategy for the South East, a Report by the South East Economic Planning Council, HMSO, London 1967.

Der Regierungsbericht über die Raumordnung in den Niederlanden, Mitteilungen aus dem Institut für Raumordnung, Bad Godesberg 1961.

The Channel Tunnel Study Group, Report, 28 March 1960.

A. Day, "Epitaph for a Planner", The Observer, 16 March 1969.

X Proposals for a Fixed Channel Link, Cmnd 2137, HMSO, London, September 1963.

"Chunnel looks a non-starter again", Science Journal, March 1969.

X M. Baily, "Channel Tunnel could be a burden for Britain", The Times, 3 April 1968.

G. Marley, "Government may be loser", The Times, 3 April 1968.

C. A. Pequignot, Chunnel, CR Books 1965.

E. Utudjian, Architecture et Urbanisme Souterrains, R. Laffont, 1966.

X X Area Redevelopment Policies in Britain and the Countries of the Common Market, U.S. Department of Commerce, January 1965.

C. Bradlaugh, The Channel Tunnel. Ought the democracy to oppose or support it? A. Bonner, London, 1887.

A. Sartiaux, The Channel Tunnel, Hamilton, London, 1906.

X Report of the Channel Tunnel Committee of the Economic Advisory Council, HMSO, February 28 1930

- X The Economist Intelligence Unit, Limited, London; Société d'Etudes Techniques et Economiques, Paris; De Leuw, Cather and Company, Chicago, Channel Tunnel Traffic and Revenue Summary, Sections I (Highway Tunnel) and II (Railway Tunnel), 1960.

Kent County Council, The Channel Tunnel, A Discussion of Terminal Requirements on the British Side and of Possible Locations for Terminal Facilities in Kent, Kent County Council, December 1968.

R. Breck, Britain 1984, Dorton, Long and Todd, London 1964.

- X S. Osgood, J.P. Grosfils, J. Ostrower, E. Werczberger, Channel Tunnel, HGSD, 1965.

Tourism in OECD Member Countries, OECD 1968.

J. Gottman, A Geography of Europe, Rinehart and Winston New York, 1954.

G. J. Froment, L'Angleterre n'est plus une Ile, Gamma Press 1963.

J. James, Regional Planning in Britain, in Planning for a Nation of Cities, Cambridge, M.I.T. Press, M.I.T. Press, 1966.

A. E. Holmans, "Restrictions of Industrial Expansion in South East England: A Reappraisal," Oxford Economic Papers, July 1964.

"Industrial Development Certificates and Control of the Growth of Employment in South East England" Urban Studies, Vol.1, No.2, November, 1964

S. R. Dennison, The Location of Industry and the Depressed Areas, O.U.P., 1939.

Report of the Royal Commission on the Distribution of the Industrial Population, Cmnd 6 153, HMSO, London 1940.

P. Self, "Regional Planning and the Machinery of Government," Public Administration, Autumn 1964.

Department of Economic Affairs, "The Development Areas - A Proposal for a Regional Employment Premium", London, April 1961.

Town and Country Planning, Cmnd 3333, HMSO, London, 1967.

I. Wilson, Policies for Regional Development, Univ. of Glasgow Social and Economic Studies, Occasional Papers No. 3, Oliver and Boyd, 1964.

X The Intermediate Areas, report by a committee under the chairmanship of Sir Joseph Hunt, HMSO, London, April 1969.