The Port of Belfast

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I have been asked to make the subject of my talk this evening the Port of Belfast. Many visitors to the Port, on being shown around, are surprised at its magnitude, and exclaim that previously they had no conception of the extent of its trade and the importance of the Undertaking Now, although there are at least two publications extant giving many details about the growth of the Port—one published in 1917 by a former General Manager, Sir David Owen, and the other a brochure issued on the occasion of the Centenary of the Belfast Harbour Commissioners in 1947—I have a suspicion that many local people are also unaware that one of the world's major ports lies at their doorstep. I am, therefore, glad to be here and to have the opportunity of giving this talk to your Society.

Transport in Northern Ireland is a subject which is very much in the minds of all today, from traders to tourists, and whilst it has wide ramifications, far beyond my experience, it has a direct link with the Port of Belfast, through which the major portion of the trade of the Province passes.

TABLE 1

Total Tonnages (given as %) of goods passing through the principal ports in Northern Ireland

(Based on figures from Ministry of Commerce)

	1938	1941	1944	1947	1950	1953	1954	1955
Port	%	%	%	%	%	%	%	%
Belfast	70 7	64 7	76 0	74 4	71 9	69 7	70 3	68 3
Londonderry	8 2	11 3	8 2	6 6	7 6	7 9	7 5	7 5
Larne	8 7	12 6	3 4	3 6	5 0	5 5	7 0	8 0
Newry	4 0	3 3	3 8	4 4	4 1	3 2	3 0	3 8
Other ports	8 4	8 1	8 6	11 0	11 4	13 7	12 2	12 4

First of all, I should like to give you, as a background, some idea of the traffic which passes through the Port of Belfast. We have a certain direct Foreign trade and, from the nature of our geographical position, a large cross-Channel trade with Great Britain ; 75 per cent. of our trade is cross-Channel Last year our imports and exports totalled over 5 million tons

TABLE 2

Imports and Exports

Commodity	1955	1938
	Tons	
Imports		
Coal	1,633,000	1,271,000
Grain and Feeding Stuffs	1,057,000	795,000
Oils and Motor Spirit	425,000	146,000
Steel and Iron, etc	177,000	119,000
Timber	131,000	84,000
Other Imports	929,000	671,000
TOTAL IMPORTS	4,352,000	3,086,000
EXPORTS		
Potatoes	209,000	90,000
Livestock (head)	(427,000)	(312,000)
Livestock (tons)	103,000	60,000
Textiles	65,000	64,000
Steel and Iron (mostly scrap)	58,000	38,000
Bacon, Ham and Pork, etc	43,000	23,000
Machinery	41,000	16,000
Milk, preserved or condensed	23,000	(under 500)
Eggs	19,000	25,000
Tobacco	18,000	11,000
Rope, Cordage and Twine	12,000	10,000
Other Exports	203,000	192,000
TOTAL EXPORTS	794,000	529,000

The ships that carry these cargoes number in a year over 8,000 that is, on the average one vessel is arriving and one is departing every hour of the day, each day of the year. Their total net register tonnage exceeds 5 million tons annually—about 1million tons greater than just before the last war

TABLE 3

Vessels Arriving

Year	Coastwise and Cross-Channel		FOREIGN		NON-TRADING		TOTAL	
	Net Register Tonnage	No	Net Register Tonnage	No	Net Register Tonnage	No	Net Register Tonnage	No
1936	3,325,824	7,179	959,699	598	100,415	237	4,385,938	8,014
1937	3,398,111	7,005	929,222	537	136,663	267	4,463,996	7,809
1938	3,336,661	6,687	985,746	528	129,202	303	4,451,609	7,518
1953	3,975,185	7,944	871,978	596	240,222	440	5,087,385	8,980
1954	4,043,228	7,569	1,112,357	743	269,632	402	5,425,217	8,714
1955	4,011,831	7,313	1,053,593	704	321,807	392	5,387,231	8,409

The category "Non-Trading" comprise mostly ships launched by Messrs Harland and Wolff, Ltd. and those arriving for repairs

Now what demand does this trade or the means of transport used in this trade make upon the Harbour of Belfast.

Take what I would classify as the first essential of a port—the approach channel Here you have a remarkable illustration of the foresight displayed by the predecessors of the present Board over a century ago At low water there was a depth of only from 2 to 4½ feet in front of the town. The channel, which took a tortuous and winding course, gradually increased to 8 feet, and it was not until Garmoyle was reached that a depth of 16 feet was to be found Most of the cargoes were discharged into lighters at the Pool of Garmoyle, which, I may say, is on the County Down side of Belfast Lough, about 1½ miles on the Belfast side of Holywood

With a full realisation of the necessity for a proper approach channel, the problem was faced, and eventually solved, by the making of two cuts through the slobland, the first of which was opened in 1841–115 years ago The second was brought into use a few years later, and from time to time the channel has been further extended and deepened Today there is the long, straight Victoria Channel, over 5 miles in length, with a depth of 31½ feet at ordinary high water, so well buoyed and lighted that at night it resembles a lighted city street It is safe to say that few ports in the world have as adequately as Belfast fulfilled the requirements of sea transport in the matter of approach channel—such foresight may be further rewarded by rendering unneccessary the installation of radar or other aids to shipping in Belfast Lough Branching off from the main Channel to the South-East is the Musgrave Channel, completed in 1903, and to the South-West the Herdman Channel, opened 30 years later

Having dealt with the approach to the Port, we next come to the quays and docks. Altogether the total quayage is 7 miles—about 4¼ miles on the Co Antrim side, and 2¾ miles on the Co Down

The accommodation, briefly, is used as follows —

Donegall Quay for Cross-Channel traffic

Queen's Quay, Abercorn Basin and Albert Quay for coal, as well as two special quays at which coal for the two Electricity Stations is discharged—one in Musgrave Channel and one in Herdman Channel

York Dock, which, prior to 1939, was almost entirely used for Foreign trade but now used also for Cross-Channel goods traffic

The Dufferin, Spencer and Pollock Dock systems in which the majority of the Foreign vessels using the Port are now berthed

At Pollock Basin East there is a ramp berth at which loaded lorries can be driven on and off the ship

Owing to the location on the Harbour Estate of the large shipbuilding and engineering works of Messrs Harland & Wolff, Ltd , the accommodation for ship construction and repair at Belfast, you will appreciate, is considerable—over 1½ miles of quayage is normally devoted to this work Special mention should also be made of the graving docks, of which we have five. The Thompson Graving Dock, nearly 900 feet in length, constructed in 1911, was at that time the

largest graving dock in the world, but since then longer graving docks have been constructed at Liverpool and Southampton, and in some overseas countries. The problem today with graving dock accommodation is not so much the length of the dock but rather the width

On the quays, extensive transit shed accommodation is provided for the goods imported and exported. Some of the finest sheds to be seen in any Port in the United Kingdom are to be found at Belfast Harbour. The total area of shed space in the Port is 109,000 square yards or 22½ acres

The quays are also well equipped with cranes and there are three privately-owned grain silos with a total capacity of 67,000 tons

As you may have gathered, the accommodation for commercial shipping is chiefly on the Co Antrim side Accommodation for the shipbuilding industry in the fitting-out and repair of ships is centred on the Co Down side of the Harbour. Such well-known places as Victoria Wharf, Alexandra Wharf, Alexandra Jetty, Clarence Wharf, Thompson Wharf and quays in Musgrave Channel are berths for ocean-going ships of all kinds, warships and aircraft carriers under construction and repair

In Musgrave Channel, too, there are wharves devoted to the accommodation of oil tankers at which the oil is discharged from the vessels and conveyed by underground pipes to the large storage depots some half-a-mile away. From the figures mentioned earlier, you will see that this trade has trebled since pre-war.

Increasing trade ; the further industrial expansion of Northern Ireland, and the increasing size of ships have rendered it necessary for the facilities of the Port to be further extended, and last year the Harbour Commissioners embarked on a programme of construction of new quays and involving an expenditure of £3½ millions.

Work is at present in progress on a new quay, 1,250 feet in length, on the East side of Herdman Channel to meet the requirements of deep-sea vessels. When completed, the berth will be dredged to provide a depth of 30 feet at ordinary low water, which could be increased, by further dredging, to 35 feet, if required. A shed, 1,100 feet in length and 120 feet in width, will be erected on the quay, accommodating approximately 15,000 tons of bagged goods or 10,000 tons of general cargo.

One of the main questions regarding sheds of this particular design concerns headroom, especially when it is intended to use mobile cranes. One big drawback experienced with sheds of the more conventional design has here been overcome, because the type of roof construction—it will be a single span, without pillars—means that the floor area remains clear for the operation of whatever equipment is used within the shed. There will be a height clearance of 30 feet over its full width. Most of the openings into the shed will be 20 feet high, but every fifth opening will be 28 feet in height so as to permit mobile cranes to enter with full loads.

On the West side of Victoria Channel a 200-ton cantilever crane and a new deep-water wharf are being provided principally for the handling of the heavy electrical equipment to be shipped through the Port by the British Thomson-Houston Co. Ltd. from their new factory at Larne.

The crane, which has been ordered from Sir William Arrol & Co. Ltd., will be equipped with a 25-ton hook and a 5-ton whip to deal with smaller loads.

The overall height of the crane above quay level will be 167 feet and the main hoisting gear will be capable of lifting a load of 200 tons at 95 feet radius and 100 tons at 125 feet radius.

The wharf will be 650 feet in length and will be equipped with a transit shed, 170 feet in length and 60 feet in width.

The berth alongside, 750 feet in length, will be dredged to 30 feet at ordinary low water and provision will be made for eventual deeping to 35 feet at ordinary low water, if required. The quay has been designed for the operation of 7½-ton mobile cranes to the coping, and will be suitably strengthened for carrying 10-ton travelling cranes on each side of the 200-ton crane, so that such cranes or cranes of smaller capacity could be installed at a later date, if required

The wharf will accommodate the large ocean-going vessels which will carry the equipment of the British Thomson-Houston Co. Ltd. direct to ports in Africa, India, Australia, New Zealand, Canada and elsewhere, and it is hoped that, with the further industrialisation of the Province, the facilities being provided will be the means of extending in other directions the trade of the Port.

It is anticipated that the facilities will be available by March, 1958

To return to the Herdman Channel, I would draw attention to the Herdman Channel Wharf, where additional facilities are to be provided for British Railways Cross-Channel cargo services. The wharf will be extended northwards by more than 1,000 feet to give three additional berths. There will be large transit sheds for the reception and sorting of cargo and ample open space for containers, which in the last 6 or 7 years have become a feature of Cross-Channel traffic. Provision is also being made for the shipment of livestock, and there will be adequate cranage facilities. Apart from freight carried in their passenger vessels, which will continue to berth at Donegall Quay, all the cargo services of British Railways at Belfast will be concentrated at these new berths.

While all these new works are progressing, the repair and modernisation of the older quays in the Port is not being neglected. I have already mentioned that the main coal discharging berths are at Abercorn Basin, Queen's Quay and Albert Quay. Within the past few years the quays at Abercorn and Queen's Quay have been reconstructed and strengthened and modern level luffing electric grabbing cranes installed. These cranes have a more rapid rate of discharge than the older type and their greater reach enables coal to be stored over a wider area. The depth of water alongside these quays has been increased by about 5 feet so that the largest colliers can berth at all states of the tide. As you may be aware, the colliers now coming into use are much larger than the older ones : they have a loaded draft of 15′/16″ compared with about 12′ of an average small collier, and can carry a cargo of some 1,600 tons—more than twice that of the smaller vessel. At present, similar work of reconstruction is being carried out at Albert Quay and a number of new cranes are on order and are being delivered.

Having dealt with the approach channel and the docks and quays, there now remains what I would call the "third department" of the Port. That is, the means for the conveyance of goods by road or rail to and from the Port.

There are over 7 miles of railway lines on the Harbour Estate connected with the systems of the country, but I would point out that railway-borne traffic to and from our Port is comparatively small, being only about 10 per cent of the total.

The bulk of the goods to and from our quays is conveyed by road, say, 85 per cent., and when it is considered that, of the population which the Harbour of Belfast serves, half-a-million people are actually on the spot and that so many of our industries and manufactures are in the city itself, it will be realised why road transport is so important a feature here

The balance of these percentages consists of lighter traffic on the Lagan for the conveyance of coal to the Gas Works.

The provision of facilities to keep the Port abreast of the times is a difficult question for the Port Authority. You decide to build a dock or quay and the question of the depth of water arises at once You fix upon a certain depth, but before many years have passed vessels of several feet deeper draft have come into use for the particular trade for which your new dock or quay was constructed You build a huge graving dock allowing, you think, ample margin for future development in the size of vessels, but soon find you cannot accommodate the latest thing in shipbuilding. Our Thompson Graving Dock is a typical case in point, and numerous examples might be given at various ports. To keep the matter in perspective, however, I would mention that a recent investigation revealed that there were only about a dozen commercial ships afloat which could not be accommodated in our Thompson Graving Dock.

What then, it will be asked, is to be done in regard to the future of Belfast Harbour or, in other words, what does transport demand in the way of Harbour development ? Is that demand one merely of more accommodation of the existing kind on account of growth of trade, or is it one of a different kind owing to altered or changing conditions ?

This is our problem and however difficult it may be, the Port Authority will see that the Harbour of Belfast is kept abreast of the times, as they have done in the past.

The question of the provision of Harbour accommodation for the future is a difficult one, and it has to be borne in mind that at the same time that extra facilities and improvements all tend to encourage and increase traffic.

Another important factor relating to the extent of the accommodation to be provided is the usage of shed space. A ship arrives in the Port, discharges her cargo into a certain shed at a certain berth and goes away ; before the cargo is all removed from the shed another vessel arrives—the same berth is free but the shed is occupied with cargo and so another berth and shed have to be provided. You will, therefore, fully understand the continual pressure which is being brought to bear with the object of getting goods removed from the sheds in the quickest possible time.

In connection with Harbour development, it is important to remember that the provision of facilities is to a very large extent governed by physical conditions. The range of tide is the great factor in this respect and largely affects the approach channel and the place at which the vessels can lie to load and unload. It is, of course, common knowledge that at some ports vessels can only get in and out at times of nearly high water Obviously, it operates much to the disadvantage of transport if there is any delay of this sort

It will readily be appreciated that where there is a great difference in height between low and high water, such as over 20 feet (which is the case at Liverpool), it would be unwise to attempt to build quays along the river side. It would be quite impracticable for goods to be discharged or loaded at such quays except for short periods, apart from the question of the expense that would be involved in building the quays. These conditions necessitate the provision of closed docks in which the water is retained at practically one level by means of massive gates, and into and out of which vessels can only enter and leave by a system of locks There are therefore, no riverside wharves or quays, or practically none, at such places as Liverpool, Hull and Bristol. At Bristol, it may be noted, there is an enormous range of over 40 feet in the tide At places where the rise and fall is limited in extent, such as at the Port of Belfast, where the difference between the average high and low water is only about 8 or 9 feet—Glasgow, Southampton, Dublin and Londonderry being other similar instances—there is no necessity for closed docks and, in consequence, you find in those ports open quays partly on the riverside and partly surrounding tidal or gateless docks

The question of whether closed or open docks or river wharves or piers should be provided, being thus determined by tidal considerations, the manner in which the quays or wharves and the accommodation on them should be laid out so as to secure the best possible results, is a matter of vital importance to transport

As a final note I must make reference to one important aspect of the Port—that of finance, which is the crux of most problems It is a comparatively simple matter to talk of development and to outline ideal schemes of improvement, and the engineering department of any port can construct practically any accommodation and provide any facilities that are wanted, provided the necessary money is forthcoming Now, I acknowledge that the Government of Northern Ireland are assisting the Commissioners financially in their current £3½ millions programme of works of development, and the Commissioners much appreciate this assistance In the main, however, the money has to come from the vessels and the goods using the Harbour Of course, in the end, all charges for transport, including Harbour Dues, fall on the goods and have to be paid ultimately by the consumer. I don't wish to be too elementary in my remarks, but it sometimes appears to me that many of the users of a Harbour seem to think that a Harbour Board controls an inexhaustible fund of money and to forget that they themselves, the users of the Harbour, have to find the money necessary for maintaining the Harbour and for carrying out any improvements The problem of the Port Authority

is to levy such rates or dues as will be sufficient to carry on the work of the Port and to pay interest on the capital moneys spent on docks, quays and other necessary works. If trade increases the revenue advances proportionately and extra accommodation can be paid for. If the Harbour Rates and Dues are assessed on too high a figure the trade is killed

So far as Belfast is concerned, you have the satisfaction of knowing that the Port Authority is a Public Trust and that, consequently, all the revenue put into its coffers is spent on the Harbour. After paying the working expenses and maintenance, and interest on capital money borrowed, as well as Sinking Funds, any balance that remains is devoted to improvements—there being no shareholders entitled to dividends. The revenues of Belfast Harbour are managed by the Commissioners with the utmost economy consistent with efficiency I am pleased to say that Harbour Rates at Belfast compare most favourably with those at comparable Cross-Channel Ports.

I will conclude by assuring you that the Harbour Board are fully alive to the necessity of adequate Port facilities for the Province and, recognising that the Port of Belfast is the natural gateway for the bulk of our trade, it is their intention, as indeed it is their function, to meet the increasing demands of transport in the most practical form. In the words of a writer in a recent issue of the influential shipping paper, *The Journal of Commerce*—" the port has the appearance of one that will inevitably make further advances "