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EXPLANATORY NOTES

References to "tons" indicate metric tons, unless otherwise specified.

A dash (—) indicates that the amount is nil, or less than half the unit used.

Two dots (..) indicate that data are not available, or are not separately reported.

A full stop (.) is used to indicate decimals.

Use of a hyphen between years, e.g., 1965-1966, indicates the full period involved, including the beginning and end years.

An oblique stroke (/) between years indicates a season or crop year, e.g. 1965/66.

Details and percentages in tables do not necessarily add up to totals, because of rounding.

Reference to dollars (\$) indicates U.S. dollars, unless otherwise stated.

*
* *

The description and classification of countries and territories in this document and the arrangement of material, should not be considered as implying any judgement by the Secretariat of the United Nations regarding the legal status of any country or territory or in respect of the delineation of its boundaries, or regarding its economic system or degree of development. Inclusion of a particular country or territory in any economic or geographical grouping (or its exclusion) has been dictated by economic and statistical considerations.

ABBREVIATIONS

Names of organizations

IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICHCA	International Cargo Handling Co-ordination Association
IMCO	Inter-Governmental Maritime Consultative Organization
ISO	International Organization for Standardization
OECD	Organisation for Economic Co-operation and Development

Other abbreviations

c.i.f.	Cost, insurance, freight
dwt	Dead weight tons
f.o.b.	Free on board
grt	Gross registered tons
LASH	Lighter aboard ship
n.e.s.	Not elsewhere specified
obo	ore/bulk/oil

INTRODUCTION

1. This review has been prepared by the secretariat in accordance with item V of the programme of work of the Committee on Shipping.¹

2. The purpose of this review is to present statistical evidence of developments in international maritime transport and to comment on these developments, with special reference to factors affecting the trade and shipping of developing countries.

¹ See *Official Records of the Trade and Development Board, Fifth Session, Supplement No. 2, annex II.*

Chapter I

THE VOLUME OF INTERNATIONAL SEABORNE TRADE

3. The volume of international seaborne trade increased by 10 per cent in 1968 as compared with 1967; this increase was the highest since 1964, and compares with 9, 8 and 5 per cent in 1965, 1966 and 1967 respectively. Table 1 shows the recurrence of substantial increases in the volume of international seaborne trade every fourth year, starting in 1956, the intervening three years marking slower rates of increase.

4. As far as the various types of cargoes were concerned, 1968 was the first year since 1964 where the rate of growth of seaborne dry cargo trade exceeded that of tanker cargo, reaching 11 per cent (tanker cargo: 10 per cent); the increase in the rate of growth has been spectacular since 1967 which, as compared with 1966, showed an increase of only 2 per cent.

5. The rate of growth of the main bulk commodities also increased considerably, reaching 9 per cent. The average rate of growth of the main bulk commodities over the period 1964-1968 was 7.4 per cent, which compares with 7.8 per cent for all dry cargo. The annual

average rate of growth of oil loadings over this period was 9.4 per cent. The share of oil in total loadings, which was 50 per cent in 1960, rose to 55 per cent in 1968.

6. The shares of the various groups of countries² in international seaborne loadings and unloadings are shown in table 2.³ The share of the developing countries in seaborne loadings (table 2, A) rose from 61.4 per cent in 1959 to 63.5 per cent in 1968. However, the share of these countries in crude petroleum shipments fell slightly from 97.0 per cent in 1959 to 94.9 per cent in 1967; the share in loadings of petroleum products also fell from 71.1 to 64.7 per cent in the same period.

7. These over-all figures conceal the significant changes which have occurred in the relative importance

² For the composition of the groups of countries, see annex I.

³ Data presented in table 2 are for the years 1959, 1965, 1967 and 1968. Data available for 1968 are not broken down by type of cargo. Thus, comment in the text on trends in loadings and unloadings of different types of cargo are limited to the period 1959-1967.

TABLE 1
Development of world international seaborne trade,^a 1955-1968
(Goods loaded)

Year	Tanker cargo		Dry cargo				Total (all goods)	
	Million metric tons	Percentage increase/decrease over previous year	Total		Of which: main bulk commodities ^b		Million metric tons	Percentage increase/decrease over previous year
			Million metric tons	Percentage increase/decrease over previous year	Million metric tons	Percentage increase/decrease over previous year		
1955	350	9	450	15	..	—	800	13
1956	390	11	490	9	..	..	880	10
1957	420	8	510	4	..	..	930	6
1958	440	5	480	-6	..	..	920	-1
1959	480	9	490	2	..	..	970	5
1960	540	13	540	10	228	..	1 080	11
1961	580	7	570	6	239	5	1 150	6
1962	650	12	600	5	246	3	1 250	9
1963	710	9	640	7	269	9	1 350	8
1964	790	11	720	13	308	14	1 510	12
1965	870	10	770	7	327	6	1 640	9
1966	950	9	820	6	340	4	1 770	8
1967	1 020	7	840	2	352	4	1 860	5
1968 ^c	1 120	10	930	11	384	9	2 050	10

^a Sources: For tanker cargo, total dry cargo and all goods: United Nations, *Monthly Bulletin of Statistics*, January issues; for main bulk commodities: Fearnley and Egers Chartering Co. Ltd., *Trades of World Bulk Carriers in 1969* (Oslo, 1969).

^b Excluding international cargoes loaded at ports of the Great Lakes and St. Lawrence system for unloading at ports of the same system. Including petroleum imports into Netherlands Antilles and Trinidad for refining and re-export.

^b Data on iron-ore, grain, coal, bauxite and alumina, and phosphates; figures before 1960 not available.

^c Provisional.

TABLE 2
International seaborne trade,^a 1959, 1965, 1967 and 1968,^b
shares of groups of countries ^{c, d}
(Percentages of world total)

Groups of countries	1959				1965				1967				1968
	Crude petroleum	Petroleum products	Dry cargo	Total all goods	Crude petroleum	Petroleum products	Dry cargo	Total all goods	Crude petroleum	Petroleum products	Dry cargo	Total all goods	Total all goods
A: GOODS LOADED													
<i>Million tons</i>													
World total	315.9	164.7	488.8	969.5	622.0	242.3	768.6	1 632.9	756.2	263.5	851.2	1 870.8	2 051.6
<i>Percentages</i>													
World total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developed market-economy countries (excluding Southern Europe).	0.3	22.0	55.5	31.8	0.1	23.0	53.5	28.6	0.7	24.9	54.5	28.6	28.1
Southern Europe	—	0.2	3.3	1.7	—	0.3	2.4	1.2	—	1.2	2.3	1.2	1.3
Socialist countries of Eastern Europe and Asia	2.7	6.6	6.2	5.1	4.6	8.9	8.1	6.9	4.4	9.2	9.8	7.5	7.1
Developing countries, total	97.0	71.1	35.0	61.4	95.3	67.8	35.9	63.3	94.9	64.7	33.4	62.7	63.5
<i>of which:</i>													
in Africa	1.0	0.4	9.4	5.1	16.0	1.7	10.6	11.3	18.4	1.2	9.6	12.0	13.4
in Asia	60.8	25.3	9.3	28.8	58.4	23.3	9.2	30.0	58.4	24.0	8.6	30.9	31.4
in Latin America and Caribbean	35.1	45.5	15.5	26.9	21.0	42.8	15.3	21.6	18.0	39.5	14.5	19.4	18.1
in Oceania	—	—	0.9	0.4	—	—	0.7	0.4	—	—	0.7	0.3	0.6
B: GOODS UNLOADED													
<i>Million tons</i>													
World total	316.9	151.5	498.4	966.8	622.0	221.7	793.5	1 637.2	756.0	234.4	862.5	1 852.9	2 019.0
<i>Percentages</i>													
World total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Developed market-economy countries (excluding Southern Europe).	72.5	64.1	74.6	72.3	76.4	77.0	72.3	74.5	77.4	75.5	73.4	75.3	75.1
Southern Europe	2.4	2.0	3.0	2.6	2.5	2.0	4.2	3.3	3.4	1.8	3.6	3.3	4.0
Socialist countries of Eastern Europe and Asia	—	1.0	3.9	2.2	0.4	1.0	5.9	3.2	0.6	1.3	5.1	2.8	2.6
Developing countries, total	25.1	32.9	18.5	22.9	20.7	20.0	17.6	19.1	18.6	21.4	17.9	18.6	18.3
<i>of which:</i>													
in Africa	1.5	9.5	4.8	4.4	2.5	5.1	4.1	3.7	2.2	4.7	3.8	3.3	3.2
in Asia	4.7	12.2	8.8	8.0	5.5	8.5	9.0	7.6	5.8	9.6	9.7	8.1	7.9
in Latin America and Caribbean	18.9	11.0	4.7	10.4	12.7	6.0	4.3	7.7	10.5	6.3	4.2	7.0	7.0
in Oceania	—	0.3	0.2	0.2	—	0.4	0.2	0.2	—	0.8	0.2	0.2	0.3

Source: United Nations estimated data; the world totals do not correspond exactly to the rounded totals in table 1.

^a See note a to table 1. Great Lakes and St. Lawrence trade (in dry cargo) amounted to 26 million tons in 1959, 37 million tons in 1965, 34 million tons in 1967 and 36 million tons in 1968.

^b Break-down by type of cargo for 1968 not yet available.

^c Derived from table I in annex II. 1968 figures estimated from data in United Nations, *Monthly Bulletin of Statistics*, November 1969 and January 1970 issues.

^d See annex I for the composition of these groups.

TABLE 3
Growth of international seaborne trade,^a 1959-1967,
classified by types of cargo and groups of countries^{b, c}
(Percentages)

Groups of countries	A: Goods loaded 1967 (1959 = 100)				B: Goods unloaded 1967 (1959 = 100)			
	Crude petroleum	Petroleum products	Dry cargo	All goods	Crude petroleum	Petroleum products	Dry cargo	All goods
World total	239	160	174	193	239	155	173	192
Developed market-economy countries (excluding Southern Europe)	552	181	171	173	255	182	170	200
Southern Europe	—	847	123	139	346	137	206	239
Socialist countries of Eastern Europe and Asia	390	222	277	284	^d	209	226	245
Developing countries, total	234	145	166	197	176	101	167	156
of which:								
in Africa	^e	475	178	450	355	77	136	141
in Asia	230	137	161	207	296	122	192	195
in Latin America and Caribbean	123	140	204	148	141	103	181	144
in Oceania	—	—	148	148	—	410	156	225

Source: See table 2.

^a See note *a* to table 1. Great Lakes and St. Lawrence trade (in dry cargo) amounted to 26 million tons in 1959, 37 million tons in 1965, 34 million tons in 1967 and 36 million tons in 1968.

^b Derived from table I in annex II. 1968 figures estimated from data in United Nations, *Monthly Bulletin of Statistics*, November, 1969 and January 1970 issues.

^c See annex I for the composition of these groups.

^d Unloadings of crude petroleum in the socialist countries of Eastern Europe and Asia amounted to 0.1 million tons in 1959 and to 4.4 million tons in 1967.

^e Loadings of crude petroleum in developing countries in Africa amounted to 3.2 million tons in 1959 and to 139.3 million tons in 1967.

of the different regions in international oil exports. Thus, developing countries in Africa increased their share of crude petroleum shipments from 1.0 per cent in 1959 to 18.4 per cent in 1967, the bulk of this increase coming from the North African countries and from Gabon and Nigeria. In the same period, the share of crude petroleum shipments of the developing countries in Asia fell slightly from 60.8 per cent to 58.4 per cent, and that of the Latin American and Caribbean countries fell from 35.1 per cent to 18.0 per cent.

8. The fall in the share of developing countries in shipments of petroleum products reflects the considerable expansion of refining capacities in developed market-economy countries, Southern Europe, and the socialist countries of Eastern Europe and Asia. This development may partly be explained by the tendency towards placing oil refineries near the final markets. Between 1959 and 1967 the shares in dry cargo loadings of the developing countries in Asia and in Latin America and the Caribbean fell slightly. The share of the African countries in this type of cargo rose over the period as a whole, but fell from 10.6 per cent in 1965 to 9.6 per cent in 1967.

9. The socialist countries of Eastern Europe and Asia increased their share of total international shipments from 5.1 per cent in 1959 to 7.5 per cent in 1967 and 7.1 per cent in 1968. This increase was spread over

the three types of cargo listed. The share of developed market-economy countries in total loadings fell from 31.8 per cent in 1959 to 28.6 per cent in 1967 and 28.1 per cent in 1968; this decrease was attributable to the fall in their share of dry cargo loadings.

10. The figures for goods unloaded⁴ (table 2, B) show a different pattern. The share of developing countries in the world total fell from 22.9 per cent in 1959 to 19.1 in 1965, 18.6 in 1967, and 18.3 per cent in 1968. One of the reasons for this declining share is the rise of international oil trade, the major part of which has been destined for developed market-economy countries. Thus, the share of developing countries in unloadings of crude petroleum fell from 25.1 per cent in 1959 to 18.6 per cent in 1967, and their share of petroleum product unloadings from 32.9 per cent to 21.4 per cent in the same period. However, the share of developing countries in unloadings of dry cargo also decreased from 18.5 per cent in 1959 to 17.9 per cent in 1967.

11. As in the case of goods loaded, there were different regional trends. Developing countries in Africa and Asia increased their share in crude petroleum unloadings,

⁴ Owing to the existence of time lags and of statistical discrepancies, there is a difference between the tonnage of goods loaded and unloaded within a given year.

TABLE 4
Growth of international seaborne trade,^a 1959-1968 and 1965-1968,
classified by groups of countries^{b, c}
(Percentages)

Groups of countries	A: Goods loaded (all goods)		B: Goods unloaded (all goods)	
	(1959 = 100)	1968 (1965 = 100)	(1959 = 100)	1968 (1965 = 100)
World total	212	126	209	123
Developed market-economy countries (excluding Southern Europe)	187	123	217	124
Southern Europe	166	140	315	151
Socialist countries of Eastern Europe and Asia	292	128	253	102
Developing countries, total	219	126	167	118
<i>of which:</i>				
in Africa	551	149	149	106
in Asia	231	131	206	127
in Latin America and the Caribbean	151	112	157	129
in Oceania	293	223	340	212

Source: See table 2.

^a See note a to table 1. Great Lakes and St. Lawrence trade in dry cargo amounted to 26 million tons in 1959, 37 million tons in 1965, 34 million tons in 1967 and 36 million tons in 1968.

^b Derived from table I in annex II. 1968 figures estimated from data in United Nations, *Monthly Bulletin of Statistics*, November 1969 and January 1970 issues.

^c See annex I for the composition of these groups.

while those in Latin America and the Caribbean experienced a fall from 18.9 in 1959 to 10.5 per cent in 1967 of the world total. All developing regions, except Oceania, experienced falls in the share of unloadings of petroleum products. In dry cargo trade, only developing countries in Asia increased their share.

12. The share of the developed market-economy countries in total seaborne unloadings rose from 72.3 per cent in 1959 to 75.3 per cent in 1967 as a result of the rapid increase in their oil imports; this was partly offset by a slight fall in their share of dry cargo imports. The socialist countries of Eastern Europe and Asia increased their share of total unloadings from 2.2 per cent in 1959 to 2.8 per cent in 1967.

13. The percentage figures in table 2 do not reflect the actual changes in the absolute figures for loadings and unloadings in the different regions. While there have been several decreases in shares of trade, decreases in absolute volume of trade have been rare. This may be seen from table I in annex II⁵ which gives the absolute figures from which table 2 was derived. The infrequency of absolute decreases is brought out in tables 3 and 4 which show the percentage increases and decreases over different periods in the loadings and unloadings of the various groups of countries.

⁵ Table I in annex II also provides a more detailed classification of groups of countries than is presented in the tables in the main text.

Chapter II

THE DEVELOPMENT OF THE WORLD MERCHANT FLEET

(a) Size, composition and flag distribution

14. Table 5 shows the development of the world active seagoing merchant fleet over the period 1955 to 1969. Total tonnage increased by 144 per cent during this period, tanker tonnage by 192 per cent and dry cargo tonnage by 122 per cent (all expressed in grt).⁶ In table 6 the total tonnage figures from table 5 are divided according to flag of registration between different groups of countries.⁷

15. In the period 1964 to 1969, the world fleet increased by nearly 50 per cent; however, this very substantial

⁶ Bulk carrier tonnage grew by 175 per cent from 1964 to 1969. *Lloyd's Register of Shipping Statistical Tables* did not publish separate statistics on bulk carriers before 1964. Figures from another source, given in dwt, are shown in table 19.

⁷ It should be noted that owing to a different classification of countries into groups and the exclusion of the United States Reserve Fleet, table 6 is not comparable to similar tables previously published by the UNCTAD secretariat (except those in *Review of Maritime Transport, 1968* (United Nations publication, Sales No.: E.69.II.D.16)). The composition of the groups of countries used in this table is explained in annex I.

increase was very unevenly distributed between groups of countries. The fastest growing fleets were those of the socialist countries of Eastern Europe and Asia, developing countries in Africa, and Liberia and Panama.

16. Socialist countries in Eastern Europe and Asia increased their tonnage more than fivefold between 1955 and 1969 and nearly doubled it between 1964 and 1969, and their share in the total world fleet rose to 9 per cent in 1969.

17. Amongst the developing countries, only those situated in Africa showed growth rates significantly above the world average; however, they only increased their share from 0.4 per cent in 1964 to 0.6 per cent in 1969 in spite of a rise in their fleet of 87 per cent. Developing countries as a whole increased their fleets by 37 per cent between 1964 and 1969; their share of the world fleet rose from 6.5 per cent of the world total in 1955 to 7.6 per cent in 1969, after reaching 8.1 per cent in 1964. This relative fall occurred in spite of the rapid expansion of the fleets of developing countries in Africa and the steady growth of the merchant marines of

TABLE 5
World shipping tonnage,^a 1955-1969
(Mid-year figures)

Year	Tankers		Dry cargo ships		Total	
	Million grt	Million dwt	Million grt	Million dwt	Million grt	Million dwt
1955	26.4	..	56.3	..	82.7	..
1956	27.8	..	59.3	..	87.1	..
1957	29.9	..	64.1	..	94.0	..
1958	33.1	..	67.1	..	100.3	..
1959	37.3	..	69.7	..	107.0	..
1960	40.8	62.9	71.6	94.8	112.4	157.7
1961	43.1	65.4	76.3	98.7	119.3	164.1
1962	44.7	69.0	79.6	102.9	124.2	171.9
1963	46.5	72.1	83.7	109.3	130.1	181.4
1964	49.9	77.2	87.9	113.7	137.8	190.9
1965	54.4	86.1	92.1	118.4	146.5	204.5
1966	59.8	94.4	99.2	126.7	159.0	221.1
1967	63.9	102.5	107.2	138.4	171.1	240.9
1968	68.9	112.6	115.0	149.5	184.0	262.1
1969	77.1	127.0	125.0	161.3	202.0	288.3

Sources: *Lloyd's Register of Shipping Statistical Tables, 1955-1969*, for figures expressed in grt (vessels of 100 grt and over). Figures in dwt (vessels of 300 grt and over) have been obtained from Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*. Statistics applying to the United States Reserve Fleet are published by the United States Department of Commerce, Maritime Administration.

^a Excluding the United States Reserve Fleet and the Great Lakes fleets of the United States and Canada.

TABLE 6
Distribution of world tonnage by flag of registration,^{a b} 1955, 1964 and 1969

Flags of registration in groups of countries	Tonnage (million grt)			Shares of world tonnage (percentage)			Increase in tonnage 1964-1969		
	1955	1964	1969	1955	1964	1969	in million grt	Index 1969 (1964 = 100)	Share in world total increase (percentage)
World total	82.7	137.8	202.0	100.0	100.0	100.0	64.2	147	100.0
Developed market-economy countries (excluding Southern Europe)	61.4	87.2	118.5	74.2	63.3	58.6	31.4	136	48.8
Liberia, Panama ^d	8.3	18.8	34.6	10.1	13.6	17.1	15.8	184	24.6
Southern Europe	4.1	11.3	15.6	4.9	8.2	7.7	4.2	137	6.6
Socialist countries of Eastern Europe and Asia	3.5	9.4	18.1	4.2	6.8	9.0	8.7	192	13.5
Developing countries, ^d total	5.4	11.1	15.3	6.5	8.1	7.6	4.2	137	6.5
of which:									
in Africa	0.2	0.6	1.1	0.3	0.4	0.6	0.5	187	0.8
in Asia	1.8	6.0	8.9	2.2	4.4	4.4	2.9	148	4.5
in Latin America and the Caribbean	3.4	4.5	5.2	4.1	3.3	2.6	0.7	116	1.2

Source: Compiled from Lloyd's Register of Shipping Statistical Tables and supplementary data.

^a Excluding United States Reserve Fleet of about 14.4 million grt at 1 July 1955, 11.7 million grt at 1 July 1964, and 6.3 million grt at 1 July 1969.

^b Also excluding United States and Canadian Great Lakes tonnage.

^c Tonnage under these two flags is shown separately since it is believed that most of it is effectively controlled by interests foreign to these countries. The Honduran flag used to be in this category and its tonnage of 0.4 million grt is included with that under Liberian and Panamanian flags in this table for 1955. Honduran flag tonnage in the 1960s has been of a much smaller order.

^d In this table and in a number of passages in this document, the expression "developing countries" does not include Liberia and Panama.

developing countries in Asia, the latter matching the increase of the world fleet in the period 1964 to 1969. The fleets of developing countries in Latin America and the Caribbean grew by 16 per cent between 1964 and 1969 and their share of the world total declined from 4.1 per cent in 1955 and 3.3 per cent in 1964 to 2.6 per cent in 1969.

18. The share of the group of Southern European countries declined from 8.2 per cent in 1964 to 7.7 per cent in 1969; however, it is believed that substantial amounts of tonnage registered in other groups are owned by residents of some of these countries and it is possible that this apparent decline is matched by an increase in the tonnage owned by the residents of such countries but registered in other groups.

19. The share of developed market-economy countries in the world total remained very high, reaching 58.6 per cent in 1969. However, the relative decline of this group of countries continued, since its share in 1964 was of 63.3 per cent, and in 1955 of 74.2 per cent. As mentioned in the case of the group of countries in Southern Europe, some developed market-economy countries are owners of substantial amounts of shipping tonnage registered in other groups, and this fact may fail to reveal development of tonnage owned by residents in these countries.

20. The share of Liberia and Panama in the world total continued to increase at a rapid rate; the total

tonnage of the fleets registered in these countries increased by 84 per cent between 1964 and 1969, to reach 17.1 per cent of the world total, the corresponding figures for 1955 and 1964 being respectively 10.1 and 13.6 per cent. Most of the tonnage operated under the flags of these countries is owned by foreign interests, so that although both Liberia and Panama are developing countries, their merchant fleets cannot be included with those owned in developing countries.

21. The distribution of 1969 world tonnage, according to type of ship, is given in table 7. The increase in the tonnage of the various kinds of ships between 1964 and 1969 clearly shows the growing importance of bulk carriers and tankers, the fleet of the former having increased by 175 per cent and that of the latter by 55 per cent. Other non-bulk dry cargo ships (that is, liners and tramps) increased their tonnage by only 16 per cent; it is of such ships, however, that the fleets of Southern Europe, the socialist countries of Eastern Europe and Asia, and the developing countries are mainly composed. The fleets of Liberia and Panama are seen to provide about one quarter of world tonnage of both tankers and bulk carriers. Developing countries in Africa, Latin America and the Caribbean were owners of relatively small amounts of bulk carrier tonnage (compared with their total fleet) and the same observation applies to socialist countries of Eastern Europe and Asia; these

TABLE 7
Shares of world tonnage by class as at 1 July 1969 ^a

	All ships ^b	Tankers ^b	Bulk carriers ^c	Other ships ^b
<i>Share of total tonnage in grt, 1968 and 1969 (percentage)</i>				
World total: 1969	100.0	38.1	19.3	42.5
1968	100.0	37.5	17.5	45.0
<i>Tonnage increase, Index 1969 (1964 = 100)</i>				
World total	147	155	275	116
<i>Shares of groups of countries in total tonnage in each class, 1969 (percentage)</i>				
World total	100.0	100.0	100.0	100.0
Developed market-economy countries (excluding Southern Europe)	58.6	59.2	63.8	55.9
Liberia, Panama	17.1	25.6	23.2	6.7
Southern Europe	7.7	5.8	5.7	10.3
Socialist countries of Eastern Europe and Asia	9.0	4.8	2.2	15.7
Developing countries, total	7.6	4.5	5.1	11.4
<i>of which:</i>				
in Africa	0.6	0.3	—	1.1
in Asia	4.4	1.8	4.2	6.9
in America and the Caribbean	2.6	2.4	0.9	3.5

Source: Compiled from *Lloyd's Register of Shipping Statistical Tables, 1969*.

^a Excluding Great Lakes fleets of the United States of America and of Canada (3.3 million grt combined of which 2.7 million grt bulk carriers) and the United States Reserve Fleet, estimated at 0.2 million grt tankers, 0.01 million grt bulk carriers, and 7.6 million grt of other ships.

^b Vessels of 100 grt and more.

^c Ore and bulk carriers of 6,000 grt and more.

countries, and the developing countries of Africa and Asia also had a relatively small share of the world oil tanker fleet.

22. A detailed breakdown of 1969 tonnage by individual flag and by type of ship is given in table II in annex II. Table III, in the same annex, classifies the 1969 tonnage according to geographical areas of countries of registration.

23. The different rates of growth of tonnage in the various groups of countries and in the different classes of ship, as shown in tables 6 and 7, are reflected in the age distribution of the 1969 world fleet, which is shown in table 8. This table shows that the socialist countries of Eastern Europe and Asia have the highest percentage (67 per cent) of ships less than ten years old; the next highest figure is that of developed market-economy countries (63 per cent). Twenty-five per cent of the ships of developing countries and of countries in Southern Europe are more than twenty years old, and these countries also constitute the two groups with the lowest percentage of ships less than ten years old (47 per cent and

42 per cent respectively). Only 12 per cent of the tonnage registered in Liberia and Panama was more than twenty years old, and the same held good for the developed market-economy countries and the socialist countries in Eastern Europe and Asia.

24. As for the different classes of ships, 84 per cent of all bulk carrier tonnage was less than ten years old; this compares with 62 per cent for tankers, and 42 per cent for other ships; on the average, 58 per cent of the total world fleet was less than ten years old.

(b) Growth of individual fleets ⁸

25. On 1 July 1969 there were eight merchant fleets with a tonnage in excess of 10 million dwt each, and

⁸ In this section of the *Review*, data on the size of individual fleets at 1 July are given in dwt; the source of these data is the Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*. This source gives information on vessels of 300 grt and over, and shows separate statistics for about seventy different fleets accounting for approximately 99 per cent of world tonnage. The remaining 1 per cent is not relevant to a discussion of the growth of the larger

TABLE 8
Age distribution of the world merchant fleet as at 1 July 1969 ^a
(Percentage of total tonnage)

	Total	Age groups (years)					
		0-4	5-9	10-14	15-19	20-24	25 and over
World total	100	36	22	19	10	6	8
<i>By group of countries:</i>							
Developed market-economy countries (excluding Southern Europe)	100	39	24	17	9	6	6
Liberia, Panama	100	32	17	26	13	5	7
Southern Europe	100	25	17	20	13	11	14
Socialist countries of Eastern Europe and Asia	100	37	30	15	6	2	10
Developing countries, total	100	27	20	15	12	12	15
<i>By type of ship:</i>							
Tankers	100	37	25	22	11	3	3
Bulk carriers ^b	100	62	22	9	3	2	2
Other ships	100	22	20	20	12	11	14

Source: Compiled from *Lloyd's Register of Shipping Statistical Tables, 1969* and supplementary data.
^a Excludes vessels of less than 100 grt; also excludes the United States Reserve Fleet and United States and Canadian Great Lakes tonnage (estimated age distribution).
^b Ore and bulk carriers of 6,000 grt and more.

these together accounted for about 69 per cent of world tonnage. These fleets are listed in table 9 in order of size in 1969, together with the comparable figures for 1964 and the tonnage increases between 1964 and 1969.

26. It will be noted that, of the eight largest fleets, two increased by more than 100 per cent between 1964 and 1969, that is, those registered in Japan and Liberia. The Union of Soviet Socialist Republics increased its fleet by nearly 70 per cent, and the other fleets showed increases ranging from 19 per cent (United Kingdom) to 45 per cent (Norway). The increase in the active seagoing fleet of the United States of America was accompanied by a decrease in the United States Reserve Fleet of about 7.3 million dwt.

27. Apart from the fleets exceeding 10 million dwt, there were thirty-three other fleets in excess of 500,000 dwt on 1 July 1969. Ten of these, totalling about 42.7 million dwt were registered in developed market-economy countries. The Panamanian flag fleet amounted to

8,371,000 dwt. Other fleets in excess of 500,000 dwt on 1 July 1969 were (in thousand dwt):⁹

In developing countries and territories

India	3,314	Israel	1,111
Brazil	1,992	Pakistan	770
Republic of China	1,514	Indonesia	761
Argentina	1,489	Mexico	570
Philippines	1,318	Kuwait	521
Republic of Korea	1,128	Lebanon	503
Hong Kong	1,123		

In countries of Southern Europe

Spain	5,751	Portugal	910
Yugoslavia	2,043	Turkey	752
Cyprus	1,187		

In socialist countries of Eastern Europe and Asia

Poland	1,965	China (mainland)	1,088
Eastern Germany	1,196	Bulgaria	867

28. One common feature of the three groups mentioned in the preceding paragraphs was that the composition of the groups remained virtually unchanged between 1968 and 1969, the only exception being the addition of Kuwait to the list of developing countries having fleets of more than 500,000 dwt.

⁹ It is believed that some of the tonnage in a number of these fleets is controlled by interests which are not resident in the country or territory of registration.

TABLE 9
Eight largest merchant fleets in dwt, 1969 and 1964

	1 July 1969 (thousand dwt)	1 July 1964 (thousand dwt)	Increase in tonnage 1964-1969	
			Thousand dwt	Index 1969 (1964 = 100)
Liberia	46 928	22 519	24 410	208.3
Japan	32 593	14 368	18 225	226.8
United Kingdom	32 499	27 244	5 255	119.2
Norway	31 168	21 455	9 713	145.2
United States of America ^a	17 747	14 230	3 517	124.7
Union of Soviet Socialist Republics	13 723	8 174	5 549	167.8
Greece	13 136	10 098	3 038	130.0
Federal Republic of Germany	10 267	7 405	2 863	138.6
Total, eight flags	198 062	125 493	72 570	157.8
World total	288 328	190 897	97 431	151.0
Eight flags as percentage of world total	68.6	65.7	74.5	

Source: Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*.
^a Estimated active seagoing fleet, excluding Great Lakes tonnage and Reserve Fleet. Reserve Fleet estimated at 15,121,000 dwt in 1964 and 7,774,000 dwt in 1969. (Data from United States Department of Commerce, Maritime Administration.)

29. Many of these fleets have grown substantially since 1964. Apart from the flags under which more than 10 million dwt were registered, the fleets under the following flags increased by more than 500,000 dwt from 1 July 1964 to 1 July 1969. In each case, the first figure is the tonnage increase, to the nearest thousand dwt, and the figure in parenthesis is the increase as a percentage of the 1964 tonnage.

Spain	3,363 (140)	Republic of Korea	958 (561)
Italy	2,068 (27)	Philippines	727 (123)
France	1,876 (30)	Republic of China	677 (81)
Panama	1,843 (28)	Poland	656 (50)
India	1,328 (67)	Yugoslavia	635 (45)
Denmark	1,238 (35)	Bulgaria	604 (229)
Cyprus ¹⁰	1,173 (..)	Eastern Germany	587 (96)
Sweden	1,151 (19)		

30. Tonnage increases in the range 200,000-499,999 dwt between 1 July 1964 and 1 July 1969 occurred in the following fleets (thousand dwt; percentage increase over 1964 in parenthesis):

Israel	468 (73)	Somalia ¹⁰	351 (..)
Kuwait	465 (836)	China (mainland)	295 (37)
Belgium	464 (46)	Australia	289 (43)
Netherlands	405 (6)	Mexico	272 (91)
Romania	371 (291)	Indonesia	254 (50)
Finland	367 (26)	Canada	240 (33)
Pakistan	366 (91)	Brazil	210 (12)

31. Of the fleets listed in the two preceding paragraphs, those of Cyprus, Somalia, Kuwait, the Republic of

¹⁰ Since the tonnage registered in Cyprus on 1 July 1964 was only about 14,000 dwt and that registered in Somalia about 11,000 dwt, the percentage increases are so high as to be virtually meaningless.

Korea, Romania, Bulgaria, Spain and the Philippines grew by 100 per cent or more in the five year period. Of the fourteen developing countries showing increases of 200,000 dwt or more, nine were situated in Asia.

32. A few fleets actually decreased in size between 1964 and 1969. The Lebanese fleet decreased by about 810,000 dwt to 38 per cent of its 1964 level. Tonnage registered in Turkey decreased by 66,000 dwt (8 per cent) and that registered in Hong Kong, New Zealand, Honduras, Czechoslovakia, Argentina, Ireland and Chile by smaller amounts.

(c) Tonnage on order¹¹

33. Tonnage on order on 31 October 1969 is shown in table 10. The world order book on that date amounted to 101.8 million dwt, representing an increase of about 30 per cent over the 1968 level, and constituting about 35 per cent of the world fleet.

34. The share of developed market-economy countries of all ships on order was 57.9 per cent, which compares with 54.8 per cent in 1968. The share of Liberia and Panama remained virtually unchanged at nearly 25 per cent and that of countries in Southern Europe increased from 5.8 to 7.0 per cent. The share of socialist countries in Eastern Europe and Asia fell from 5.8 per cent in 1968 to 4.3 per cent in 1969; this fall may be attributed to a large amount of deliveries to the USSR during 1969. The share attributable to developing countries also fell from 7.7 to 5.2 per cent.

¹¹ Order figures in this section are from *World Ships on Order*, No. 21, supplement to *Fairplay* (London), 27 November 1969; data as at 31 October 1969.

TABLE 10
World tonnage on order as at 31 October 1969 ^a

	All ships	Tankers (of 150,000 dwt and over)	Tankers (of less than 150,000 dwt)	Ore/joll and ore/bulk/joll carriers ^b	Other bulk carriers ^c	Container ships ^d	Dry cargo ships excluding container ships and bulk carriers
	(Million dwt)						
World total	101.8 (100 per cent)	49.8 (49.0 per cent)	11.8 (11.6 per cent)	13.7 (13.4 per cent)	14.6 (14.4 per cent)	2.9 (2.9 per cent)	9.0 (8.8 per cent)
	Share of world total (percentage)						
World total	100	100	100	100	100	100	100
Developed market-economy countries (excluding Southern Europe)	57.9	59.5	55.0	64.9	54.4	91.9	36.7
Liberia, Panama	24.5	33.0	8.5	26.4	21.6	4.3	6.5
Southern Europe	7.0	6.2	9.5	1.2	9.9	3.5	13.5
Socialist countries of Eastern Europe and Asia ^e	4.3	—	10.0	—	8.7	0.3	21.8
Developing countries, total	5.2	0.9	14.6	5.8	4.1	—	19.9
of which:							
in Africa	0.1	—	0.3	—	—	—	1.0
in Asia	3.0	0.9	8.0	1.9	3.6	—	10.0
in Latin America and the Caribbean	2.1	—	6.4	3.9	0.5	—	8.9
Flag not yet known	1.1	0.5	2.4	1.7	1.4	—	1.6

^a Source: Compiled from *World Ships on Order*, No. 21, Supplement to *Fairplay* (London), 27 November 1969.

^b Vessels of 1,000 dwt and over, excluding passenger vessels, ferries, fishing vessels and miscellaneous specialized craft.

^c Vessels of 12,000 dwt and over.

^d Defined as single-deck vessels of 12,000 dwt and over.

^e Vessels with a carrying capacity of 300 ISO 20-foot containers and over.

^f Because of national planning periods in these countries, orders are often placed far in advance of expected delivery date. This partly explains the very high percentage share of dry cargo ships.

35. Tankers of more than 150,000 dwt accounted for nearly 50 per cent of all tonnage on order, and the average size of such vessels rose to 231,000 dwt. The flags of Liberia and Panama accounted for 33 per cent of all orders in this category. Of the developing countries, only those in Asia had orders for such big tankers, but they accounted for only 0.9 per cent of the world total.

36. Tankers of less than 150,000 dwt accounted for only 11.6 per cent of world tonnage on order, and their average size was 27,000 dwt. The shares of developing countries and of socialist countries in Eastern Europe and Asia were respectively 14.6 and 10.0 per cent, substantially more than their share of total orders. Amongst the developing countries, those in Asia and in Latin America and the Caribbean accounted for much the largest share. The shares of Liberia and Panama, 8.5 per cent, were much below their general average.

37. The steep rise in tonnage of combined carriers on order (see para. 81 below) continued in 1969; by far the larger amounts of tonnage were on order for registration in developed market-economy countries and in Liberia and Panama, leaving only 7.0 per cent for registration

in other regions (the flag of registration of 1.7 per cent being unknown). Amongst the developing countries, large orders had been placed by those situated in Latin America and the Caribbean. The average size of all such ships on order reached 127,700 dwt. The average size of other bulk carriers on order reached 37,800 dwt; the distribution of this tonnage between the various groups was rather more even, with 9.9 per cent being on order for Southern Europe, and 8.7 per cent for socialist countries in Eastern Europe and Asia.

38. The tonnage of container ships on order reached 2.9 million dwt; over 90 per cent of this tonnage was on order for owners in developed market-economy countries, of which the United States and the United Kingdom accounted for about 60 per cent. Large amounts of tonnage were on order for owners in the Federal Republic of Germany, Sweden, Liberia, Denmark, Greece, Japan, France and Norway.

39. The relative importance of non-bulk dry cargo vessels (excluding container ships) continued to decline; they now amount to only 9.0 per cent of the world total. The socialist countries of Eastern Europe and Asia continued to provide a very large proportion of

TABLE 11
Shipbuilding: completions by country of build, 1960, 1964, 1966 and 1968

	Tonnage (thousand grt)				Share of total completions (in percentage)			
	1960	1964	1966	1968	1960	1964	1966	1968
Japan	1 839	3 764	6 495	8 349	21.9	38.6	46.0	49.6
Other developed market-economy countries (excluding Southern Europe)	5 925	5 211	6 138	6 750	70.7	52.5	43.5	40.1
Southern Europe	354	420	726	820	4.2	4.2	5.1	4.9
Socialist countries of Eastern Europe (excluding USSR) ^a	220 ^b	441	621	721 ^c	2.6	4.4	4.4	4.3
Developing countries	45	81	126	204	0.5	0.8	0.9	1.2
Total	8 382	9 917	14 105	16 845	100.0	100.0	100.0	100.0
USSR in thousand dwt ^d	161	363	384	263				

Source: Compiled from *Lloyd's Register of Shipping Statistical Tables, 1969*, and supplementary data.

^a The source does not give data for USSR and socialist countries in Asia.

^b 1960 completions in Eastern Germany not available.

^c 1968 completions in Bulgaria not available.

^d Statistics provided by the USSR Ministry of Merchant Marine. Since they are in dwt, they have been shown separately from the rest of the table and are not included in the row of totals.

this total, nearly 22 per cent.¹² The share of developing countries was also high, reaching nearly 20 per cent, but those of the developed market-economy countries and Liberia and Panama were far below their general average.

(d) Shipbuilding

40. The growth in tonnage completed is shown in table 11. Annual completions have doubled since 1960 to reach nearly 17 million grt, or 8.5 per cent of the existing fleet; the corresponding figures for 1960 were 8.4 million grt and 6.8 per cent.

41. Japan maintained and reinforced its position as the biggest shipbuilding nation in 1968, with nearly 50 per cent of all completions; tonnage completed in that country increased by about 350 per cent between 1960 and 1968. The share of developed market-economy countries decreased from about 71 per cent in 1960 to 40 per cent in 1968; owing, however, to the growth of the world total, the relative decline of such countries did not result in an absolute fall, 1968 completions being approximately 14 per cent higher than in 1960. The most

important shipbuilding nations in this group of countries were the Federal Republic of Germany, Sweden and the United Kingdom, each of which constructed more than one million grt in 1968.

42. The share of countries in Southern Europe remained constant throughout the period, whereas socialist countries in Eastern Europe increased their share from 2.6 per cent in 1960 to 4.3 per cent in 1968.¹³ The share of developing countries more than doubled from 1960 to 1968, but was still only 1.2 per cent of the total in 1968; of these countries, Brazil accounted for more than half of all completions.

43. It is possible that the volume of shipbuilding will be affected by the adoption of an understanding by the major shipbuilding countries members of OECD in May 1969 whereby the participating Governments agreed to impose certain limitations on official shipbuilding credit facilities for new ships by limiting the repayment period to a maximum of eight years, the minimum down payment to 20 per cent, and the minimum rate of interest to 6 per cent.¹⁴

¹³ These percentages do not take account of shipbuilding in the USSR for which comparable data were not available.

¹⁴ For a further discussion of this subject, see "Financing for the purchase of new and second-hand ships by developing countries: report by the UNCTAD secretariat" (TD/B/C.4/58).

¹² It should be noted that many of these countries place orders that are expected to be met over the current economic planning period of each country. The over-all time span of these orders is longer than average.

Chapter III

THE DEMAND FOR NEW TONNAGE, 1970-1980

44. Forecasting the demand for new ships has become even more important in recent years as the rate of technological change in shipping has been accelerating; many ships built only a few years ago have already become economically obsolete, especially those exposed to competition from very large vessels. However, owing to the very lack of stability of the world shipping scene and its constituent components, any forecast concerning specific types of ships has become very difficult, and few fruitful attempts have been made to arrive at reliable figures for the more than immediate future.

45. Other attempts have been made to make forecasts for broad classes of vessels, such as dry cargo ships or oil tankers. One of the most recent of such forecasts, made by Mr. Ichiro Onozuka¹⁵ of the Hitachi Shipbuilding and Engineering Co. and published by the Shipbuilders' Association of Japan, makes forecasts for the demand and supply of new building up to 1980. The main assumption of the forecast is that the gross national product of

¹⁵ The text of this chapter is based on Ichiro Onozuka, *Japanese Shipbuilding in 1980* (Tokyo, Shipbuilders' Association of Japan, 1969). The UNCTAD secretariat is grateful to the author and the publisher of that study for their permission to make use of the results in this form.

the members of OECD will grow at between 4.6 and 5.0 per cent per annum until 1980 (in real terms).

46. In estimating the increase of oil consumption in the future there is a possibility of structural changes in the demand for energy; it has been assumed that no major changes will take place in the price ratio conventional/nuclear energy before 1980, but the gradual change in the structure of the source of energy due to the increased use of nuclear power and natural gas has been built into the regression formula. Furthermore, an estimate was made of the future changes in the average length of voyage and it was expected that the Suez Canal would be reopened and substantially enlarged within the near future. All the same, the author expects an increase in the average length of voyages due to the introduction of very large tankers proceeding via the Cape.

47. On the other hand, it is expected that the productivity of tankers will continue to increase;¹⁶ the increase in the length of haul, and that in productivity, therefore, affect differently the demand for tanker tonnage; the net effect, which is expected to increase the demand for such

¹⁶ See chap. IV below.

TABLE 12
The demand for new building, 1971-1975 and 1976-1980
(Million dwt)

	1971-1975		1976-1980	
	Upper limit a	Lower limit b	Upper limit a	Lower limit b
<i>Tankers</i>				
Fresh demand	68.8	61.2	98.8	84.9
Replacement demand	15.0	15.0	22.5	22.5
Total	83.8	76.2	121.3	107.4
<i>Dry cargo vessels</i>				
Fresh demand	55.5	49.4	75.4	65.4
Replacement demand	15.7	15.7	17.7	17.7
Total	71.2	65.1	93.1	83.1
Grand total	155.0	141.3	244.3	190.5

Source: Ichiro Onozuka, *Japanese Shipbuilding in 1980* (Tokyo, Shipbuilders' Association of Japan, 1969).

a The upper limit for tankers refers to a growth rate of oil tonnage moved by sea of 8.9 per cent per annum; for dry cargo vessels, it refers to a maximum growth rate of dry cargo seaborne trade of 6.2 per cent per annum.

b The lower limit for tankers refers to a growth rate of oil tonnage moved by sea of 8.3 per cent per annum; for dry cargo vessels it refers to a minimum growth rate of dry cargo seaborne trade of 5.7 per cent per annum.

TABLE 13
The world tanker and dry cargo fleet, 1970, 1975 and 1980 ^a
(Million dwt at year end)

	Tankers		Dry cargo vessels		Total	
	Upper limit ^b	Lower limit ^b	Upper limit ^b	Lower limit ^b	Upper limit ^b	Lower limit ^b
1970	127.8	124.6	157.5	154.9	285.3	279.6
1975	193.8	183.5	211.3	202.8	405.1	386.3
1980	289.7	265.8	384.3	266.4	574.0	532.2

Source: As for table 12.

^a Estimates.

^b For a definition of the upper and lower limits, see footnotes *a* and *b* to table 12.

tonnage more than would be in proportion to the expansion of oil cargo trade measured in tons, is applied as a correction factor to the forecast of the transport of oil cargoes by sea.

48. Since changes in the length of haul and productivity have been taken into account, it is expected that the demand for new tanker tonnage will grow in step with the increase of the corrected oil cargo trade forecast, to which should be added the demand created by the replacement of old vessels. The net demand for new tonnage, that is, excluding replacements, is expected to grow at between 8.3 and 8.9 per cent per annum, which compares with an average of 8.0 per cent for the period 1955 to 1966. The estimated demand for new building shown as a total for the period 1970-1975 and 1976-1980 is shown in table 12; table 13 reproduces the forecasts applying to the actual volume of world shipping tonnage in 1970, 1975 and 1980.

49. The method of approach has been the same with regard to forecasting the demand for dry cargo tonnage, except for the fact that no correction is made for changes in the length of haul or the productivity of vessels; i.e., the forecast is largely based on previously observed trends. This leads to the assumption of an average annual increase in dry cargo seaborne trade of between 6.0 and 6.5 per cent (1955 to 1969: 5.5 per cent), and an annual increase in the dry cargo fleet of between 5.7 and 6.2 per cent (1955 to 1966: 5.3 per cent). The forecasted demand for new building is shown in table 12, and the size of the world fleet in table 13.

50. It is possible to challenge many of the assumptions on which these forecasts are based; as the author points out himself, the continued closure of the Suez Canal would increase the demand for all kinds of world tonnage. Other assumptions seem partly to ignore the possible impact of new methods of energy production such as nuclear power and other ways of transport such as aircraft and hovercraft. However, the key assumption seems to be the expected growth rate of the gross national

product of the OECD countries and the stipulation of certain related trends.

51. Certain other studies have obtained similar results; the figures worked out for 1975 by the Ministry of Transport of Japan in 1967 were very close to those of the above-mentioned study. On the other hand, the forecast made for 1980 is slightly below that worked out in the United Kingdom by the Geddes Committee in 1966.

52. It is worthy of note that these estimates imply a considerable and continued increase in world shipping tonnage; they do not imply any medium-term excess of any one type of tonnage, and Mr. Onozuka actually forecasts that shipbuilding capacity will lag behind the demand for new building after 1975.

53. According to a recent report ¹⁷ the representatives of the shipbuilders' associations of some of the most important shipbuilding countries members of OECD have forecast the demand for new tonnage as being between 21 million grt and 24 million grt in 1973; the capacity of the shipbuilding industry was estimated at a maximum of 24 million tons. It is unfortunately difficult to compare these figures, expressed in grt, with the dwt figures mentioned above, but it does appear, from the examination of recent completion figures expressed in both grt and dwt, that the two estimates are fairly close.

54. However, these global averages and forecasts fail to show that whereas certain types of ship may be in heavy demand, others may become redundant owing to technological progress, and it is impossible, for instance, to base an investment policy on such forecasts alone. There is a real need for such estimates of future trends, and there seems to be no reason why the methods used in this field in other sectors of the economy should not be applied to shipping. In view of the high capital requirements of shipping, such studies would be of particular interest to developing countries.

¹⁷ *The Journal of Commerce* (Liverpool and London, 13 November 1969).

Chapter IV

THE PRODUCTIVITY OF SHIPPING SPACE

55. The development of the efficiency of world shipping tonnage is an important factor in determining the demand for tonnage. The number of ton/miles of cargo carried by one dwt in a given period may be used as a measure of the productivity of shipping space, as it measures both the weight transported and the distance. Unfortunately, ton/mile figures are only available for goods transported in bulk carriers and for oil cargoes.

56. Table 14 shows the changes in the number of ton/miles performed by one dwt of bulk carrier tonnage in the period 1960-1968; table 16 gives the same kind of information for oil tanker tonnage. The ton/mile performance of tankers and bulk carriers is also shown in graph 1.

57. Table 14 shows that the number of tons of cargo carried by dwt of bulk carriers of more than 18,000 dwt increased by about 37 per cent between 1960 and 1968. One of the reasons for this increase may be sought in the lengthening of the average distance of loaded voyage for such vessels, growing from 3,210 miles in 1960 to 4,730 miles in 1968; this change would, *ceteris paribus*, increase the proportion of time spent at sea to time spent in port, and therefore also increase the potential number of ton/miles transported. In addition, during the period under review, handling facilities for bulk cargoes have been greatly improved.

58. Table 15 shows the annual rate of growth of ton/miles of bulk cargoes and of bulk carrier tonnage 1960-1968. These very high rates of growth may be attributed to the cost reductions offered by bulk transport; this is discussed in chapter V below.

59. As for oil tankers, the change in the number of ton/miles of cargo carried by dwt was similar, in that it increased by about 50 per cent for the total fleet and 38 per cent for the active fleet between 1960 and 1968.

TABLE 14
Bulk carriers: ton/miles of bulk commodities carried by dwt, 1960-1968 ^a

Year	Thousand million ton/miles of bulk commodities carried in bulk carriers ^{b, c}	World bulk carrier fleet in million dwt ^d	Ton/miles of bulk commodities carried by dwt	
			Thousand ton/miles	Index (1960 = 100)
1960	122	4.1	29.8	100
1961	180	5.3	34.0	114
1962	261	7.9	33.0	111
1963	370	11.1	33.3	112
1964	530	14.7	36.1	121
1965	678	18.0	37.7	127
1966	927	24.1	38.5	129
1967	1 303	33.2	39.2	132
1968	1 797	44.0	40.8	137

Source: Fearnley and Egers Chartering Co. Ltd., *Trades of World Bulk Carriers in 1968* (Oslo, 1969).

^a Due to changes in definitions, this table is not comparable with table 16 in the *Review of Maritime Transport 1968* (United Nations publication, Sales No.: E.69.II.D.16).

^b Excluding bulk shipments in vessels of less than 18,000 dwt.

^c Excluding oil cargo and cars when shipped in bulk carriers of the combined types 1960-1964; including oil cargoes in combined carriers from 1965. The exclusion of oil cargoes in the earlier period does not represent an important distortion of the series in view of the small volume of such shipments by combined carriers before 1966 (5 million tons of oil in 1965 compared with 171 million tons of dry bulk cargo); the increase of ton/miles per dwt would only be reduced by a few percentage points.

^d Vessels of 18,000 dwt and over.

TABLE 15

Annual rates of increase ^a of ton/miles of bulk cargoes ^b carried and of bulk carrier ^c tonnage
(Percentages)

Year	Bulk cargo (ton/miles carried)	Bulk carrier (tonnage)
1961	48	29
1962	45	49
1963	42	41
1964	43	32
1965	28	22
1966	37	34
1967	41	38
1968	38	33

Source: Table 14.

^a Increase in each year as a percentage of the previous year's figure.

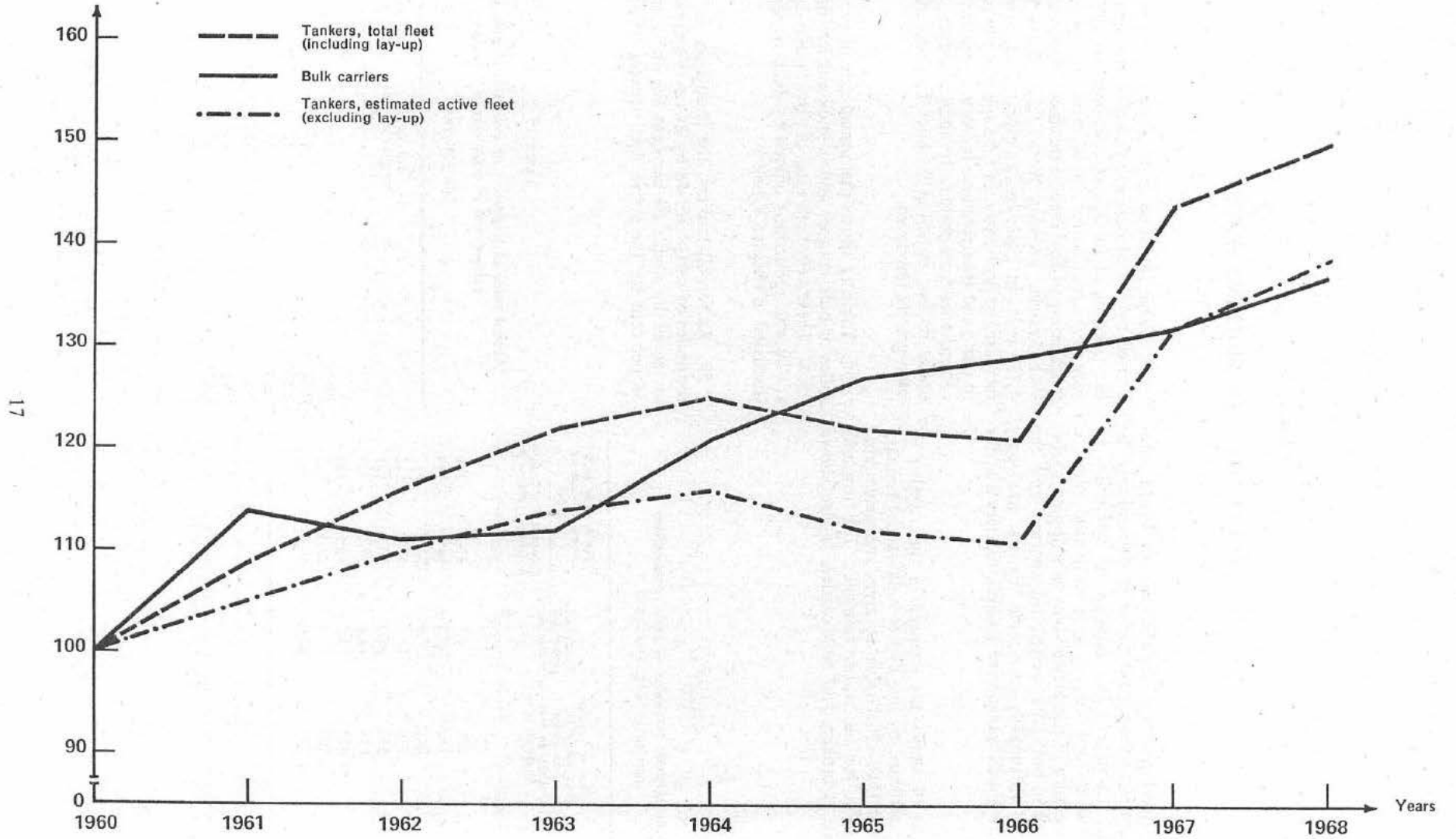
^b In vessels of over 18,000 dwt, excluding oil cargoes transported by combined carriers 1960-1964; including such cargoes from 1965; see footnote *c* to table 14.

^c Vessels of 18,000 dwt and over; mid-year figures.

Ton/miles of cargo
carried by one dwt
(1960 = 100)

GRAPH I

Ton/miles of cargo carried by one dwt, tankers and bulk carriers, 1960-1968



Source: Tables 14 and 16.

TABLE 16
Oil tankers: ton/miles of oil carried per dwt, 1960-1968

Year	Thousand million ton/miles of oil carried ^a	Ton/miles of oil carried per dwt					
		World tanker fleet (in million dwt)		Total fleet		Active fleet (estimated)	
		Total fleet ^b	Active vessels ^c (estimated)	Thousand ton/miles	Index (1960 = 100)	Thousand ton/miles	Index (1960 = 100)
1960	3 965	62.9	57.6	63.0	100	68.8	100
1961	4 490	65.4	62.2	68.7	109	72.2	105
1962	5 050	69.0	66.7	73.2	116	75.7	110
1963	5 555	72.1	70.6	77.0	122	78.7	114
1964	6 090	77.2	76.2	78.9	125	79.9	116
1965	6 620	86.1	85.5	76.9	122	77.4	112
1966	7 220	94.4	94.1	76.5	121	76.7	111
1967	9 272	102.5	102.1	90.5	144	90.8	132
1968	10 629	112.6	112.4	94.4	150	94.6	138

^a Data from British Petroleum Co. Ltd. It has not been possible to obtain ton/mile figures for shipments of grain by oil tankers; hence, the figures presented in the table above cannot be interpreted as providing a global estimate of the productivity of tankers.

^b See table 5; mid-year figures, vessels of 300 grt and over.

^c Excluding tonnage laid up (lay-up figures were estimated by applying a conversion factor to lay-up statistics expressed in grt).

TABLE 17
Annual rates of increase ^a of ton/miles of oil cargo carried and of active oil tanker tonnage (Percentages)

Year	Oil cargo (ton/miles carried)	Active oil tanker tonnage (excluding ships laid up)
1961	13	8
1962	12	7
1963	10	6
1964	10	8
1965	9	12
1966	9	10
1967	28	9
1968	15	10

Source: Table 16.

^a Increase in each year as a percentage of the previous year's figure.

Much of this increase may be attributed to the same factors that caused the productivity of bulk carrier tonnage to rise, that is, longer hauls and improved cargo handling facilities. However, the course of the time series indicates that a certain proportion of this increase may be only apparent, in that it does not stem from technical or organizational improvements, but from the removal of the over-capacity existing before the closing of the Suez Canal in 1967.

60. The annual changes in ton/miles carried and in the size of the oil tanker fleet are shown in table 17. The relatively rapid rate of growth of the oil tanker fleet, as compared with the total world fleet, may be explained by the rapidly rising demand for oil and petroleum products, which in turn is being supported by the reduction in the cost of transport arising from the utilization of bigger vessels (see chap. V).

Chapter V

THE TREND TOWARDS BIGGER SHIPS

61. The increase in the average size of tankers and bulk carriers continued between 1968 and 1969. The development since 1961 is shown in tables 18 and 19. As far as oil tankers¹⁸ are concerned vessels totalling 13.6 million dwt were delivered between 1 July 1968 and 30 June 1969. The average size of vessels delivered was 112,300 tons, which compares with an average size of the existing fleet of 36,600 dwt in 1968 and 40,500 dwt in 1969.

(a) Oil tankers

62. The average size of tankers on order continued its rapid rise, reaching nearly 150,000 dwt in 1969. Indeed, during the 1960s, the average size of tankers on order increased by an average of about 17 per cent (the comparable figure for bulk carriers was 10 per cent), and the average size of the existing fleet increased by about 8 per cent.

63. Nothing indicates that the trend is going to be reversed or is coming to a halt. The current order-book is the biggest ever, and represents 47 per cent of the existing fleet, i.e. 56.6 million dwt out of 121.0 million dwt. Even more significant was the size distribution of ships on order (figures in brackets refer to the existing fleet): thus, only 4.4 per cent of the tonnage on order was represented by ships between 10,000 and 49,999 dwt

¹⁸ The statistical information contained in paragraphs 61-76 is based on John I. Jacobs and Co. Ltd., *World Tanker Fleet Review* (London, 30 June 1969).

(existing fleet 46.4 per cent); 4.6 per cent by ships between 50,000 and 99,999 dwt (35.3 per cent); 6.7 per cent by ships between 100,000 and 149,999 (8.5 per cent), and 84.3 by ships over 150,000 (9.7 per cent). The largest individual size group was represented by oil tankers between 200,000 dwt and 249,999 dwt, of which 131, totalling 28.4 million dwt, were on order.

64. Facilities for the construction of large tankers are still being expanded. As of 30 June 1969 there were twenty-six shipyards capable of building vessels of more than 200,000 dwt,¹⁹ of which nine were situated in Japan, sixteen in Western Europe and one in Yugoslavia. In addition, there were fourteen such facilities under construction and eight in the planning stage; of the latter, one was situated in Brazil. Six of these building facilities were able to construct vessels of 700,000 to one million dwt.

65. This persistent trend towards larger size is attributable to the economies of scale which reduce the carrying cost per ton/mile as size increases. Thus, tankers of 250,000 dwt are currently being built for about \$U.S. 80 per dwt or less compared with about \$U.S. 100 per dwt for 75,000-tonners in recent years and operating costs per dwt fall even more rapidly as size increases.²⁰

¹⁹ *Zosen* (Tokyo, October 1969), quoting statistics compiled by Mitsubishi Heavy Industries.

²⁰ For supplementary information on this subject see *Review of Maritime Transport, 1968* (United Nations publication, Sales No.: E.69.II.D.16), graph 1.

TABLE 18
Average size of oil tankers, 1961-1969
(Vessels of 10,000 dwt and over)^a

Year	Existing fleet			Ships on order		
	Number of ships	Total tonnage (thousand dwt)	Average size (dwt)	Number of ships	Total tonnage (thousand dwt)	Average size (dwt)
1961	2 671	60 616	22 694	316	14 171	44 845
1962	2 659	63 326	23 816	259	13 018	50 261
1963	2 625	66 094	25 179	310	16 778	54 123
1964	2 661	71 439	26 847	316	18 171	57 503
1965	2 748	80 206	29 187	280	19 114	68 265
1966	2 814	88 585	31 480	267	23 020	86 219
1967	2 864	96 969	33 858	254	27 827	109 553
1968	2 943	107 639	36 574	303	42 089	138 909
1969	2 991	121 016	40 460	379	56 619	149 390

Source: John I. Jacobs and Co. Ltd., *World Tanker Fleet Review* (London, 30 June 1969).

^a Figures as at 30 June.

TABLE 19
Average size of bulk carriers, 1961-1969
(Vessels of 10,000 dwt and over)^a

Year	Existing fleet			Ships on order		
	Number of ships	Total tonnage (thousand dwt)	Average size (dwt)	Number of ships	Total tonnage (thousand dwt)	Average size (dwt)
1961	471	8 711	18 495	233	4 980	21 373
1962	611	11 565	18 928	273	7 018	25 707
1963	756	15 054	19 913	194	5 694	29 351
1964	920	19 514	21 211	181	5 857	32 359
1965	1 000	22 081	22 081	283	9 410	33 251
1966	1 168	27 552	23 589	425	16 960	39 906
1967	1 380	34 786	25 207	499	19 819	39 717
1968	1 651	46 357	28 078	426	16 467	38 655
1968 (1 July) .	1 791	51 971	29 018	407	16 967	41 688
1969	1 936	57 588	29 746	432	19 320	44 722
1969 (1 July) .	2 053	62 086	30 242	478	25 153	52 621

Source: Fearnley and Egers Chartering Co. Ltd., *World Bulk Carriers* (Oslo, 1961-1969).

^a Figures as at 1 January.

66. However, it would have been impossible to achieve such economies of scale without improved designs and new shipbuilding techniques. For example, the speed of loading and discharging operations has increased very considerably, and tankers of 200,000 dwt and over are able to load and discharge 12,000 tons per hour, double the performance of a 90,000 dwt tanker a few years ago.²¹ Other improvements have taken place in the design of hulls, rudders, engine rooms and navigational aids, and production techniques have, in many shipyards, come to resemble those of assembly lines.

67. Other improvements have been made in the field of propulsion; it is reported²² that a 200,000 dwt tanker may be driven at 16 knots by a single shaft rendering 30,000 shaft horse power, giving a ratio of between 6 and 7 dwt per shaft horse power.²³ Tankers in the 20,000 dwt to 50,000 dwt range, with similar speed, have a dwt/s.h.p. ratio of about three to one. The difference in these two ratios implies large savings in fuel consumption per ton carried as size is increased. Another significant development has been that of high tensile steel, which has enabled engineers to put relatively fewer tanks into larger vessels (thus reducing the weight of steel), and to reduce the thickness of plates.

68. The question still remains whether the size of oil tankers will go on increasing; some of the cost-saving advantages seem to become less important as the ship grows larger, but it should be borne in mind that such cost estimates are based on existing techniques, and that tankers of, for instance, 300,000 dwt did not seem to be a reasonable economic or technical proposition in, say, 1960.

69. Other limitations are imposed by terminal facilities; the larger the ship, the deeper must be the water, not

only at the terminal, but also at sea. A fully loaded 100,000 dwt tanker draws about 47 feet; this rises to 61 feet for a 200,000 dwt vessel, to 73 feet for 300,000 dwt and so on. The largest tanker yet ordered, a 367,000 dwt tanker, will draw almost 90 feet. In addition, 10 to 20 feet of the ship's draught must be added to provide for navigation.²⁴ Stowage and pumping facilities must also be improved, and the market for petroleum products must itself be large enough, except in the case where the unloading port is to be used as a feeder point.

70. Thus, in Western Europe, only the following ports are reported²⁵ to be able to accept vessels of more than 200,000 dwt: Rotterdam, Gothenburg, Slagentang, Milford Haven, Finnart, Bantry Bay, Fos and Le Havre. Of these, Bantry Bay is the only one that can accommodate fully laden tankers of more than 300,000 dwt, within the next year, Finnart and Le Havre will be reported to accept ships up to 300,000 dwt. Outside Western Europe only Tokyo is reported to be able to accommodate tankers of up to 200,000 dwt.

71. Other plans have been quoted²⁶ for the construction of artificial islands to accommodate even larger vessels; these include artificial islands situated in Liverpool Bay (vessels up to 1 million dwt); off Le Havre (500,000 dwt vessels); in the Channel (500,000 dwt vessels). Furthermore, the ports of Bilbao and Kiire (Japan) are to be enlarged to accommodate ships up to 500,000 dwt.

72. It is difficult to gauge the impact on freight rates of the expansion of the world tanker fleet in general, and of big tankers in particular. It is expected²⁷ that total deliveries will total 45 million dwt in the next ten years; adding half the capacity of the combined car-

²¹ *Petroleum Press Service* (London, February 1969).

²² *Ibid.*

²³ Shaft horse power (s.h.p.) is the power actually transmitted to the propeller shaft(s), i.e. it is net of power lost in transmission.

²⁴ *Petroleum Press Service* (London), October 1969.

²⁵ *Ibid.*

²⁶ *Zosen* (Tokyo), October 1969.

²⁷ See John I. Jacobs and Co. Ltd., *World Tanker Fleet Review* (London, 30 June 1969).

due for delivery in the same period, the growth of available tonnage will be about 12½ per cent per annum net of scrappings (on the assumption that all tankers over the age of twenty-one years are scrapped). As far as tankers of more than 200,000 dwt are concerned, of the 128 on order for private owners, 76 had no reported charters at the end of June 1969, of which 20 are due for service in 1970.

73. In the period 1961-1966 the average growth rate of ton/miles of oil cargo carried was 10.5 per cent; this is rather less than the forecast 12.5 per cent increase in availability of tankers, but should not in itself necessarily imply a serious surplus of tanker tonnage, especially in view of the rapid expansion of demand in oil-importing countries.

74. However, certain other factors may contribute to create such a surplus, e.g. the completion within the very near future of the Eilat-Ashdod pipeline (initial capacity 19 million tons/year; ultimate capacity 60 million tons), and the expected completion in 1971 of the Suez-Alexandria pipeline (capacity 50 million tons/year). It is expected that when the latter comes into operation, it will diminish demand for tanker space by 4 per cent. Similarly, a re-opening of the Suez Canal would mean an immediate economy of tanker tonnage, even if the biggest vessels sailing between the Persian Gulf and Europe were to continue using the route via the Cape of Good Hope.

75. Furthermore, the discovery of oil reserves of possibly 3,000 million tons in Alaska, and the extraction of up to 100 million tons per annum, would contribute to reducing the demand for oil tankers. The recent voyage of the tanker *Manhattan* has proved that it is possible to use the North-West passage for shipments from Alaska to the East Coast of the United States of America and to Europe. Although the economic implications of this are not yet clear, one important factor will be that the distance from the point of shipment in Alaska to the main areas of consumption on the East Coast of the United States and in Western Europe is only about 4,500 miles, which compares with the 11,000 miles voyage from the Persian Gulf to the United States and to Western Europe via the Cape; Japan is only 3,600 miles from Alaska and 6,600 miles from the Persian Gulf. Another factor which would tend to reduce the demand for tanker shipping space is the rapid expansion of oil production in certain African countries.

76. On balance, it does seem that there is a tendency towards an excess of capacity within the next few years; however, it will take some time before the oil fields in Alaska are producing at full capacity, and the utilization of nuclear energy has not yet assumed such proportions as to present a serious threat to conventional electricity generating plants utilizing oil. The final outcome will be largely dependent on political factors and the rate of economic growth in the consuming areas. It is also worthwhile noting that another study²⁸ expects the

demand for new building to be greater than the capacity of supply after 1975, even if the Suez Canal were to be re-opened.

(b) Bulk carriers

77. During the 1960s the size of the bulk carrier fleet and the average size of vessels increased very considerably. Between 1968 and 1969,²⁹ 259 new buildings, totalling 9.3 million dwt, were added to the existing fleet and tonnage on order increased by 8.2 million dwt to 25.2 million dwt (or 41 per cent of the existing fleet). Of the tonnage on order at 1 July 1969, approximately 4.7 million dwt was expected to be delivered during the latter half of the year, 9.8 million dwt in 1970 and 10.7 million dwt in 1971.

78. Several new types of bulk carriers appeared in the 1960s. Ore/bulk/oil (obo) carriers showed very large increases, rising from virtually nothing in the early 1960s to 4.3 million dwt in 1969. Combined carriers of the ore/oil³⁰ type grew at steady rates from 1.5 million dwt in 1961 to 6.3 million dwt in 1969. Bulk/carriers reached a total of 1.4 million dwt in 1969.

79. The previously observed trend towards larger size was confirmed by developments between 1968 and 1969; thus, the average size of the existing fleet rose from 29,000 dwt to 30,200 dwt. A part of the growth in average size of the fleet in operation is said to be due to changes in the rules introduced under the International Convention on Load Lines, 1966, which was signed in London on 5 April of that year under the auspices of IMCO and came into force in July 1968.

80. The average size of deliveries in 1968/69 was 36,000 dwt as compared with 41,500 dwt in 1967/68. It appears that this decline is due to the fast growing fleet of specialized carriers measuring less than 30,000 dwt, but vessels employed in the main bulk carrier trades show an uninterrupted increase in size. Of the various types of bulk vessels combined carriers (such as obos) experienced considerable expansion for vessels over 80,000 dwt.

81. New contracts were signed for 16.9 million dwt in 1968/1969, more than in any other year. There were few orders for ore carriers but continued interest was shown in contracts for combined carriers, of which 7.6 million dwt were ordered in this period. The average size of ships on order increased from 44,700 dwt in 1968 to 52,600 dwt in 1969. This increase occurred in spite of the large amount of orders for ships of less than 40,000 dwt and was mainly due to heavy contracting for combined carriers of about 150,000 dwt.

82. As of 1 January 1969 motor vessels still accounted for 86 per cent of vessels in operation and on order, the remainder consisting of turbine ships. The average speed of vessels on order was 15.2 knots, and that of the existing fleet 14.8 knots. The speed distribution for

²⁸ All figures as of 1 July in relevant year, unless otherwise stated.

³⁰ One important difference between an ore/oil carrier and the obo is that the second is capable of transporting a great variety of bulk cargoes, whereas the first is specially constructed for carrying iron-ore.

²⁸ Ichiro Onozuka, *Japanese Shipbuilding in 1980* (Tokyo, Shipbuilders' Association of Japan, 1969). See also chap. III above.

vessels on order was very concentrated, only about 1.0 million dwt being above or below the 14-16 knot range.

83. As in the case of oil tankers, the almost uninterrupted increase in the size of bulk carriers may be attributed to economies of scale. It is thus reported³¹ that the cost of shipping iron-ore from Peru to Japan in Liberty ships of 10,000 dwt at the end of the 1950s was about \$16.00 a ton; by contrast, a vessel of approximately 106,500 dwt is now able to transport the same commodity over the same route at a cost of \$3.75 per ton. However, bulk cargoes have widely varying characteristics, and a bulk carrier constructed to carry only one kind of cargo would much too often find that it would spend a very large proportion of its time in ballast. This was one of the reasons for the development of the multipurpose bulk carriers.

84. These multipurpose vessels are reported³² to show very substantial cost savings, both as compared with other bulk carriers and with traditional tramps. Without taking into account the earnings generated by transporting oil, a combination ore/oil carrier of about 130,000 dwt is expected to reduce the cost of transporting

³¹ See Hugh C. Downer "Reviewing the bulk transportation explosion", in *International Cargo Handling Co-ordination Association Monthly Journal* (London, August 1969).

³² *Ibid.*

iron ore from Peru to Japan to approximately \$3.25 per ton. However, on the assumption of "reasonable" oil rates, the cost of transporting one ton of ore from Peru to Japan is expected to be less than \$1.00 if the following itinerary is followed: iron ore Peru/Japan; ballast Japan/Persian Gulf; crude oil Persian Gulf/France; ballast France/Libya; crude oil Libya/U.S. West Coast; ballast to Peru.

85. If this example is representative of the reduction in costs arising from the utilization of combination vessels, it explains the recent spate of orders for such ships (see para. 81 above), and points to the possibility of a continued fall in the cost of carrying bulk cargoes in the years to come. In view of the high ratio of freight rates to prices of many bulk commodities exported by developing countries, such a development would be of considerable importance.

86. Apart from the development of combined carriers of the obo type, other changes have reduced the cost of transport by single-purpose bulk carriers. One impediment to growth in the size of bulk carriers being the speed of cargo handling, a method has been developed to transform solid cargoes such as ores into slurry which can be pumped. This is said to result in substantial savings in capital and operating costs at the ports of both loading and discharging, as compared with conventional dry cargo handling methods.

Chapter VI

FREIGHT RATE DEVELOPMENTS

87. Many indices are available for describing the changes in freight rates. Such indices should be used with proper care. They fail to take into account the fact that many commodities are now being transported on a medium- to long-term contractual basis, and they provide averages which may conceal important divergent changes in individual items. This may be especially important for developing countries, many of which rely on a few export commodities for most of their earnings of foreign exchange; for such countries it is hardly relevant to know that the cost of shipping goods in general did not increase if freight rates concerning their main export items rose by a significant amount. Unfortunately, it is difficult to obtain up-to-date figures on the development of freight

rates for many commodities; however, the Royal Netherlands Shipowners' Association has collected data for twelve commodities for the period 1963 to 1967, and has kindly made the figures available to the UNCTAD secretariat. The full data are not reproduced, but the main developments are given in table 22 and discussed in para. 96 below.

88. During the first nine months of 1969, liner freight rates rose on average slightly above the level experienced in 1968, and it appeared that most adjustments made necessary by the closing of the Suez Canal had been completed in 1968; many liner companies engaged in the trade between Europe and the Far East chose to re-route

TABLE 20
Freight rate indices, 1955-1969

Year	Liner freight rates a		Dry cargo tramp		Tanker trip charter d		
	(July-December 1954 = 100)	(1965 = 100)	Time charter b (1960 = 100)	Voyage charter c (1960 = 100)	(MOT scale = 100) f	(London scale = 100) g	(Inscale = 100) h
1955 . . .	108		199	173	119		
1956 . . .	119		265	212	224		
1957 . . .	132		183	153		150	
1958 . . .	122		86	91		54	
1959 . . .	120		86	97		55	
1960 . . .	122		100	100		52	
1961 . . .	127		112	107		48	
1962 . . .	131		89	89			55
1963 . . .	133		105	109			73
1964 . . .	138		119	112			67
1965 . . .	142		134	127			66
1966 . . .	148		132	114			62
1967 . . .	153		130	120			114
1968 . . .		107	139	124			104
1969 . . .		109 ^e	137 ^e	116 ^e			75 ^e

NOTE: All these indices are published regularly in Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*. Figures shown are averages of monthly assessments in each year.

a Liner index compiled by the Ministry of Transport of the Federal Republic of Germany. Monthly weighted assessments of freight rates on cargoes loaded or discharged by liners of all flags at ports in the Antwerp/Hamburg range. The 1968 figure is the first of a new series with base 1965 = 100; no link with the previous series is available.

b Dry cargo time charter index compiled and published by the United Kingdom Chamber of Shipping. Based on unweighted arithmetic mean of hires for time charters of vessels over 9,000 dwt.

c Dry cargo voyage charter index compiled and published by the United Kingdom Chamber of Shipping. Monthly weighted assessment of rates for all flags on routes of importance to the United Kingdom merchant fleet. Includes quotations for carriage of coal, grain, sugar, ore, fertilizers, timber, sulphur. Figures for the years 1955-1959 converted from previous base 1952 = 100.

d Tanker trip charter index compiled and published by *Norwegian Shipping News*, Oslo. Based on unweighted arithmetic mean of tanker freights for single voyages concluded each month in all parts of the world. The three series are not linked.

e January-September, nine months average.

f United Kingdom Ministry of Transport scale from 18 Sept. 1947 = 100.

g London Market Nominal Tanker Freight Scale from 1 Jan. 1957 = 100.

h International Tanker Nominal Freight Scale from 15 May 1962 = 100.

TABLE 21
Freight rate indices, 1967-1969, monthly assessments

	Liner freight rates a (1965 = 100)			Dry cargo tramp time charter b (1960 = 100)			Dry cargo tramp voyage charter c (1960 = 100)			Tanker trip charter d (Intascale = 100)		
	1967	1968	1969	1967	1968	1969	1967	1968	1969	1967	1968	1969
January		107	108	118	145	134	101	135	121	62	100	83
February		106	108	115	149	131	103	122	118	50	89	73
March		108	110	119	143	140	106	132	118	49	95	75
April		108	110	121	126	135	104	123	124	39	98	60
May		108	108	128	154	145	110	113	113	49	121	66
June		107	109	121	146	148	114	126	109	145	130	72
July		107	109	133	131	137	138	119	117	184	110	81
August		107	109	130	130	134	113	124	114	187	89	81
September		108	110	147	134	133	126	119	109	191	92	89
October		107		147	147		140	119		161	96	
November		108		149	138		146	128		140	115	
December		108		138	124		146	127		107	111	
Yearly average		107		130	139		120	124		114	104	

NOTE: All these indices are published regularly in Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*.

a Liner index compiled by the Ministry of Transport of the Federal Republic of Germany; due to a recalculation of the index, no figures are available for 1967 on the 1965 = 100 base. See table 20, footnote a.

b Compiled by the United Kingdom Chamber of Shipping; see table 20, footnote b.

c Compiled by the United Kingdom Chamber of Shipping; see table 20, footnote c.

d Compiled by *Norwegian Shipping News*; see table 20, footnotes d and h.

their ships via the Panama Canal. In the dry cargo time charter market, rates remained fairly constant, whereas there was a persistent downward pressure on rates for dry cargo voyage charters. The tanker market experienced an important weakening during the first six months; this trend was reversed to a certain extent during the following months, but the average for the first three quarters was significantly below 1968. The changes in some of the main freight rate indices between 1965 and 1969, and their month to month movements for the period 1967 to 1969, are shown in tables 20 and 21; their movements in 1969 are discussed below. Table IV in annex II shows the levels of certain tramp freight rates in 1968 and 1969.

Liner rates

89. The liner rate index compiled by the Ministry of Transport of the Federal Republic of Germany showed an increase during the first nine months of 1969, as compared with the corresponding period of 1968, the average rising from 107 to 109 (1965 = 100). The assessment reached 108 in January and 110 in March, and fell to 108 in May, the figure of 110 being reached again in September. It is still not known whether all shipping conferences using the Deutschmark as a unit of account are going to reduce their freight rates after the revaluation of this currency; if not, this would represent a *de facto* increase in the cost of shipping by the full amount of the revaluation, i.e., 8.5 per cent. So far, of the conferences using the Deutschmark as a basis for freight rate quotations, only those serving the trade between Western Europe and Brazil and Western Europe and West Africa are reported to have reduced their rates.³⁹

³⁹ *Journal pour le transport international* (Basle, 14 November 1969). The source does not indicate the magnitude of the reduction in the Western Europe-West Africa trade, but states the reduction to be of 2.5 per cent for the Brazil-Europe-Brazil Freight Conference (Section 3, Southbound).

Dry cargo tramp market rates

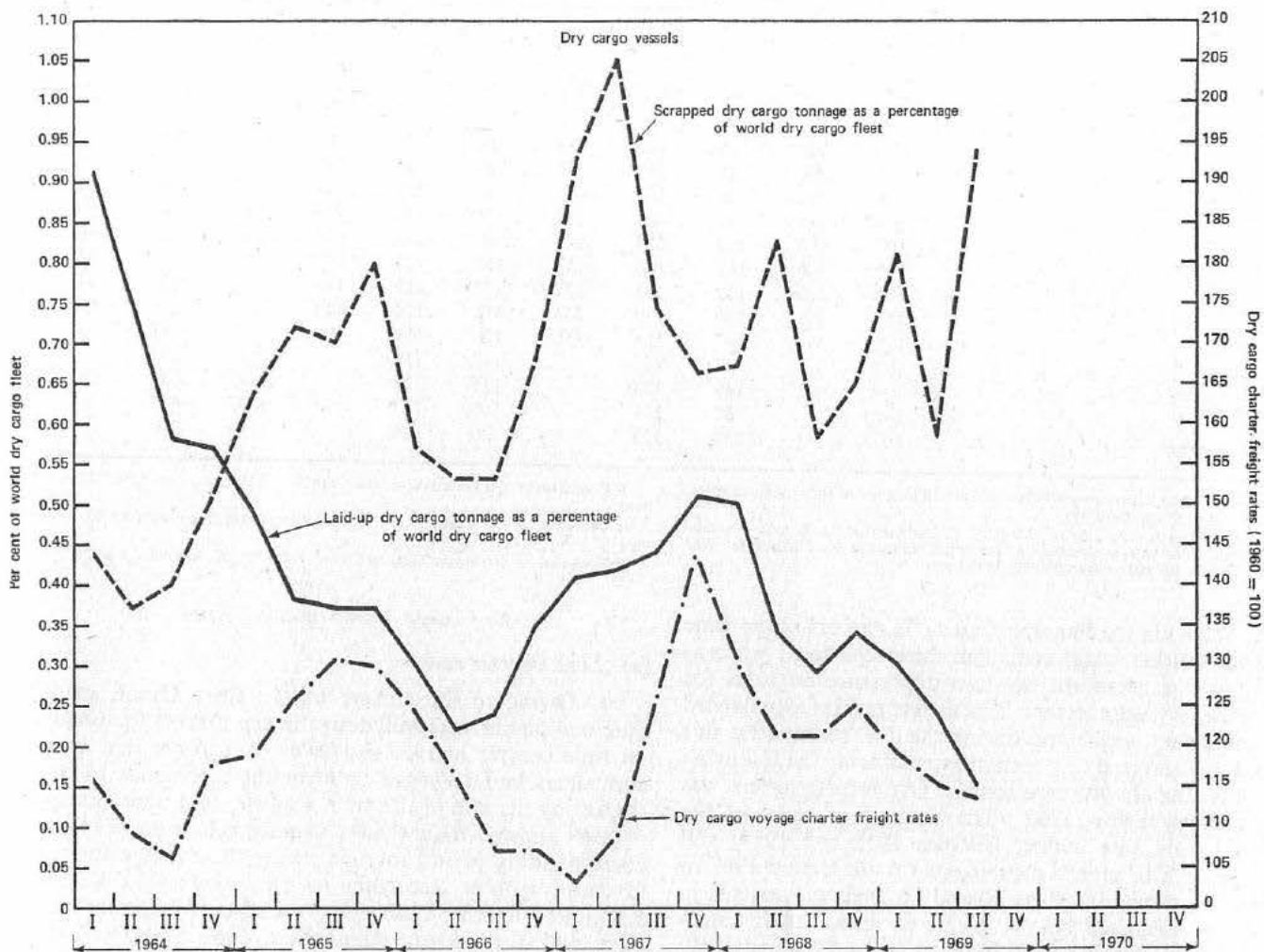
(a) Time charter rates

90. Owing to the closure of the Suez Canal, many liner companies were still active in the market for vessels on time charter in 1968; however, it appears that most companies had managed to meet their demands in this respect by the end of the year, and the first nine months of 1969 showed freight rates slightly below those of the corresponding period in 1968; thus, the average for the first nine months, according to the index of the United Kingdom Chamber of Shipping, stood at 137 as compared with 140 for January-September 1968 (1960 = 100). Fluctuations during the year were fairly wide; the index fell from 134 in January to 131 in February, and then rose to 148 in June; the three following months, however, showed a constant fall, until the index reached 133 in September.

(b) Voyage charter rates

91. Freight rates for voyage charters remained fairly constant in 1968 as compared with 1967, owing probably to the influx of new bulk carrier tonnage. The voyage charter index compiled by the United Kingdom Chamber of Shipping fell during the first nine months of 1969 to reach an average of 116, as compared with 124 for the corresponding period of 1968 (1960 = 100). Again, this was probably due to the addition of substantial amounts of new tonnage to the existing fleet; thus, the tonnage of bulk carriers over 10,000 dwt grew by 19 per cent between July 1968 and July 1969 (see chap. V above). Variations in the index ranged from a lower limit of 109 to an upper limit of 124. Rates were fairly stable during the first four months of the year; the index fell from 124 in May to 109 in June, but increases were registered in July and August, to be reversed in September when the index again fell to 109.

GRAPH 2
The course of freight rates,^a laying-up^b and scrapping,^c 1964-1969



Sources: United Kingdom Chamber of Shipping *Annual Report*, 1966 and 1968 (lay-up statistics), Institute of Shipping Economics, Bremen, *Statistik der Schifffahrt*, 1964-1969 (scrapping statistics).

^a Freight rates, dry cargo vessels: United Kingdom Chamber of Shipping dry cargo voyage charter index (1960 = 100); oil tankers: *Norwegian Shipping News* tanker trip charter (Intascale = 100).

^b Ships laid up: tonnage laid up at the beginning of each quarter expressed as a percentage of the world fleet of respectively dry cargo vessels and oil tankers.

^c Dry cargo vessels and oil tankers scrapped during each quarter expressed as a percentage of the world fleet of each category of ships.

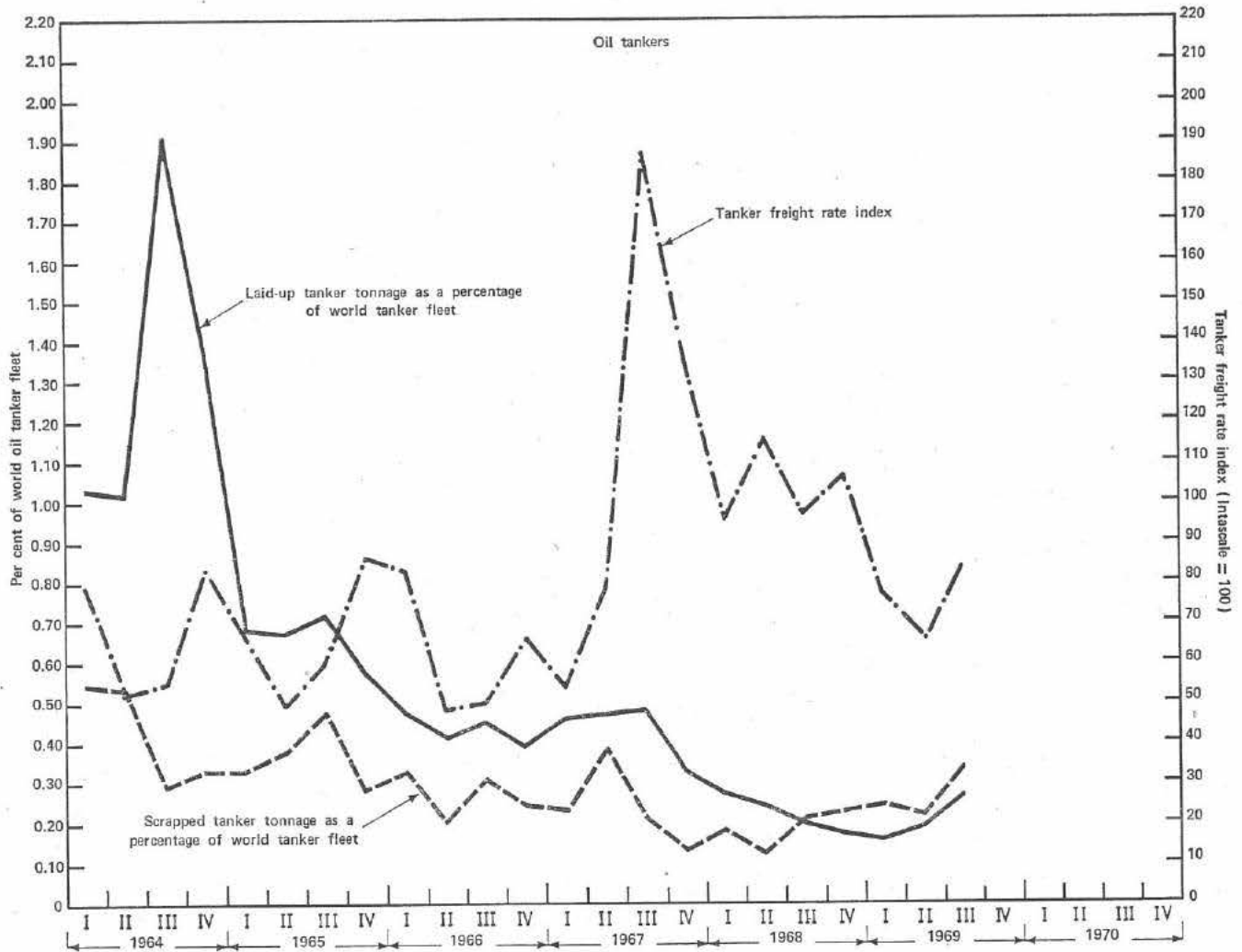
Tanker voyage charter rates

92. During the first half of 1969, all tanker markets experienced a substantial weakening. Single voyage rates from the Persian Gulf came down to levels approaching the first half of 1966 when 3.6 million dwt of tanker tonnage was engaged in the grain trade; this observation also applies to rates from the Mediterranean to Northern Europe and from the Caribbean to North America. During April and May, fixtures were reported to be made at levels as low as Intascale minus 55 per cent. Thereafter, however, the closure of the Aramco pipeline from Saudi Arabia to Sidon on 31 May led to an immediate recovery, and rates from the Persian Gulf rose quickly by about 20 points; the closing of the pipeline did not appear to have an important impact on rates covering movements out of the Mediterranean. Rates continued to strengthen, on average, during the period June-September, and the tanker trip charter index of *Norwegian Shipping News*

reached 89 in September (Intascale = 100), as compared with 66 in May. The average for the first nine months of 1969, measured on the same basis, reached 76 as compared with 103 for the corresponding period in 1968. The short-term period fixture market followed a pattern similar to that of the voyage market, rates being generally lower during the first half of the year than in 1968. The bulk of the chartering activity was for periods of nine, twelve and twenty-one months. Only one fixture was reported for a very large tanker, a 276,000 dwt vessel chartered for five years' consecutive voyage at Intascale minus 68.5 per cent.

93. There was no significant difference in the tonnage of tankers laid up whereas scrappings, as compared with the first nine months of 1968, rose from 0.17 per cent per quarter to 0.27 per cent on average, the third quarter of 1969 reaching as high a figure as 0.34 per cent, the highest since the second quarter of 1967.

GRAPH 3
The course of freight rates,^a laying-up^b and scrapping,^c 1964-1969



Sources: See graph 2. (For footnotes, see graph 2.)

The level of freight rates, laying up and scrapping

94. The shipping industry, like other branches of economic activity, reacts to changes in the price of its services by varying the amount of productive capacity lying idle or being scrapped. Graphs 2 and 3 bring this out by showing, as a percentage of the world fleet, the changes in ships laid-up and scrapped (left-hand axis) and freight rates (right-hand axis) for respectively dry cargo vessels and oil tankers in the period 1964-1969. There appears to be a strong correlation between these two sets of variables with a certain time lag especially for dry cargo vessels, oil tanker operators seeming to react faster to changes in freight rates. Such a lag in decision-making may, in the case of falling rates, be explained by the fact that existing charters have to be concluded before ships are laid up; in addition, laying up a ship is a costly procedure, and such a decision would require a fair degree of certainty as to the movement of freight rates. On the other hand, a shipowner would not put a ship back into service unless he was fairly certain that freight

rates were going to remain at the new and higher level, or continue rising. The data shown in graphs 2 and 3 also suggest that the correlation may work both ways: lower freight rates induce shipowners to lay up or scrap their vessels; on the other hand, the reduction of the active world fleet resulting from such a decision diminishes supply, and by the same token has a tendency to increase freight rates.

95. At no point during the period 1964-1969 did tonnage laid-up exceed 1.9 per cent for oil tankers, or 0.9 per cent for dry cargo vessels, as compared with the total world fleet of such ships. In comparison with many other branches of economic activity, this is a very low figure; however, it can be explained by the high ratio of fixed costs to total costs in shipping, which would make shipowners keep operating at much less than full capacity as long as variable costs (less the cost of laying up) were covered. In general, during the period 1964-1969, the tonnage of all ships laid up tended to fall whereas no definite trend could be ascertained for scrapings. In

TABLE 22
The level of liner freight rates and freight rates as a percentage
of price of twelve selected commodities, 1963-1967

Commodity	Route	Freight rates ^a (1963 = 100)		Freight rate as a percentage of price ^b		
		1965	1967	1963	1965	1967
Sisal hemp	East Africa - Continental Europe	107	107	7.6	13.3	17.0
Rubber	Malaysia - Continental Europe	100	116	5.7	5.8	8.5
Hemp	Philippines - Continental Europe	110	127	22.6	25.4	40.9
Jute	East Pakistan - Continental Europe	110	137	8.6	8.1	10.9
Tea	Ceylon - Western Europe	112	139	5.8	6.3	8.9
Rice	Burma - Continental Europe	100	125	14.4	13.3	14.3
Copra	Philippines - Continental Europe	116	116	9.6	9.0	9.8
Coconut oil . . .	Ceylon - Continental Europe	85	102	11.2	7.2	10.0
Palm kernels . .	Nigeria - Continental Europe	120	132	7.8	7.3	9.6
Cocoa beans . . .	Brazil - Continental Europe	122	122	6.4	13.1	7.6
Cocoa beans . . .	Ghana/Nigeria - Continental Europe	85	99	3.3	4.1	2.7
Tin	Malaysia - Continental Europe	116	153	1.7	1.2	1.9

Source : The Royal Netherlands Shipowners' Association.
^a Owing to the closing of the Suez Canal the following surcharges were added to freight rates in 1967 : plus 15 per cent ; Jute, tea and coconut oil ; plus 10 per cent : rubber, hemp and tin.
^b C.i.f. prices were quoted for rubber, tin, copra, jute, sisalhemp, cocoa beans (Ghana/Nigeria-Continental Europe), and palm kernels ; prices of the remaining commodities were quoted on f.o.b. terms.

spite of the rapid growth of the world tanker fleet, and especially of the fleet of very big tankers, only 0.29 per cent of world tanker tonnage was scrapped on average in a quarter, as compared with 0.67 per cent of dry cargo vessels; the closure of the Suez Canal in June 1967 increased the demand for tanker tonnage and, *pari passu*, reduced scrappings; however, if only the period 1964 to June 1967 is taken into account, an important difference still remains between scrappings of dry cargo vessels and oil tankers, the percentages being respectively 0.63 and 0.35 per quarter.

Liner freight rates 1963-1967

96. For any country the development of the freight rates of its principal export goods may be of paramount importance; for primary commodities especially, the ratio of export price to freight rate may be relatively

high, and any increase in the freight rate which is not compensated by a similar increase in the price obtained for exports may have an important effect on the economy. The actual magnitude of this impact would depend on the elasticities of demand and supply in the countries of export and import.³⁴ Table 22 shows the development of certain selected freight rates in the period 1963 to 1967 and the changes in the ratio freight-rate/price. In general it can be said that the ratio freight-rate/price increased; however, the ratio itself and the direction and magnitude of the changes differed widely from commodity to commodity. For only three commodities out of the twelve the ratio decreased, the increases varying greatly between the others. The table supports the general picture of an over-all increase of liner freight rates as shown in table 20.

³⁴ See UNCTAD, *Freight markets and the level and structure of freight rates* (United Nations publication, Sales No: E.69. II.D. 13).

Chapter VII

OTHER GENERAL TRENDS

(a) Containerization

97. The trend towards the containerization of the general cargo trade between developed market-economy countries continued in 1969; considerable amounts of new containership tonnage and of converted ships were added to the existing fleet, new trade routes were opened, and steps were taken to regulate competition through the formation of "super" conferences.

98. In 1968, new containerships totalling 165,000 dwt and 746,000 dwt of converted tonnage were added to the existing fleet; the forecast for 1969 estimates new build-ings to total 474,000 dwt to reach 749,000 dwt in 1970;³⁵ estimates for the tonnage of conversions were not available. In this context, it should be borne in mind that container vessels, due to their higher service speeds and faster turnaround in ports, are capable of carrying much larger quantities of cargo within a given period than conventional vessels. Containerships on order at the end of 1969 reached 2.9 million dwt (see table 10 above).

99. The first LASH-ship³⁶ came into service in October 1969; firm orders were reported³⁷ to have been placed for twelve such vessels, totalling 275,000 dwt. The main advantage of these barge-carrying vessels is that they reduce the time spent in port by the mother ship, and that virtually all ports can accommodate the individual barges which have a very small draught. This may be especially important for many developing countries, which might otherwise have to engage in high capital consuming port expansion programmes.

100. The carrying capacity of containerships on their major trade routes increased by large amounts between 1968 and 1969. On the route between North America and Western Europe, the carrying capacity was nearly doubled in one year, reaching 8 million freight tons in 1969.³⁸ It is estimated that this figure will grow to 10 million freight tons in 1970. On the trade route between Northern Europe and Australia, carrying capacity was estimated at about 1.2 million freight tons in 1969, and about 2.0 million freight tons in 1970. In the trans-Pacific trade between Japan and the United States of America, ten container vessels were put into

service in 1969. On the Japan-Australia trade route, six new ships were put into service.

101. In spite of the rapid growth of container services mentioned above, there have been few reports indicating a fall in freight rates for transport by containers; in addition, the problem of quoting door-to-door rates for inter-modal transport does not seem to have been solved.

102. Several plans were reported for integrating individual container liner operators in a conference framework. These include the proposed creation of a "super" conference covering almost all transatlantic trade between the United States of America and Western Europe and the Mediterranean. On the trade between Western Europe and Australia, one Australian and seven Western European operators have decided to co-ordinate the operation of their containership services from August 1970. In view of the high proportion of total general cargo which will be carried by these lines in their containerships in the future, it is possible that most of the trade between the United States and Western Europe, and between Western Europe and Australia, will be controlled by two of these big conferences in the 1970s.

103. So far, containerization has mainly affected the trade of developed countries, in which large investments have been made in container handling facilities. Replies so far received to a questionnaire issued by the UNCTAD secretariat³⁹ indicate that existing facilities in Asian developing countries were able to handle approximately 100,000 20' x 8' x 8' containers per annum in 1969; the corresponding number for developing countries in Africa was negligible (although a certain number of smaller containers were handled in West African ports). Replies received from ports situated in South America and the Caribbean were not sufficiently complete to give an indication of the handling capacity, neither at present, nor of future installations.

104. However, facilities under construction in developing countries in Asia were expected to be able to handle approximately 550,000 20' x 8' x 8' containers; such facilities should be completed in 1970 and 1971, at a total initial cost of about \$40 million.⁴⁰ The ports in question

³⁵ *A survey of ships on order*, supplement to *The Motor Ship* (London, September 1969).

³⁶ Lighter-aboard-ship.

³⁷ *A survey of ships on order*, supplement to *The Motor Ship* (London, September 1969).

³⁸ This figure and the following data on the same subject have been extracted from *Ocean container transport* (Tokyo, Ministry of Transportation, 1969).

³⁹ In the context of its study on technological progress in shipping. See "Progress report on secretariat activities in the field of shipping and ports: note by the UNCTAD secretariat" (TD/B/C.4/57).

⁴⁰ It should be noted that the figure of \$40 million only refers to investments in port facilities, and not to the supporting inland infrastructure or container vessels or containers.

are Keelung, Singapore, Haldia, Bombay, Inchon, and certain ports in the Philippines.

105. In addition, plans have been made for the construction of new facilities in developing countries in Asia, increasing capacity by another 325,000 containers between 1971 and 1975. The ports in question are Ashdod, Nhava Sheva, Inchon, Saigon, and Chittagong. Replies to the above-mentioned questionnaire indicate that no major plans for the creation of new facilities are being made in developing countries in Africa.

106. On an average, a 20' x 8' x 8' container carries about ten tons of cargo in trades between developed countries and the maximum carrying capacity is about twenty tons. If ten tons is taken as a representative figure for the contents of containers in the trade between developing and developed countries, this would indicate that the present container handling capacity of ports in developing countries in Asia equals about 1 million tons of cargo; this figure should increase to about 6.5 million tons in 1971, when facilities under construction are expected to be completed, and to about 9.5 million tons in 1975 if all planned facilities are constructed.

107. On the other hand, a recent estimate⁴¹ puts the maritime transport of liner cargo between developing countries in Asia (including the socialist countries of Asia, but excluding Western Asia) and member countries of OECD at about 20 million tons per year; it is very difficult to make forecasts for the future development of this trade, but an optimistic estimate might be an average growth of 8 per cent per annum till 1975, bringing the total liner cargo up to about 36 million tons. However, no studies are known to have estimated the proportion of this liner cargo which can profitably be put into containers so that a comparison of the figures of 9.5 million tons of container cargo capacity, and of 36 million tons of liner cargo transport in 1975 remains difficult.

108. The major bottlenecks hindering the containerization of the imports and exports of most developing countries may be the capacity of the inland transport network, and the composition of imports and especially exports. Thus, most of the ports in developing countries in Asia which had major plans for the creation of container handling facilities also reported that about 75 per cent of the containers actually handled were packed and unpacked in the port area. Since most of the cost-saving advantages of containerization are achieved when goods are transported from door to door, a lack of improvement in the facilities for transporting containers inland may severely limit expansion of the traffic in the future.

109. Furthermore, most of the liner cargo imports of developing countries consist of manufactured goods, which, in the case of bulky capital equipment, is difficult to put into containers; on the other hand, certain export items of the liner cargo type, for instance rubber and lumber, are difficult to transport in containers. The imbalance of movement of containerizable cargo between imports and exports may also hinder this development.

(b) Changes in the parity of currencies

110. Two important changes took place in the parity of currencies in 1969 i.e., the devaluation of the French franc by 12.5 per cent in August and the revaluation of the Deutschmark of the Federal Republic of Germany by 8.5 per cent in October. However, neither of these two changes in parity seem to have had the same impact on world shipping as that of the pound sterling in November 1967. The pound sterling was widely used as a basis for the tariffs of liner conferences, time charters, and single voyages, but after the devaluation of this currency it was partly replaced by tariffs expressed in U.S. dollars or, in certain cases, in Deutschmarks.

111. The French franc is used mainly in the trade between France and members of the Franc Zone; since most of the member countries of this currency area (all of which, except France, are developing countries) also devalued, the costs of operations were increased for national shipping companies in respect of expenditures incurred outside the Franc Zone, and receipts did not rise automatically except when ships were engaged in trade with third countries. On the other hand, non-Franc Zone vessels employed in trades touching ports in the Franc Zone would find their earnings to be diminished in terms of their national currency (but their disbursement for purchases of locally produced goods would by the same token be reduced). The impact on the competitive position of shipping companies in France and other countries which followed that country in its devaluation would thus depend on the trades in which they were engaged; of shipowners in third countries only those heavily engaged on the trade routes touching the Franc Zone would be affected.

112. The revaluation of the Deutschmark may have more widespread effects. After the devaluation of the British currency, the Deutschmark became employed in certain trades, and for shippers in countries outside the Federal Republic of Germany the maintenance of a constant freight rate would imply a *de facto* increase in the cost of shipping of the same amount as the revaluation (i.e. 8.5 per cent); so far, there have been few reports indicating a downward change in the level of freight rates expressed in Deutschmarks.⁴² The revaluation will diminish the receipts of shipowners of the Federal Republic of Germany who engage in trades where tariffs are not expressed in Deutschmarks, but it will also diminish the cost of disbursements in foreign ports.

(c) Air transport

113. The development of the transport of passengers and cargo by air has been spectacular. Thus, the airlines of the countries members of ICAO transported about 85 thousand million passenger/km in 1958; ten years later, this figure had increased to 308 thousand million; in terms of air cargo, the increase was even greater, since the same airlines performed 1,680 million tons/km in 1958, a figure which rose to 7,940 million ton/km in 1968.⁴³

⁴² See para. 89 above.

⁴³ Data from IATA, *World Air Transport Statistics*, No. 13 (Montreal, 1968).

⁴¹ OECD, *Maritime Transport, 1968: A study by the Maritime Transport Committee* (Paris, 1969).

TABLE 23

Air freight rates and air freight volume, 1958-1968
(Scheduled operations of airlines of ICAO^a States)

Year	Average scheduled service freight rate per ton/km		Freight volume	
	U.S. cents	Percentage change over previous year	In thousand million ton/km	Percentage change over previous year
1958	24.3	..	1.68	2.4
1959	24.0	-1.2	1.94	15.5
1960	22.9	-4.6	2.16	11.3
1961	21.8	-4.8	2.48	14.8
1962	20.5	-6.0	2.91	17.3
1963	20.6	+0.5	3.26	12.0
1964	19.7	-4.4	3.90	19.6
1965	18.2	-7.6	4.95	26.9
1966	18.0	-1.1	5.85	18.2
1967	17.7	-1.7	6.70	14.5
1968	17.0	-4.0	7.94	18.5

Source: IATA, "World air transport statistics", No. 13 (Montreal, 1968).

^a Domestic and international services; the USSR, China (mainland) and some other States are not members of ICAO.

114. One of the main reasons for this development has certainly been the reduction of air fares and air freight rates, another one being the advantages of a high speed of transport; an additional advantage of transporting cargo by air is the reduction of packing costs and insurance premiums.

115. The fall of average air cargo freight rates 1958 to 1968 is shown in table 23. The average rate of decrease appears to be about 3.0 per cent per annum, which has been accompanied by an increase in ton/km carried of about 15.5 per cent per annum. A recent estimate⁴⁴ puts the average decrease of freight rates until 1980 between 2 and 4 per cent per annum, and the increase of freight volume in ton/km between 12 and 20 per cent.

116. Two major events may have a decisive impact on the future of air cargo transportation; namely, the introduction of all-cargo jets and of high-speed container vessels. A considerable number of new jet freighters came into service in 1968 and 1969, and from 1970 there will be all-freight versions of the "jumbo" jets and the various air buses. As for the all-cargo jets introduced during the last two years, some of them are reported⁴⁵ to have operating costs as low as 5.0 U.S. cents per ton/km available and the "jumbo" jets and air buses may have operating costs as low as 3.5 U.S. cents per ton/km; with a 60 per cent load factor, the former should thus be able to make a profit with freight rates averaging 9.0 U.S. cents per ton/km in 1969 (1968 average: 17.0 U.S. cents).

117. On the other hand, air transport may soon find itself exposed to the competition of fast container ships

⁴⁴ ICAO, "A review of the economic situation of air transport 1957-1967", circular No. 89/AT/15 (Montreal, July 1968).

⁴⁵ *Ibid.*

TABLE 24

World freight movement, and the forecasted development of air cargo transport, 1968-1980

(Thousand million ton/miles)

Year	Total world freight movement	World economic air potential ^a		Air freight penetration	
		As percentage of total world freight movement	As percentage of world economic air potential	As percentage of world economic air potential	As percentage of world economic air potential
1968	14 600	215	1.5	6.05	2.8
1969	15 200	230	1.5	7.42	3.2
1970	16 100	245	1.5	9.14	3.7
1971	17 000	260	1.5	11.30	4.3
1972	17 900	280	1.6	14.03	5.0
1973	18 800	295	1.6	17.49	5.9
1974	19 950	314	1.6	21.89	7.0
1975	21 000	335	1.6	27.49	8.2
1976	21 900	353	1.6	34.26	9.7
1977	23 000	380	1.7	42.60	11.2
1978	24 000	400	1.7	52.70	13.2
1979	25 100	429	1.7	64.17	15.0
1980	26 500	455	1.7	77.60	17.1

Source: The McDonnell Douglas aircraft concern; quoted in the address of Mr. Karl Nilsson to the 9th International Conference of ICHCA, Göteborg, June 1969.

^a A selection of commodities where bulk cargoes like oil, pulp, iron-ore, etc., have been excluded.

for the carriage of the high value goods which have constituted the major proportion of their cargo. The main advantage of air transport has been its speed and the reduction of packing costs and insurance premia. It is possible that many marginal shippers will find it preferable to ship their goods by container if this mode of transport accelerates the speed of delivery, especially since ocean freight rates are still far below those quoted for air transport. This may be partly counteracted by the introduction of high rebates for shipments of air cargo by container and of aircraft specially designed to carry containers and pallets.

118. A recent study⁴⁶ indicates that the increase of world air freight transport may be even greater than the one indicated by the highest estimate provided by ICAO (i.e., an annual growth rate of about 20 per cent). The study makes a forecast of total world cargo movements expressed in ton/miles, and defines an "economic air potential" as a percentage of this total. Furthermore, it estimates the actual percentage of this potential which air cargo operators may obtain; the relevant figures are reproduced in table 24 above.

⁴⁶ Study carried out by the McDonnell Douglas Aircraft concern in the USA; quoted in the address by Mr. Karl Nilsson to the 9th International Conference of the International Cargo Handling Co-ordination Association, held at Göteborg, Sweden, from 2 to 5 June 1969.

119. It seems realistic to assume both that there will be an 80 per cent increase in international air cargo transport between 1968 and 1980 and that the ratio of potential air cargo to total world cargo will increase from 1.5 per cent in 1968 to 1.7 per cent in 1980; but whether air freight penetration measured as a percentage of the air freight potential is going to rise from 2.8 per cent

to 17.4 per cent during the same period is a much more difficult question to answer. It does, however, seem reasonable to assume that air cargo transport could be greatly increased by the spread of information to potential customers. The estimated number of air cargo ton/miles is about 50 per cent higher than the ICAO forecasts for the period 1970-1980.

Chapter VIII

BIBLIOGRAPHY

120. The annotated list below (which is based on the publications obtained by the Shipping Reference Unit of the Division for Invisibles of the UNCTAD secretariat in 1969) is limited to a few important books and reports on the economic aspects of maritime transport and related subjects.⁴⁷

121. While the notes against each item in the list include a brief description, no attempt is made at a qualitative assessment or critical review of the publications listed.

Bennathan, E. and Walters, A. A., *The Economics of Ocean Freight Rates* (Frederick A. Praeger, New York, 1969). An analysis of the structure of the freight rate system, differences between free markets and cartels, the economic consequences of conference actions and shipping costs and their relation to freight rates. Also includes a case study on freight rates in the North Atlantic and a discussion of the role of government in ocean shipping.

Bennathan, E. and Walters, A. A., *Revenue Pooling and Cartels*, *Oxford Economic Papers*, vol. 21, No. 2 (Oxford, July 1969). An examination of the "pooling and sharing" techniques of liner conferences; it is shown how, under certain assumptions, such arrangements can be devised so that each company is induced to provide a certain output, and that the aggregate output of the conference is that which gives rise to maximum conference profit.

Beyer, G., *Le container: Situation actuelle et son évolution* (Société d'études et de réalisations industrielles (SERI), Renault Engineering, Paris 1968). The first part of this very extensive study is concerned with a detailed examination of the present situation of container transport; it also considers the first experiences in container transport in the world. The second part examines the evolution of containerization in France; its attempts to quantify the future demand for containers and auxiliary equipment.

Container ship register 1969-70 (A/S Shipping Consultants, Oslo, 1969). This is a study of container ship operators and owners (with a list of their vessels),

container ships in operation, new buildings on order, conversions and container ship projects, including details on owners, builders, and technical specifications. All information has been brought up to September 1969.

Gjermoe, E. *Norske Skipsaksjeselskaber etter krigen* (Norwegian shipping companies in the post-war period) (Skipsfartøkonomisk Institutt, Bergen, 1968). A comprehensive examination of the accounts of Norwegian shipping companies 1946-1964, including a general review of the development of net profit and depreciation. A distinction is made between companies which exclusively operate tankers or dry-cargo ships, and mixed companies. Includes statistics on dividends, share prices, changes in share capital and tonnage.

Haefele, E. T. (ed.), *Transport and National Goals* (The Brookings Institution, Transport Research Program, Washington, D.C., 1969). This collective work explores the relationships between national goals and transport decisions, politics and economic planning. It emphasizes the need to consider not only the costs and benefits of alternative means of moving people and goods, but to take into account possible "trade-off's" between investments in transport facilities and in other fields of economic activity. Special reference is made to the experience of Colombia, India and Malaysia.

Jane's Freight Containers 1968/1969 (London, B.P.C. Publishing Ltd., 1969). An exhaustive survey of the various aspects of containerization. Includes sections on international development and organization; national operational services (ports, inland terminals, freight forwarders, railways, inland waterways); ISO container terminology (in English, French, Spanish, Russian, German, Italian and Japanese); international operational services, including a list of shipowners, inland waterway, road and rail operators and leasing organizations; unit load air freight; names of manufacturers of container and container handling equipment.

Komaclo, T., "Aspects of air freight in new countries", (Institut du Transport Aérien, 3rd ITA International Symposium, Paris, 1968). An examination of the problems and prospects of air transport in developing countries, with special reference to West Africa. The study includes a great amount of statistical information, and considers the background factors for a future air freight policy in Africa.

⁴⁷ Some reports and other documents on maritime transport, published by United Nations bodies, specialized agencies and inter-governmental and non-governmental organizations up to the end of 1968, are mentioned *passim* in "Review of studies and activities in the field of shipping and ports carried out by other institutions within the United Nations system, by other intergovernmental organizations and by non-governmental organizations: report by the UNCTAD secretariat" (TD/B/C.4/49 and Corr.1 and Add. 1-3).

Mossin, J., "An optimal policy for lay-up decisions" in *Swedish Journal of Economics* (Stockholm, September 1968). Describes the problem of deciding when a ship should be laid up and when it should be put back into operation. Solutions are given in terms of decision rules.

Onozuka, I., *Japanese Shipbuilding in 1980* (Tokyo, Shipbuilders' Association of Japan, 1969). A discussion of the reasons for the rapid growth of the Japanese shipbuilding industry and of its structural transformation. Includes forecasts of the demand for and supply of new buildings in the world up to 1980.

Oyevaar, J. J., *Dutch Merchant Shipping* (Report submitted to the Board of the Royal Netherlands Ship-owners Association, The Hague, 1968). An examination of the development of the Dutch merchant fleet and its importance to the national economy. Discusses the future of the Dutch merchant fleet on the background of international changes in the shipping industry. Reviews aspects of the management of shipping companies, capital needs and financing, fiscal measures and stipulates aims of Dutch shipping policy.

Preis, H. et al., *Programowanie rozkladu jazdy statków liniowych* (Wydawnictwo Instytutu Morskiego (Maritime Institute Publication), Gdansk-Szczecin, 1969).

(Programming of schedule for liner vessels.) An application of mathematics to the decision-making processes of a shipping firm; an attempt is made to arrive at an optimum schedule for liner vessels, global profit being the object of the maximization procedure. Summary in English.

Stuchtey, R., *Die Beurteilung des Aufbaus nationaler Handelsflotten in unterentwickelten Ländern* (An appraisal of the expansion of national merchant marines in under-developed countries) (Hamburg, Hoffman und Campe, 1968). A description of the expansion and actual size of merchant marines in certain developing countries. Includes a critical appraisal of the reasons advanced for the creation of a national fleet, an examination of the cost-structure of shipping in various developed and developing countries, and a review of the influence of a merchant marine on the balance of payments, economic growth and employment.

Swedish Academy of Engineering Science, *Trafik med svävare* (Hydrofoil transport). (Stockholm, Swedish Academy of Engineering Science, Committee for Transport Research, 1968). Reviews the results of an investigation of the present position of hovercraft technology and studies a number of theoretically possible applications as a means of transport in Scandinavia. Survey of the economics of operation. English summary.

ANNEXES

Annex I

CLASSIFICATION OF COUNTRIES AND TERRITORIES

Notes

Note 1

This classification is designed to be applied to statistics on seaborne trade. Seaborne trade is recorded at ports of loading and unloading. The trade of the ports of a country may therefore include goods originating in or destined for another country, such as a neighbouring land-locked country. The trade of land-locked countries cannot be identified in seaborne trade statistics, and these countries are not explicitly included in the trade classification. However, when the classification is applied to registered merchant fleets, land-locked countries possessing merchant fleets (Austria, Burundi, Czechoslovakia, Hungary, Paraguay and Switzerland) are included in the appropriate geographical groups of countries.

Note 2

The groups of countries used for presenting statistics in this review are made up as follows:

Developed market-economy countries, excluding Southern Europe: Codes 1, 2, 3, 4 and 10.4

Southern Europe: Code 5

Socialist countries of Eastern Europe and Asia: Codes 6, 7 and 8

Developing countries, total: Codes 9, 10 (excluding 10.4), 11 and 12,

Of which:

in Africa: Codes 10.1, 10.2 and 10.3

in Asia: Codes 9.1 and 9.2

in Latin America and the Caribbean: Codes 11.1, 11.2, 11.3, 11.4, 11.5

in Oceania: Code 12

Note 3

In tables showing statistics of shipping tonnage, however (viz., tables 5, 6, 7, 8, 10 in the text and table III in annex II), Liberia (not included in 10.2) and Panama (not included in 11.2) have been excluded from the appropriate groups and shown separately, for reasons explained in paragraph 20 of this *Review*.

Note 4

The description and classification of countries and territories should not be considered to imply any judgement by the Secretariat of the United Nations regarding the legal status of any country or territory, or in respect of the delineation of its boundaries, or regarding its economic system or degree of development. Inclusion of a particular country or territory in any economic or geographical grouping (or its exclusion) has been dictated by economic and statistical considerations.

Classification of countries and territories *

Code 1. — North America

Bermuda	St. Pierre et Miquelon
Canada	United States of America
Greenland	

Code 2. — Japan

Code 3. — Australia and New Zealand

Code 4. — Northern and Western Europe

(Austria)	Italy
Belgium	Monaco
Denmark	Netherlands
Faeroe Islands	Norway
Federal Republic of Germany	Sweden
Finland	(Switzerland)
France	United Kingdom of Great Britain and Northern Ireland
Iceland	
Ireland	

Code 5. — Southern Europe

Cyprus	Portugal
Gibraltar	Spain
Greece	Turkey
Malta	Yugoslavia

Code 6. — Central and Eastern Europe (excluding Union of Soviet Socialist Republics)

Albania	(Hungary)
Bulgaria	Poland
(Czechoslovakia)	Romania
Eastern Germany	

Code 7. — Union of Soviet Socialist Republics

Code 8. — China (mainland), North Korea, North Viet-Nam

Code 9. — Asia, n.e.s.

9.1 Western Asia

Bahrain	Muscat and Oman
Iran	Qatar
Iraq	Saudi Arabia
Israel	Southern Yemen
Jordan	Syria
Kuwait	Trucial Oman
Lebanon	Yemen

* Countries shown in parentheses are land-locked countries with merchant fleets. See note 1 above.

9.2 Southern and Eastern Asia

Brunei	Pakistan
Burma	Philippines
Cambodia	Portuguese Timor
Ceylon	Republic of China
Hong Kong	Republic of Korea
India	Republic of Viet-Nam
Indonesia	Ryukyu Islands
Macao	Singapore
Malaysia	Thailand
Maldives	

Code 10. — Africa

10.1 Northern Africa

Algeria	Melilla
Canary Islands	Morocco
Ceuta	Tunisia
Ifni	United Arab Republic
Libya	

10.2 Western Africa

Angola	Ivory Coast
Cameroon	Liberia
Cape Verde Islands	Mauritania
Congo (Brazzaville)	Nigeria
Congo, Democratic Republic of	Portuguese Guinea
Dahomey	St. Helena Island
Equatorial Guinea	São Tomé and Príncipe Islands
Gabon	Senegal
Gambia	Sierra Leone
Ghana	Spanish Sahara
Guinea	Togo

10.3 Eastern Africa

(Burundi)	Mozambique
Comoro Islands	Réunion Island
Ethiopia	Seychelles Islands
French Somaliland	Somalia
Kenya	Sudan
Madagascar	United Republic of Tanzania
Mauritius	

10.4 Southern Africa

South Africa

Code 11. — Latin America

11.1 Caribbean

Antigua	Haiti
Bahamas	Jamaica
Barbados	Martinique
Cayman Islands	Montserrat
Cuba	St. Kitts-Nevis-Anguilla
Dominica	St. Lucia
Dominican Republic	St. Vincent
Grenada	Turks and Caicos Islands
Guadeloupe	Virgin Islands

11.2 Central America

British Honduras	Honduras
Canal Zone	Mexico
Costa Rica	Nicaragua
El Salvador	Panama
Guatemala	

11.3 South America — Northern Seaboard

Guyana	Surinam
French Guiana	Trinidad and Tobago
Netherlands Antilles	Venezuela

11.4 South America — Western Seaboard

Chile	Ecuador
Colombia	Peru

11.5 South America — Eastern Seaboard

Argentina	(Paraguay)
Brazil	Uruguay
Falkland Islands (Islas Malvinas)	

Code 12. — Oceania, n.e.s.

Christmas Island	Polynesia under French admin- istration
Fiji Islands	Samoa (under United States ad- ministration)
Guam	Solomon Islands
Nauru	Tonga
New Caledonia	Wake Island
New Guinea	Western Samoa
New Hebrides	
Ocean Island (Gilbert Islands)	
Papua	

Annex II

TABLES

TABLE I

World seaborne trade according to geographical areas, 1959, 1965 and 1967 ^{a, b}
(Million tons)

Area		Goods loaded				Goods unloaded			
		Crude petroleum	Petroleum products	Dry cargo	Total all goods	Crude petroleum	Petroleum products	Dry cargo	Total all goods
1. North America	1959	0.3	5.3	116.0	121.6	64.3	41.0	194.3	199.5
	1965	0.1	3.4	190.7	194.2	73.7	67.9	115.2	256.8
	1967	3.8	5.6	201.7	211.1	72.2	71.8	118.5	262.5
2. Japan	1959	—	0.3	9.8	10.1	19.1	3.3	42.6	65.0
	1965	—	0.8	22.0	22.8	69.7	14.0	115.0	198.7
	1967	—	1.0	26.1	27.1	102.8	16.1	164.7	283.7
3. Australia and New Zealand	1959	—	1.2	11.5	12.7	10.2	2.7	8.5	21.4
	1965	—	1.2	25.2	26.5	18.7	2.0	13.8	34.4
	1967	—	1.3	42.6	43.9	22.1	1.2	15.0	38.2
4. Northern and Western Europe	1959	0.7	29.3	129.1	159.0	134.9	47.7	222.5	405.1
	1965	0.3	50.0	165.2	215.5	308.2	85.3	323.3	716.8
	1967	1.7	57.6	180.9	240.1	381.1	85.9	330.1	797.2
5. Southern Europe	1959	—	0.4	16.0	16.4	7.5	3.0	15.0	25.5
	1965	—	0.8	18.6	19.4	15.8	4.4	33.1	53.3
	1967	—	3.0	19.7	22.8	26.0	4.2	30.8	60.9
6. Central and Eastern Europe (excluding USSR)	1959	0.2	2.1	13.4	15.6	—	1.1	11.7	12.8
	1965	0.4	3.6	22.1	26.1	2.4	1.9	22.6	26.9
	1967	0.2	3.7	28.3	32.2	4.2	2.6	20.9	27.6
7. USSR	1959	8.4	8.8	12.9	30.1	0.1	—	4.6	4.7
	1965	28.3	18.0	32.8	79.1	—	—	12.7	12.8
	1967	33.2	20.6	44.8	98.5	0.1	0.2	10.1	10.3
8. China (mainland), North Korea, North Viet-Nam	1959	—	—	3.9	3.9	—	0.4	3.0	3.4
	1965	—	—	7.6	7.6	0.2	0.3	11.8	12.2
	1967	—	—	10.5	10.5	0.2	0.3	12.7	13.2
9.1 Western Asia	1959	180.2	31.4	3.3	214.9	5.6	3.0	9.1	17.7
	1965	348.7	43.3	5.5	397.5	10.9	1.9	13.0	25.9
	1967	420.2	46.4	4.6	471.1	10.7	1.2	14.3	26.3
9.2 Southern and Eastern Asia, n.e.s.	1959	11.9	10.3	42.2	64.3	9.3	15.5	34.6	59.3
	1965	14.6	13.1	65.5	93.3	23.3	17.0	58.2	98.5
	1967	21.6	16.9	68.5	106.9	33.4	21.2	69.4	124.1
10.1 Northern Africa	1959	1.9	0.6	23.1	25.6	4.7	6.4	11.7	22.9
	1965	84.6	3.4	29.2	117.2	10.9	3.9	16.3	31.1
	1967	121.1	1.6	23.9	146.6	10.4	4.0	16.0	30.4

TABLE I (continued)

World seaborne trade according to geographical areas, 1959, 1965 and 1967 ^{a, b}

Area		Goods loaded				Goods unloaded			
		Crude petroleum	Petroleum products	Dry cargo	Total all goods	Crude petroleum	Petroleum products	Dry cargo	Total all goods
10.2 Western Africa	1959	1.3	—	15.4	16.7	—	4.3	7.2	11.6
	1965	14.7	0.3	41.1	56.1	1.5	4.6	9.9	15.9
	1967	18.2	0.6	43.6	62.4	1.9	4.5	9.2	15.6
10.3 Eastern Africa	1959	—	—	7.5	7.5	—	3.6	4.9	8.5
	1965	—	0.5	11.0	11.5	3.5	3.0	6.7	13.2
	1967	—	0.9	14.3	15.3	4.6	2.7	7.4	14.6
10.4 Southern Africa	1959	—	0.2	5.0	5.2	1.3	2.3	4.0	7.7
	1965	—	0.3	8.3	8.5	4.7	1.5	6.2	12.4
	1967	—	0.3	12.3	12.6	7.2	1.9	5.3	14.3
11.1 Caribbean	1959	—	0.7	15.1	15.8	3.7	2.2	3.6	9.4
	1965	—	0.2	20.4	20.6	4.8	3.9	7.2	15.9
	1967	—	0.2	22.7	22.9	5.2	4.1	7.8	17.1
11.2 Central America	1959	—	1.9	4.2	6.1	—	2.6	1.9	4.5
	1965	1.0	2.6	9.9	13.5	3.5	3.4	4.1	10.9
	1967	1.4	2.4	10.4	14.1	4.4	4.6	3.9	12.9
11.3 South America, Northern Seaboard	1959	105.2	71.3	25.2	201.7	43.6	3.6	4.3	51.5
	1965	123.3	99.2	27.7	250.2	53.9	3.0	4.7	61.6
	1967	129.0	99.4	29.6	258.0	52.8	3.6	5.1	61.5
11.4 South America, Western Seaboard	1959	4.3	1.0	13.5	18.8	0.4	1.5	3.8	5.7
	1965	6.0	0.8	25.9	32.7	1.1	1.5	5.1	7.7
	1967	5.8	1.3	27.5	34.6	2.6	1.8	5.8	10.2
11.5 South America, Eastern Seaboard	1959	1.5	—	17.5	19.0	12.3	6.7	10.1	29.1
	1965	—	0.8	34.4	35.3	15.4	1.4	13.1	29.8
	1967	—	0.7	32.9	33.7	14.3	0.7	13.8	28.8
12. Oceania, n.e.s.	1959	—	—	4.3	4.3	—	0.4	1.2	1.6
	1965	—	—	5.6	5.6	—	0.9	1.7	2.5
	1967	—	—	6.3	6.3	—	1.8	1.8	3.6
World total	1959	315.9	164.7	488.8	969.5	316.9	151.5	498.4	966.8
	1965	622.0	242.3	768.6	1 632.9	622.0	221.7	793.5	1 637.2
	1967	756.2	263.5	851.2	1 870.8	756.0	234.4	862.5	1 852.9

Source: United Nations estimated data; the world totals do not correspond exactly to the rounded total in table 1 in the text.

^a Excluding international cargoes loaded at ports of the Great Lakes and St. Lawrence system for unloading at ports of the same system. Including petroleum

imports into Netherlands Antilles and Trinidad for refining and re-export. Great Lakes and St. Lawrence trade (in dry cargo) amounted to 26 million tons in 1959, 37 million tons in 1965, 34 million tons in 1967 and 36 million tons in 1968.

^b See annex I for the composition of these groups.

TABLE II

Distribution of world tonnage by flag of registration,^a and type of ship, in order of size of fleets,^b as at 1 July 1969

Flag of registration	Total tonnage c (in dwt)	Total tonnage d (in grt)	Of which: (in grt)		
			Tankers	Bulk carriers e	Other ships
1. Liberia	46 928 240	29 215 151	16 741 520	8 661 144	3 812 487
2. Japan	32 593 050	23 987 079	8 019 618	6 950 315	9 017 146
3. United Kingdom ^f	32 498 547	23 843 799	10 187 418	3 352 280	10 304 101
(33) Hong Kong	1 122 584	707 748	108 388	221 628	377 732
(41) Bahamas		376 132	176 394	93 201	106 537
(43) Bermuda		354 923	245 307	79 803	29 813
(69) Gibraltar		44 474	389		44 085
(86) Cayman Islands		18 818			18 818
(98) Fiji		6 280	254		6 026
(99) Falkland Islands		5 230			5 230
(106) New Hebrides		3 288			3 288
(112) Gilbert and Ellice Islands		2 193			2 193
(113) Tonga		1 987			1 987
(122) Seychelle Islands		799	493		306
(124) Montserrat		711			711
(126) Turks Islands		705			705
(127) St. Vincent		665			665
(128) British Honduras		620			620
(129) Solomon Islands		617			617
(131) St. Lucia		517			517
(133) Grenada		412			412
(134) Virgin Islands		389			389
4. Norway	31 168 356	19 679 094	9 603 725	6 519 272	3 556 097
5. Union of Soviet So- cialist Republics	13 723 487	13 704 640	3 170 872	198 194	10 335 574
6. United States of Amer- ica: estimated active seagoing fleet ^g	17 747 493	11 489 900	4 303 863	687 381	6 498 656
7. Greece	13 135 986	8 580 753	2 379 058	1 704 818	4 496 877
8. Italy	9 727 128	7 037 846	2 573 117	1 900 073	2 564 656
9. Federal Republic of Germany	10 267 254	7 027 384	1 463 933	1 239 722	4 323 729
10. France	8 089 319	5 961 963	2 980 335	717 312	2 264 316
11. Panama	8 370 510	5 373 722	3 016 684	419 879	1 937 159
12. Netherlands	7 279 474	5 254 883	1 996 795	432 556	2 825 532
13. Sweden	7 151 532	5 029 407	1 567 392	1 592 681	1 869 334
14. Denmark	4 794 887	3 490 334	1 476 396	431 990	1 581 948
(75) Faeroe Islands		36 327			36 327
15. Spain	5 751 249	3 199 035	1 330 727	163 355	1 704 953
16. India	3 313 605	2 238 344	232 594	711 996	1 293 754
17. Poland	1 964 563	1 536 384	73 902	220 005	1 242 477
18. Yugoslavia	2 043 389	1 427 935	255 256	297 219	875 460
19. Brazil	1 991 619	1 381 458	443 498	112 906	825 054
20. Finland	1 773 253	1 330 488	597 698	99 547	633 243
21. Argentina	1 489 255	1 217 646	479 586	86 082	651 978
22. Belgium	1 462 119	1 051 882	303 847	328 546	419 489
23. China (Republic of)	1 513 834	961 807	130 569	75 151	756 087
24. Philippines	1 317 948	929 317	135 431	87 807	706 079
25. Germany (Eastern)	1 195 579	895 932	158 246	108 811	628 875
26. Canada ^h	978 822	895 863	117 732	125 806	652 325
27. Australia	963 447	893 613	159 199	306 806	427 608
(88) New Guinea		17 833	875		16 958
28. Portugal	909 736	825 355	244 777	11 054	569 524
29. China (mainland)	1 087 640	791 893	88 567		703 326
30. Cyprus	1 186 807	770 463	117 283	22 323	630 857
31. Israel	1 110 969	769 156	364	378 529	390 263
32. Korea (Republic of)	1 128 383	767 315	274 161	133 127	360 027
34. Turkey	751 914	651 325	168 863		482 462
35. Bulgaria	867 088	638 167	162 951	145 267	329 949
36. Indonesia	760 950	598 155	54 287		543 868

TABLE II (continued)

Distribution of world tonnage by flag of registration,^a and type of ship, in order of size of fleets,^b as at 1 July 1969

Flag of registration	Total tonnage c (in dwt)	Total tonnage d (in grt)	Of which : (in grt)		
			Tankers	Bulk carriers e	Other ships
37. Pakistan	769 594	530 404	20 452		509 952
38. South Africa	518 500	498 743	13 145	24 114	461 484
39. Kuwait	521 131	441 063	316 307		124 756
40. Mexico	570 218	423 969	281 106	30 800	112 063
42. Venezuela	494 791	369 120	245 290		123 830
44. Romania	498 944	338 242	71 827	143 237	123 178
45. Peru	420 941	338 080	77 992		260 088
46. Somali Republic	361 530	295 049	116 566		178 483
47. Lebanon	503 034	295 038		10 051	284 987
48. Chile	374 272	287 992	63 812	35 196	188 984
49. Cuba	254 864	277 206	6 266		270 940
50. United Arab Republic	315 299	239 461	75 173		164 288
51. Singapore	311 563	233 271	14 382	8 664	210 225
52. Colombia	276 031	206 084	44 072		162 012
53. Switzerland	296 677	193 007		59 814	133 193
54. New Zealand	191 768	180 561	2 928		177 633
55. Ghana	123 461	165 670			165 670
56. Ireland	205 176	164 200	3 536	62 692	97 972
57. Iceland	70 062	120 460	8 361		112 099
58. Uruguay	173 478	112 207	41 991		70 216
59. Iran	152 103	106 269	42 365		63 904
60. Nigeria	133 983	98 199	717		97 482
61. Czechoslovakia	120 865	74 877		41 086	33 791
62. Morocco	91 118	71 757	937		70 820
63. Thailand	73 555	69 448	15 385		54 063
64. Honduras	88 443	65 659	4 122		61 537
65. Malta	88 519	58 112		19 359	38 753
66. Saudi Arabia	58 407	50 694			50 694
67. Burma	67 711	50 326	1 478		48 848
68. Ethiopia	71 002	49 591	23 880		25 711
70. Ecuador	48 633	43 920	4 015		39 905
71. Korea (North)		40 384			40 384
72. Malaysia		38 697	7 484		31 213
73. Iraq		36 547	560		35 987
74. Albania	52 464	36 407			36 407
76. Hungary	42 433	33 748			33 748
77. Madagascar		30 842	2 366		28 476
78. Congo (Democratic Republic of)		28 817			28 817
79. Ivory Coast		25 460	166		25 294
80. Paraguay		22 165	2 935		19 230
81. Sudan		20 290			20 290
82. Trinidad		20 235	4 713		15 522
83. Tunisia		19 542			19 542
84. Algeria		19 456			19 456
85. United Republic of Tanzania		18 906	239		18 667
87. Viet-Nam (Republic of)		18 718			18 718
89. Kenya		15 963	2 704		13 259
90. Nicaragua		15 492	259		15 233
91. Jamaica		15 232			15 232
92. Guinea		12 064		10 764	1 300
93. Dominican Republic		12 032	674		11 358
94. Guyana		10 705	958		9 747
95. Maldives Islands		10 578			10 578
96. Ceylon		9 339	1 158		8 181
97. Burundi		7 777			7 777
100. Mauritius		4 429			4 429
101. Nauru		4 400			4 400
102. Cambodia		4 230			4 230
103. Libya		4 017			4 017

TABLE II (continued)

Distribution of world tonnage by flag of registration,^a and type of ship, in order of size of fleets,^b as at 1 July 1969

Flag of registration	Total tonnage c (in dwt)	Total tonnage d (in grt)	Of which : (in grt)		
			Tankers	Bulk carriers e	Other ships
104. Guatemala		3 629			3 629
105. Senegal		3 544			3 544
107. Costa Rica		3 107			3 107
108. Monaco		2 777			2 777
109. Trucial States		2 319	621		1 698
110. Viet-Nam (North)		2 255	314		1 941
111. Yemen		2 195			2 195
114. Yemen (South)		1 675			1 675
115. Mauritania		1 630			1 630
116. Bahrain Islands		1 594			1 594
117. Cameroon		1 386			1 386
118. Austria		873			873
119. Sierra Leone		855			855
120. Gabon		825	347		478
121. Congo (Brazzaville)		824			824
123. Syria		728			728
125. Gambia		707			707
130. Qatar		604	200		404
132. Barbados		484			484
World total g, h, i	288 328 138	202 045 318	77 064 167	39 062 363	85 918 788

Sources: *Lloyd's Register of Shipping Statistical Tables, 1969*, for all figures expressed in grt. Figures for dwt have been taken from Institute of Shipping Economics, Bremen. *Statistik der Schifffahrt*, quoting *Lloyd's Register* and registers of other classification societies. The figures for the United States Reserve Fleet (which is excluded from the table) are published by the United States Department of Commerce, Maritime Administration.

a The designations employed in this table refer to flags of registration and do not imply the expression of any opinion by the Secretariat of the United Nations concerning the legal status of any country or territory, or of its authorities, or concerning the delimitation of its frontiers.

b Grt has been chosen as the standard of size for ranking purposes, since the dwt series is incomplete. The rank order of each flag is indicated by the number to the left of each entry in the table. In the case of flags of Non-Self-Governing Territories, which are shown out of rank order (see note f below), the number indicating rank order is in parentheses.

c Vessels of 300 grt and above; no direct comparisons should be made between the grt and dwt figures applying to the fleet of any one country, owing to the difference in the lower size limit, and to other differences in compilation. Figures in dwt were not available for a great number of countries with small fleets.

d Vessels of 100 grt and above; also see note c.

e In *Lloyd's Register of Shipping Statistical Tables* this class of vessel is defined to include single-deck ore and bulk carriers of 6,000 grt and over.

f In this table, Non-Self-Governing Territories are listed directly below the countries responsible for the administration of these Territories (as of 1 July 1969). However, the tonnage registered in these Territories is not included in the figures for the flag of the administering country.

g Excluding the United States Great Lakes fleet, which amounted to 1,753,494 grt on 1 July 1969, of which 1,493,923 grt were ore and bulk carriers; and also excluding the United States Reserve Fleet of 6,307,000 grt (7,774,000 dwt) of which 206,000 (311,000 dwt) consisted of tankers, and 14,000 grt (22,000 dwt) of bulk carriers. The figures for the United States Reserve Fleet apply to vessels of more than 1,000 grt, and are thus not directly comparable with the figures from which they have been deducted, but the statistical discrepancy is very small, since few ships of less than 1,000 grt are included in the Reserve Fleet.

h Excluding the Canadian Great Lakes fleet which, on 1 July 1969, amounted to 1,555,081 grt, of which 1,221,263 grt were ore and bulk carriers.

i The world total expressed in dwt includes 1,827,552 dwt for which the source did not specify the flag of registration.

TABLE III
Distribution of world fleet by geographical areas, 1 July 1969
(Vessels of 100 grt and above)
(Thousand grt)

Area	Total tonnage	Of which		
		Tankers	Bulk carriers	Other ships
1. North America	12 740 686	4 666 902	892 990	7 180 794
2. Japan	23 987 079	8 019 618	6 950 315	9 017 146
3. Australia and New Zealand .	1 074 174	162 127	306 806	605 241
4. Northern and Western Europe	80 224 724	32 762 553	16 736 485	30 725 686
5. Southern Europe	15 557 452	4 496 353	2 218 128	8 842 971
6. Central and Eastern Europe (excluding USSR)	3 553 757	466 926	658 406	2 428 425
7. USSR	13 704 640	3 170 872	198 194	10 335 574
8. China (mainland), North Korea, North Viet-Nam.	834 532	88 881	—	745 651
9.1 Western Asia	1 707 882	360 417	388 580	958 885
9.2 Southern and Eastern Asia, n.e.s. ^a	7 167 697	995 769	1 238 373	4 933 555
10.1 Northern Africa	354 233	76 110	—	278 123
10.2 Western Africa	339 981	1 230	10 764	327 987
10.3 Eastern Africa	443 646	146 248	—	297 398
10.4 Southern Africa	498 743	13 145	24 114	461 484
11.1 Caribbean ^b	703 303	183 334	93 201	426 768
11.2 Central America	512 476	285 487	30 800	196 189
11.3 South America, Northern Sea- board	400 060	250 961	—	149 099
11.4 South America, Western Sea- board	876 076	189 891	35 196	650 989
11.5 South America, Eastern Sea- board	2 738 706	968 010	198 988	1 571 708
12. Oceania, n.e.s.	36 598	1 129	—	35 469
Liberia (not included in 10.2), Panama (not included in 11.2) ^c	34 588 873	19 758 204	9 081 023	5 749 646
World total	202 045 318	77 064 167	39 062 363	85 918 788

Source: Compiled from table IV. See notes to that table.

^a Includes 707,748 grt registered in Hong Kong; it is believed that some of this tonnage is controlled by foreign interests.

^b Includes 376,132 grt registered in the Bahamas; the location of the effective control of this tonnage is uncertain.

^c These countries have been extracted from the relevant regional groups.

TABLE IV
Selected maximum and minimum tramp rates, 1968 and 1969

Commodities/routes	Currency unit	1968		1969	
		High	Low	High	Low
<i>Heavy grain:</i>					
United States Gulf - W. Coast					
India	Shillings sterling	133/6	111/0	98/6	88/6
N. Pacific - East Coast India . .	Shillings sterling	97/6	90/0	85/0	—
River Plate - Antwerp/Hamburg					
range	Shillings sterling	91/3	65/5	67/11	55/0
River Plate - Japan	Shillings sterling	145/0	100/0	110/10	87/6
<i>Coal:</i>					
Hampton Roads - Rio de Janeiro	U.S. dollars	3.40	2.90	7.15	6.40
<i>Sugar:</i>					
Mauritius - United Kingdom . .	Shillings sterling	77/6	72/6	82/6	67/6
Philippines - USA	U.S. dollars	8.50	6.60	7.85	6.30
<i>Ore:</i>					
Mormugao - Japan	Shillings sterling	51/3	43/4	52/6	42/6
<i>Copra:</i>					
Philippines - Continent (modern)	U.S. cents	23¼	17½	25½	21
<i>Phosphate:</i>					
Casablanca - S. China	Shillings sterling	105/0	97/0	91/6	68/0
Aqaba - W. Coast India	Shillings sterling	59/0	49/0	55/0	49/0
<i>Rice:</i>					
China - Ceylon	Shillings sterling	84/0	69/10	80/0	65/0
<i>Fertilizers:</i>					
Continent - S. China	Shillings sterling	141/0	90/0	113/6	86/0

Source: Lloyd's List and Shipping Gazette (London, 1 January 1970).

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